

*TOMORROW starts here.*



Cisco *live!*

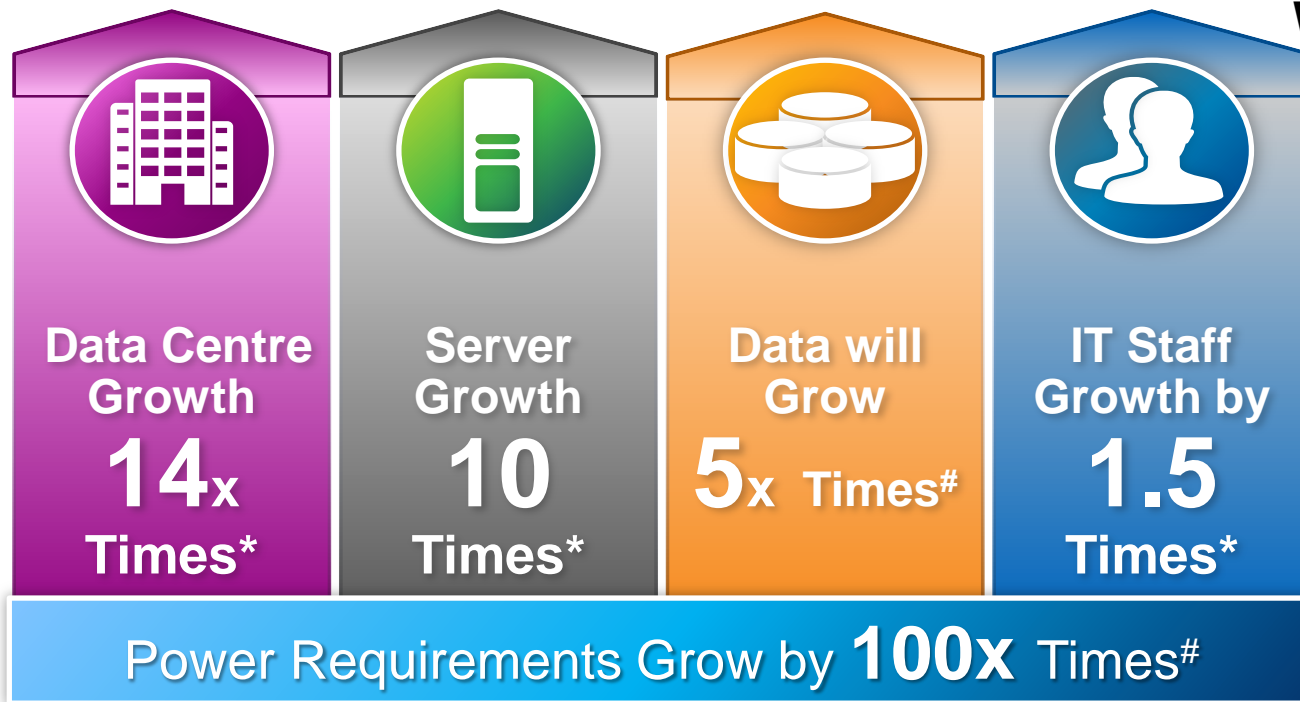
# UCS Director for Integrated Compute and Network Fabric Deployment and Management

BRKDCT-2370

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Cloud Systems Engineer



# IT Complexity



## What Data Centres Need

- Application Consistency
- Simplification
- Agility
- Efficiency and Scale
- Business Alignment
- Physical and Virtual Integration

Source: \* 2012 IDC Digital Universe Study By 2020 & # Gartner

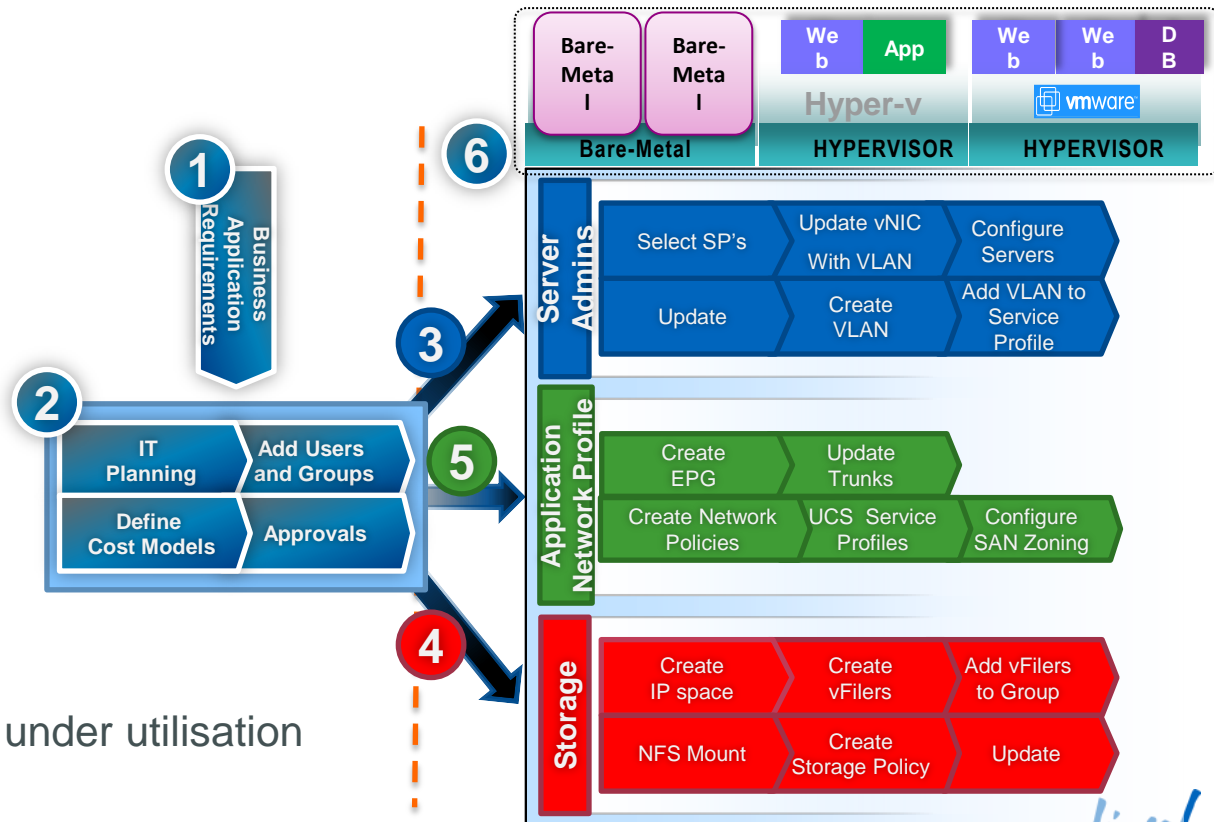
# Complex IT Processes to Deploy Resources for App's

## Challenges:

- Manual processes
- Complex handoffs between teams and domains
- Static resource allocation

## Result:

- Days/weeks/months to deploy IT services
- High operational cost
- Rigid silos
- Infrastructure inefficiency and under utilisation



# Challenges... How did we get Here?

Manual Process

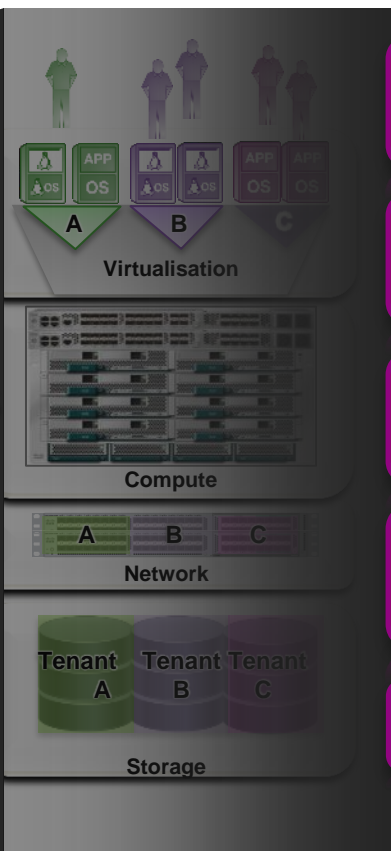
Disjoined  
Provisioning

Disruptive Growth

Static Resource  
Allocation

Seen as Different  
Components

Today's  
Challenges  
Have Lead  
To...



Silos

Operational  
Complexity

Architecture  
Rigidity

Infrastructure  
Inefficiency

Higher TCO

# UCS Director Solves Infrastructure Challenges

Manual processes require days or weeks to deploy resources; increases operating costs

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Data centre teams stay in rigid silos, with complex hand-offs between domains and teams

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Static resource allocation results in under-utilisation of resources and inefficiency

## UCS Director

✓ Reduces resource deployment from weeks to minutes

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✓ Allows IT teams to work together; encourages teamwork resulting in competitive innovation

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✓ Delivers unified automation and management for optimum utilisation and efficiencies



# Cisco UCS Director

Voted SVC Product of the Year Virtualisation Management Category

**SVC** 2013  
**awards** 2013  

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**W I N N E R**

Storage, Virtualisation, Cloud (SVC) Award

Winning Attributes:

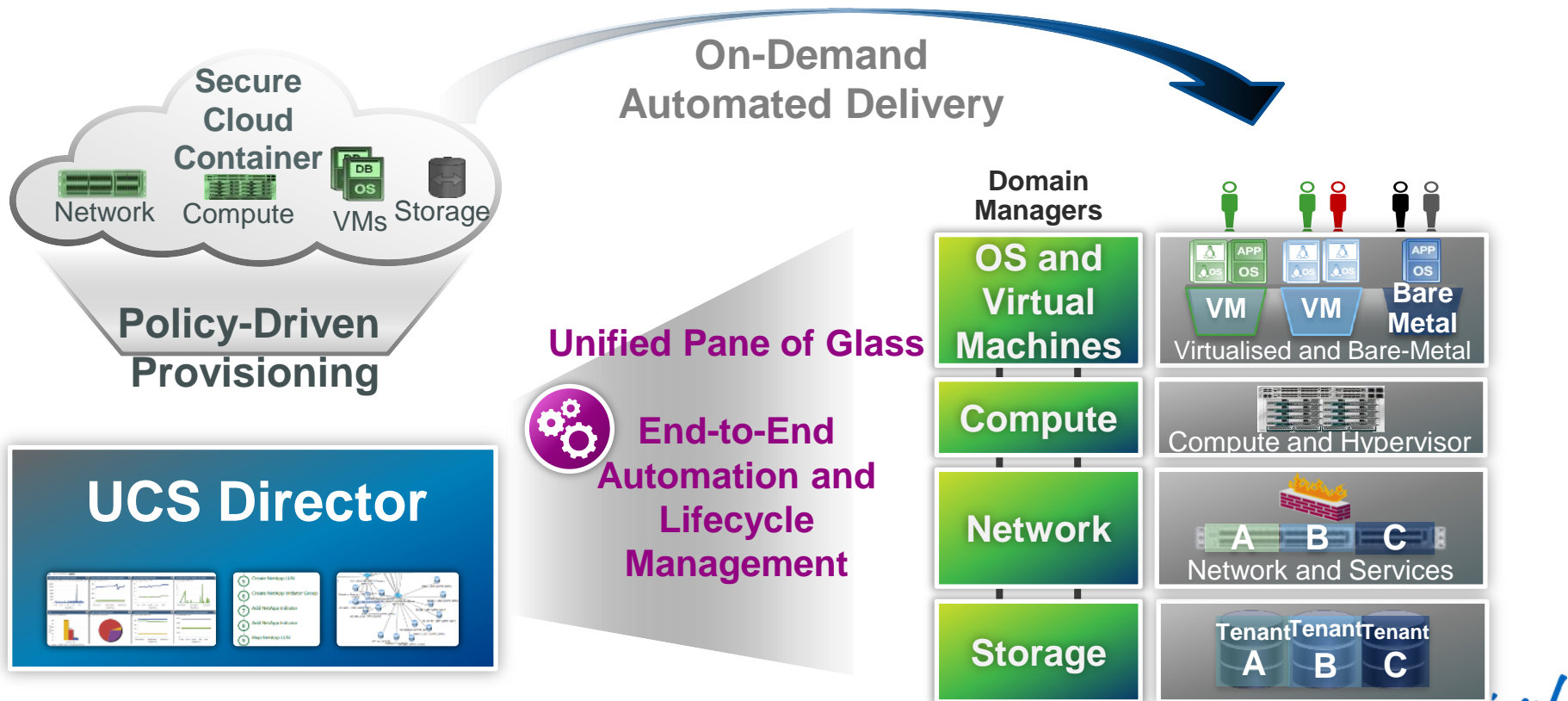
Physical + Virtual Infra Mgmt Multi-Vendor  
Coverage

FlexPod, Vblock, VSPEX Support

Turnkey, Out-of-the-Box

Fast Time-to-Value

# Cisco UCS Director Turn-Key Solution





# Cisco UCS Director

Agility and Simplicity for Virtualised and Bare-Metal IT Services



End Users



IT Admins



IT Operations

Open API for  
Integration



Self Service Console

Admin Console

Dashboard

UCS Director

OS & VM Deployment

Policy Manager

Resource Pools

Physical Infrastructure

Cisco UCS

DELL



NetApp

EMC<sup>2</sup>  
where information lives

Cisco  
Nexus



Force10

BROCADE



Virtual Infrastructure

CITRIX<sup>®</sup>

Microsoft<sup>®</sup>



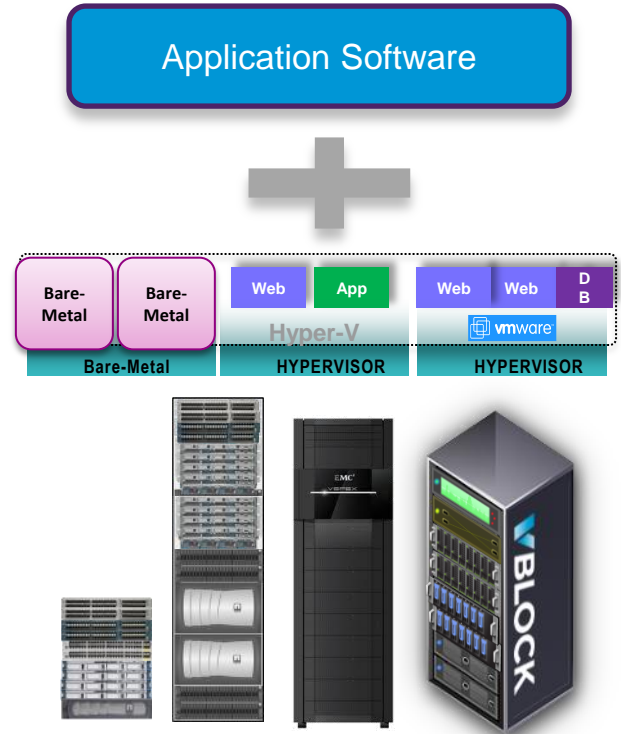
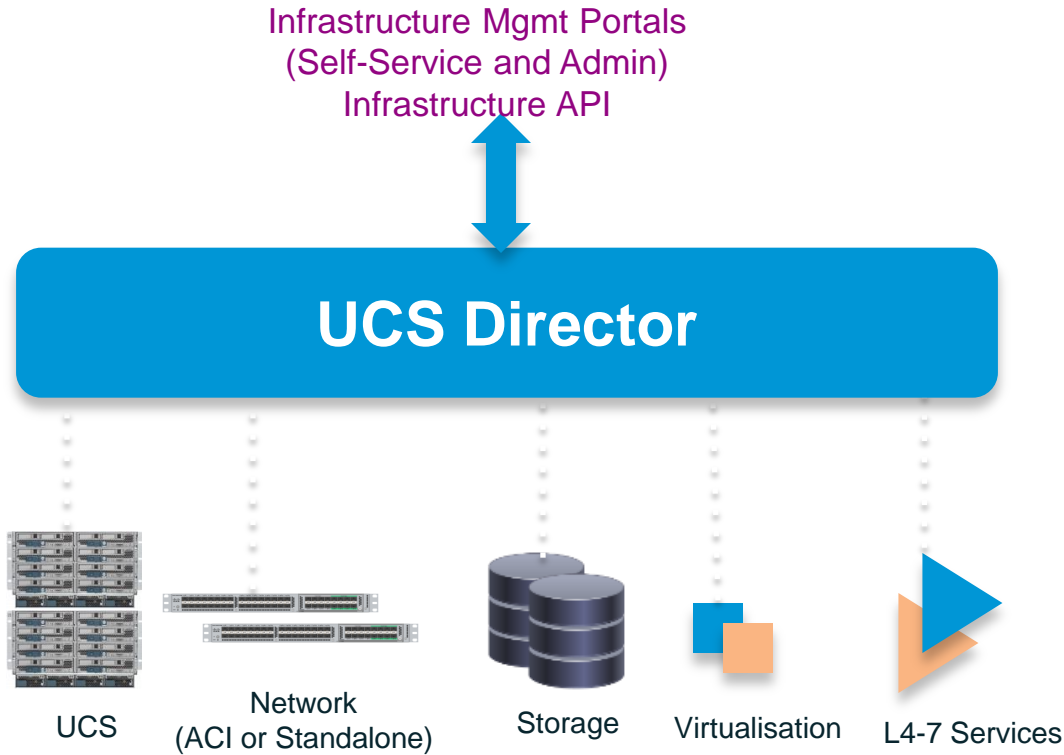
redhat.



vmware™

Centralised Lifecycle Management of Physical and Virtualisation Infrastructure

# UCS Director Focus



# Cisco UCS Software Portfolio

UCS Manager, Central, APIC and UCS Director

## UCS Director

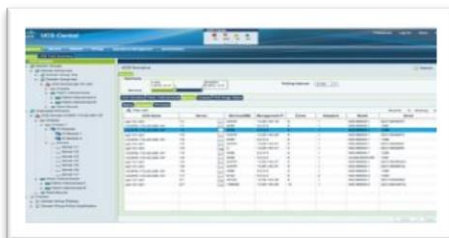
### UCS Central

### APIC & DFA

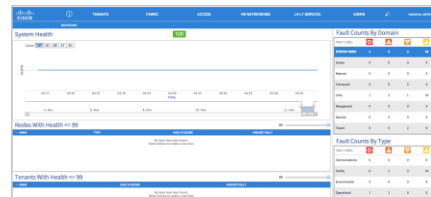
### UCS Manager



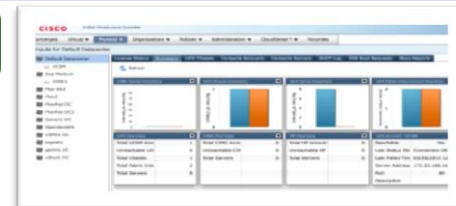
- Manage Single UCS domain
- Embedded Management of all UCS s/w and h/w components



- Manage multiple UCS Domains
- Deliver global policies, service profiles, ID pools, and templates



- Embedded Management for ACI
- Manages ACI Fabric
- L4-7 Management
- Policies: Connectivity, Security & QoS,
- **Compute & Storage\***



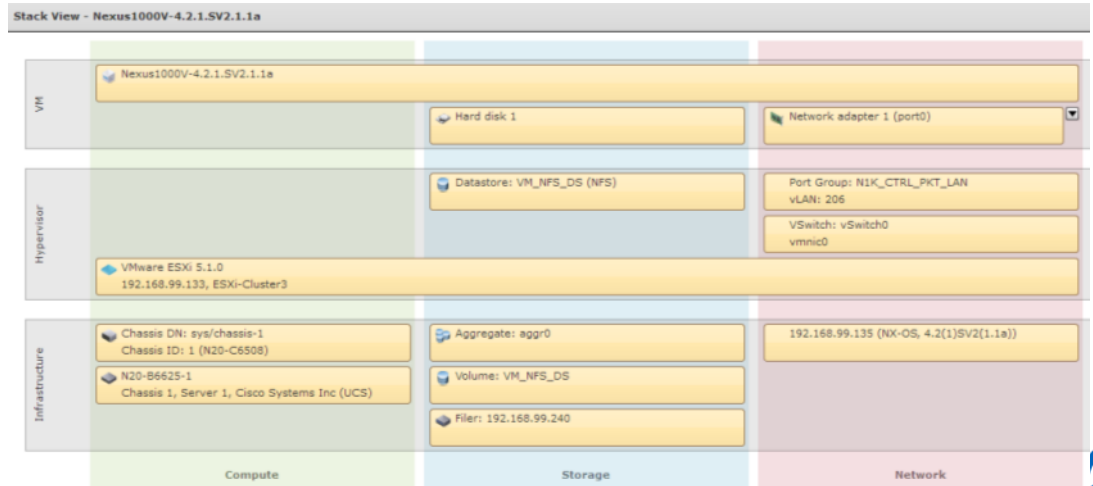
- Manage Compute, **Storage**, Network, ACI and Virtualisation
- Manage FlexPod, VSPEX, Vblock
- Support for 3<sup>rd</sup> party heterogeneous infrastructure



# Unified Automation and Management



- Manages globally distributed data centres
- Drill down capabilities reduces time for IT admin/ops



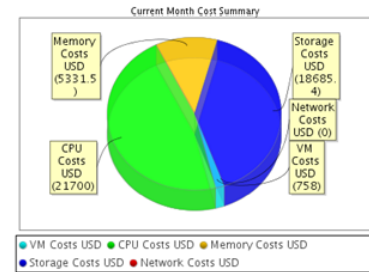
# Drag 'n Drop Workflow Creation

- **Comprehensive** Out-of-box purpose built infrastructure tasks.
- Task Library with **800+** Supported activities.
- Build in **automated rollback** of tasks and workflows
- **Cisco Developer Networks**, Community based Workflow collaboration

The screenshot displays the 'Workflow Designer - Create VLANs (61)' interface. On the left, a task library is visible with categories like 'Cloupia Tasks', 'Compound Tasks', 'Context Mapper Tasks', 'Custom Approval Tasks', 'Custom Tasks', 'Physical Compute Tasks', and 'Cisco UCS Tasks'. The 'Add VLAN to Service Profile' task is highlighted. The main workspace shows a workflow with four tasks: 'CreateVLAN\_1kv', 'AddVLAN\_UCS', 'CreatedvSwitch\_938', and 'CreateDVPortGroup\_336'. A yellow callout box with a green plus icon and the text 'Add VLAN to Service Profile' is positioned over the workflow, indicating the task being added. The interface includes buttons for 'Edit Workflow Properties', 'Validate Workflow', 'Execute Now', 'Auto Layout', 'Compact View Mode', and 'Full View'. A note at the bottom left states: 'To add a new task, drag and drop a task item to design area.'

# All-Inclusive Consumption & Showback Reporting

Chargeback								
Group	VM ID	Instance Name	Month	Active VM	Inactive VM	Average CPU Us	Average Memory	Committed
Default Group	3929	My_PSA	October, 2013	261.0	0.0	1.7008	0.0000	
Default Group	3931	testVmCrFrmHy	October, 2013	258.0	3.0	0.0000	0.0000	
Default Group	3932	smis-provider	October, 2013	0.0	261.0	0.0000	0.0000	
Default Group	3933	SCVMM2012SP1	October, 2013	479.0	0.0	8.5734	0.0000	
Default Group	3934	VMforNoLiveMig	October, 2013	0.0	261.0	0.0000	0.0000	
Default Group	3935	CUICforRavi	October, 2013	158.0	321.0	0.0000	0.0000	
Default Group	3936	vsm	October, 2013	261.0	0.0	0.0000	0.0000	
Default Group	3937	Nexus1000V-4.2	October, 2013	464.0	0.0	0.0325	0.0528	
Default Group	3938		October, 2013	118.0	9.0	0.0306	0.0587	
Default Group	3939	CUCSD-4.0.0.2-	October, 2013	116.0	371.0	0.0067	0.0419	
Default Group	3940	vm-naveenTest-	October, 2013	71.0	196.0	0.0000	0.0000	
Default Group	4061	vnx-smis-provic	October, 2013	398.0	0.0	0.9514	0.0000	
Default Group	3930	2ndAdforLDAPte	October, 2013	154.0	233.0	0.0000	0.0000	
Default Group	4062	testNetworkTasl	October, 2013	0.0	194.0	0.0000	0.0000	



## Overview

Month: December 2013

Total Monthly Cost (USD) 46728.1

### VM Costs

Total VM Costs (USD)	758.0	Total CPU Costs (USD)	21700.0
One Time Costs (USD)	0.0	CPU Cost (Cores)USD	21700.0
Active VM Costs (USD)	729.0	Allocated CPU Costs (USD)	0.0
Inactive VM Costs (USD)	29.0	Reserved CPU Costs (USD)	0.0
Active VM Hours	729.0	Used CPU Costs (USD)	0.0
Inactive VM Hours	58.0	Allocated CPU GHz-Hours	1735.2
Total CPU Costs (USD)	21700.0	Reserved CPU GHz Hours	0.0

### Memory Costs

Total Memory Costs (USD)	5331.5	Total Storage Costs (USD)	18685.4
Allocated Memory Costs (USD)	5150.0	Committed Storage GB-Hours	2508.0
Reserved Memory Costs (USD)	0.0	Uncommitted Storage GB-Hours	13669.4

- Starting point between IT and users of resources on understanding **consumption rates**
- Ability to add **costs for chargeback** capabilities
- Tenanted Reporting** tool formalises information for consumers



# Built-in Approvals and Notification

My Approvals						
Service Request IC	Request Type	Initiating User	Group	Catalog Name	Initiator Comments	Requ
57	User Action	salesadmin	Sales			06/18/
58	Undo Workflow	admin	Sales			06/18/
72	Admin Workflow	admin				06/23/
73	Undo Workflow	admin				06/23/
83	User Action	salesadmin	Sales			06/24/
86	Undo Workflow	admin	Sales			06/25/
88	User Action	salesadmin	Sales			06/25/
96	Advanced	steve	Sales			06/26/
244	Undo Workflow	admin	Sales			08/15/
287	Undo Workflow	admin	Sales			09/05/
288	Undo Workflow	admin	Sales			09/05/
417	User Action	salesadmin	Sales			10/30/
425	Advanced	salesuser	Sales	RHEL 6.2 Baremetal		10/31/
429	Advanced	salesuser	Sales	RHEL 6.2 Baremetal		11/01/
432	Advanced	salesuser	Sales	RHEL 6.2 Baremetal		11/04/
441	Undo Workflow	admin	Sales			11/04/
442	Undo Workflow	admin	Sales			11/04/

Refresh

Current status for the service request.

- 1 Initiated by admin 06/23/2013 00:06:08
- 2 Approval By admin 06/23/2013 04:12:37
- 3 Create UCS Service Profile RHEL62CLTest created. 06/23/2013 04:12:41
- 4 Select UCS Server 06/23/2013 04:12:45
- 5 Associate UCS Service Profile 06/23/2013 04:16:35
- 6 Setup PXE Boot (OS Type: RHEL62) 06/23/2013 04:16:53
- 7 Create VNX Storage Group 06/23/2013 04:18:21
- 8 Add VNX Host Initiator Entry 06/23/2013 04:18:59
- 9 Add VNX Host Initiator Entry 06/23/2013 04:20:51
- 10 Add Hosts to VNX Storage Group 06/23/2013 04:21:16
- 11 Create VNX LUN 06/23/2013 04:22:23
- 12 Add VNX LUN to Storage Group 06/23/2013 04:23:09
- 13 Generic Configure SAN Zoning 06/23/2013 04:25:51

- **Approvals** for IT admin, change control or other appropriate approvals inserted into workflows
- Automated **Email**, to individuals when approval is pending

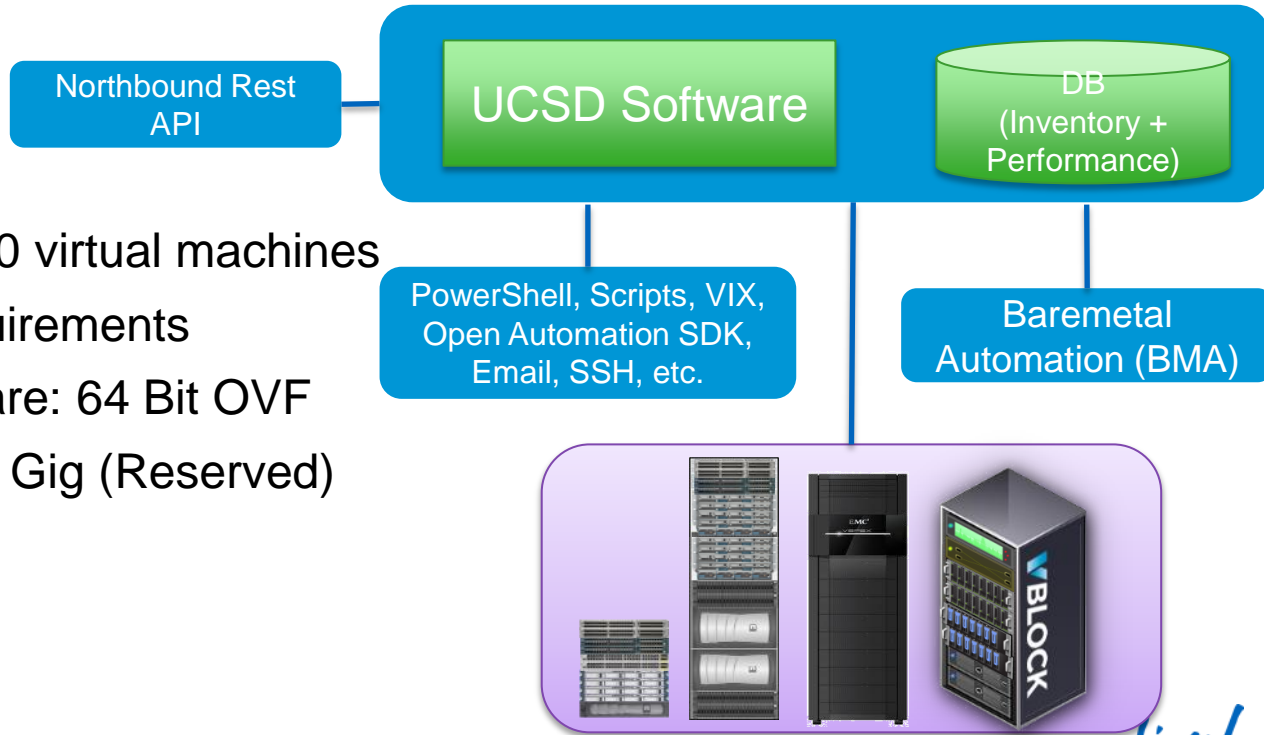
# Management on the Move (UCS Director Mobile)

- **UCS Director Mobile** Application
  - Request and manage Virtual and Physical lifecycle from mobile devices
- Supported Platforms
  - iPad, iPhone
  - Android



# Scalability – Standard Deployment Model

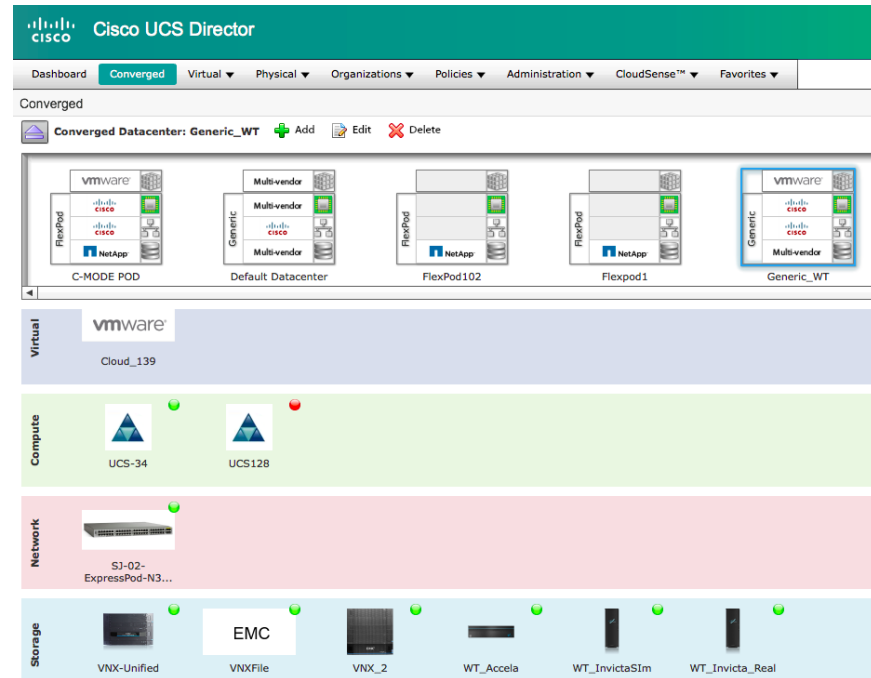
- Environment Size
  - **5000** devices; 50,000 virtual machines
- Minimum System Requirements
  - UCS Director Software: 64 Bit OVF
  - vCPU: 4, Memory: 8 Gig (Reserved)
  - Disk: 100 Gig





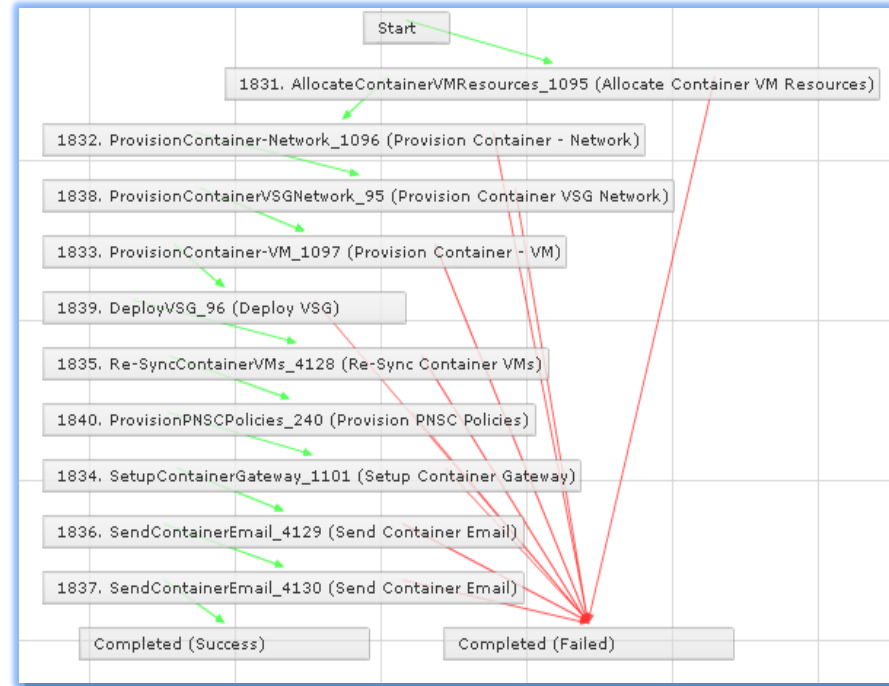
# UCS Director & Invicta

- Inventory Features (SSN, SSR)
- CRUD Operations & Reports
- Volume Group, Initiator Groups
- LUN, VLAN, Virtual Interface and Bond
- Converged and Stack Views
- Solution Flows – SMT (iSCSI, FC)
- Bare Metal (iSCSI & FC)

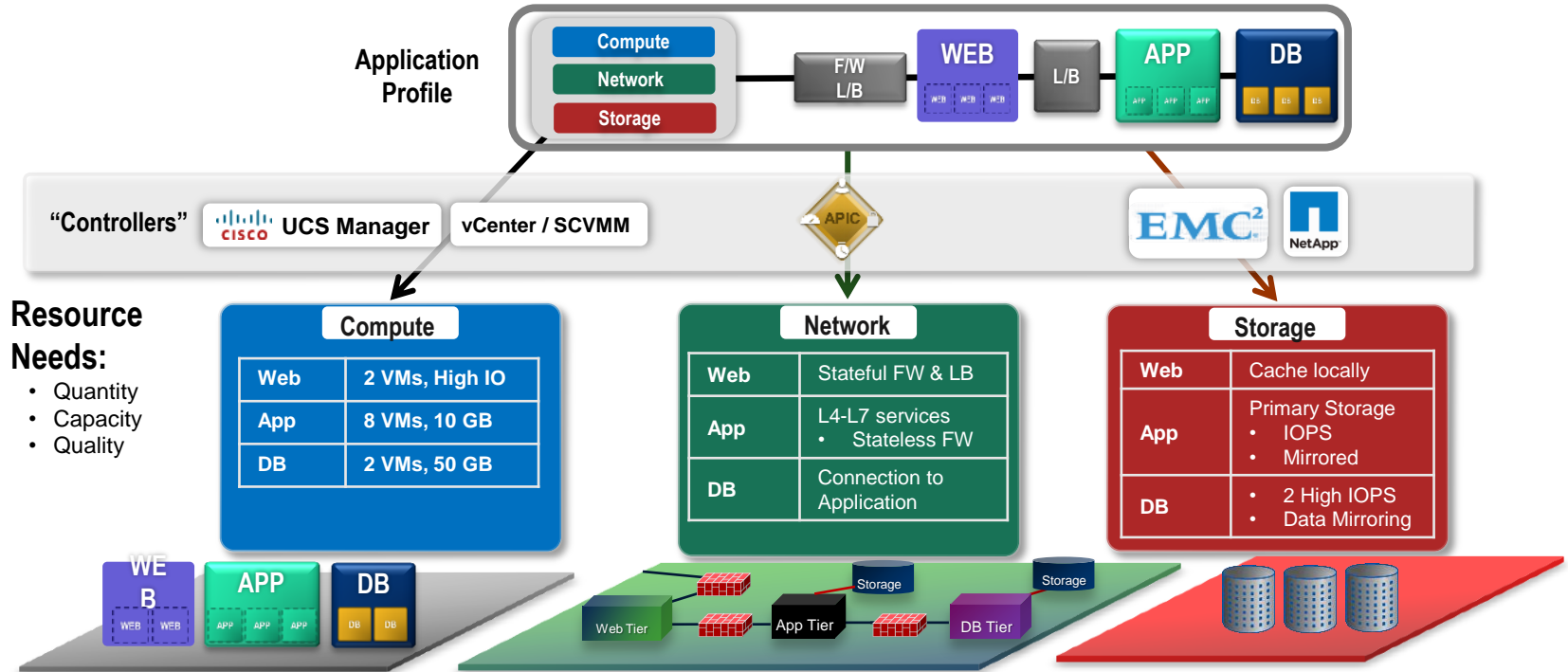


# Network Infrastructure Containers

- Support for **Prime Network Service Controller (PNSC)**
- Collects inventory and creates reports
- Workflow task support for actions
- Integrates **VSG** into Application Containers
- Integrates VSG into existing **application container** within UCSD
- Extends UCS Director's value to network services

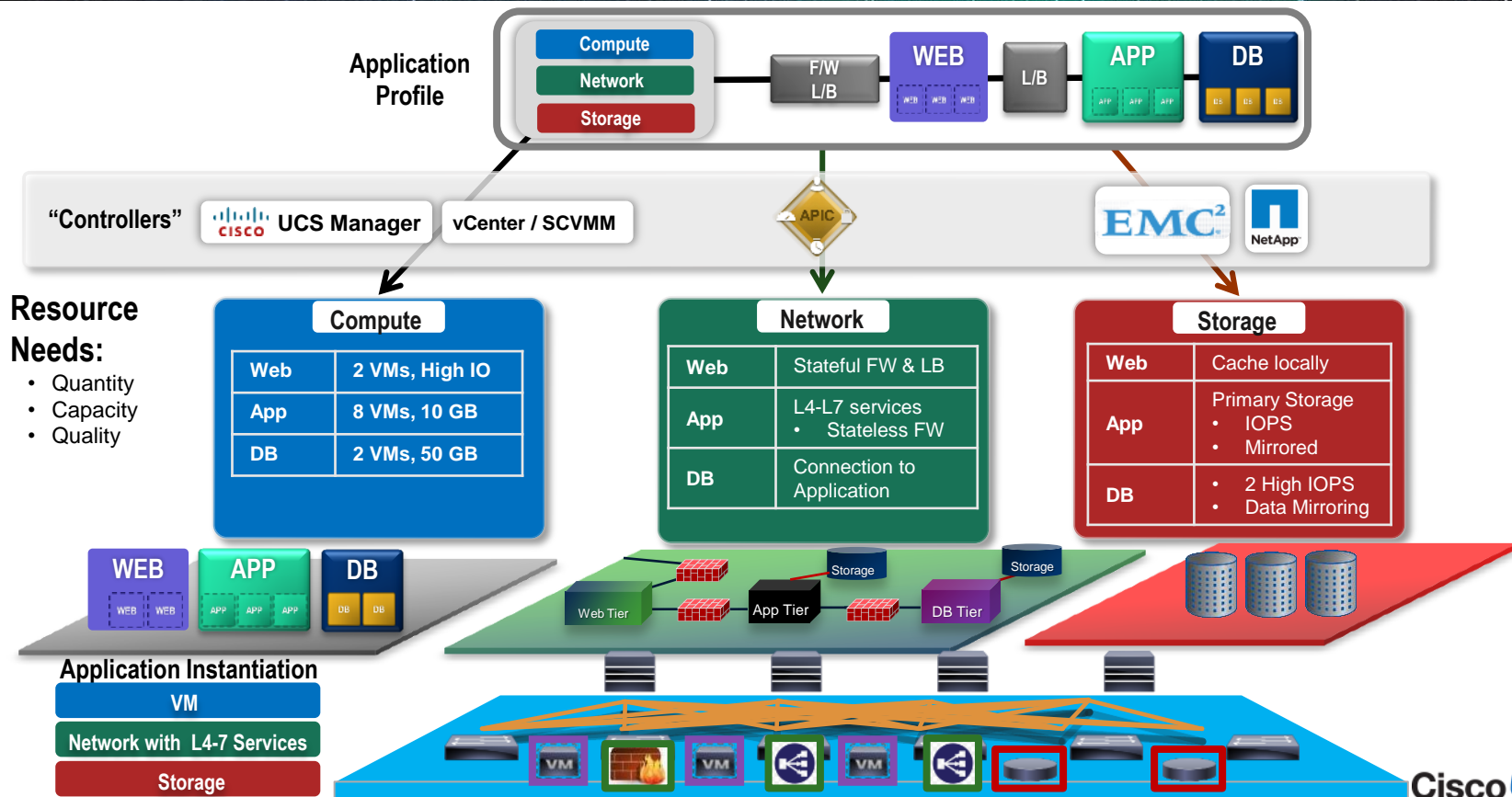


# End-to-End **Virtual** Application Deployment

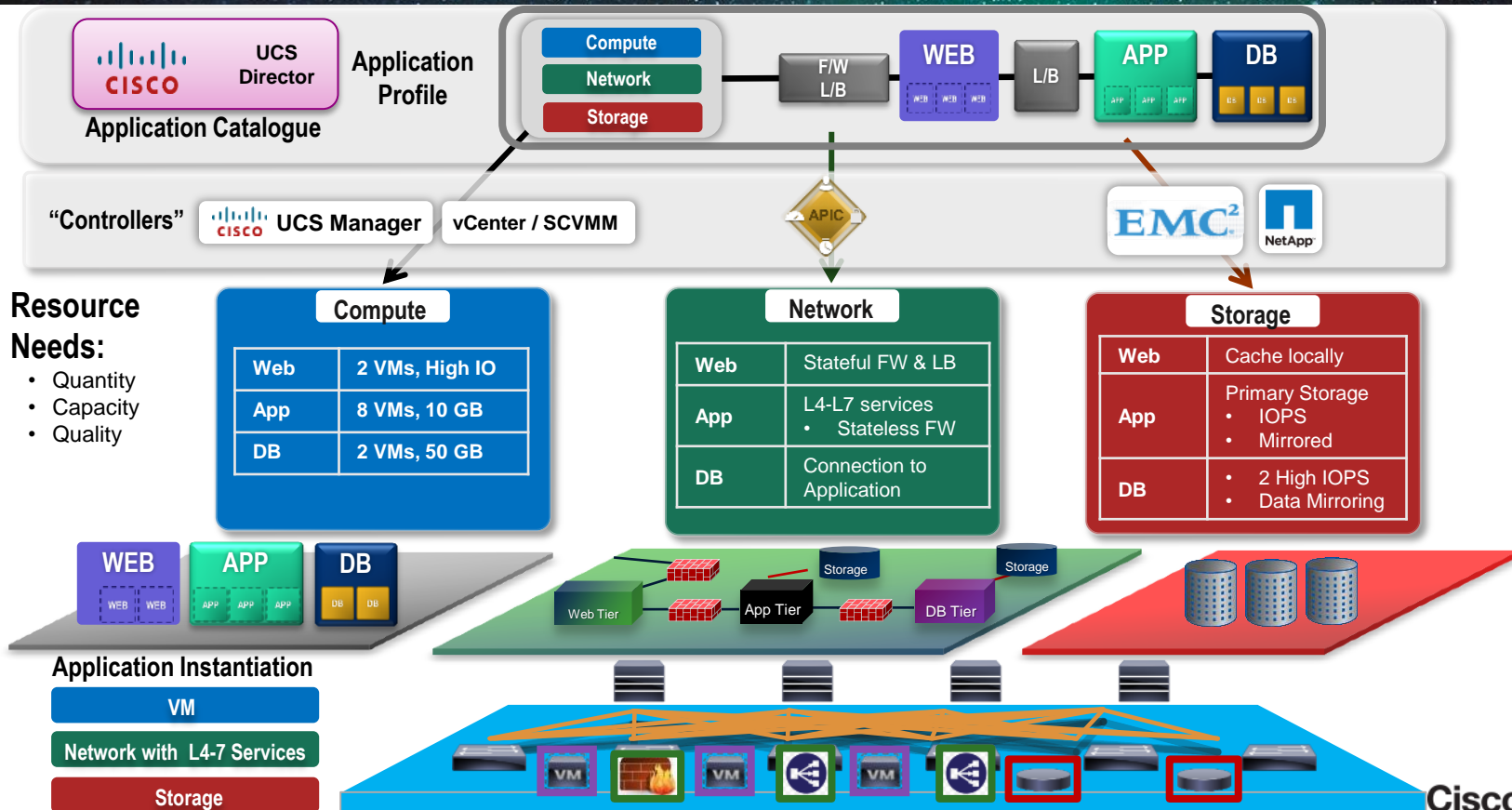




# End-to-End **Virtual** Application Infrastructure Deployment (Con't)

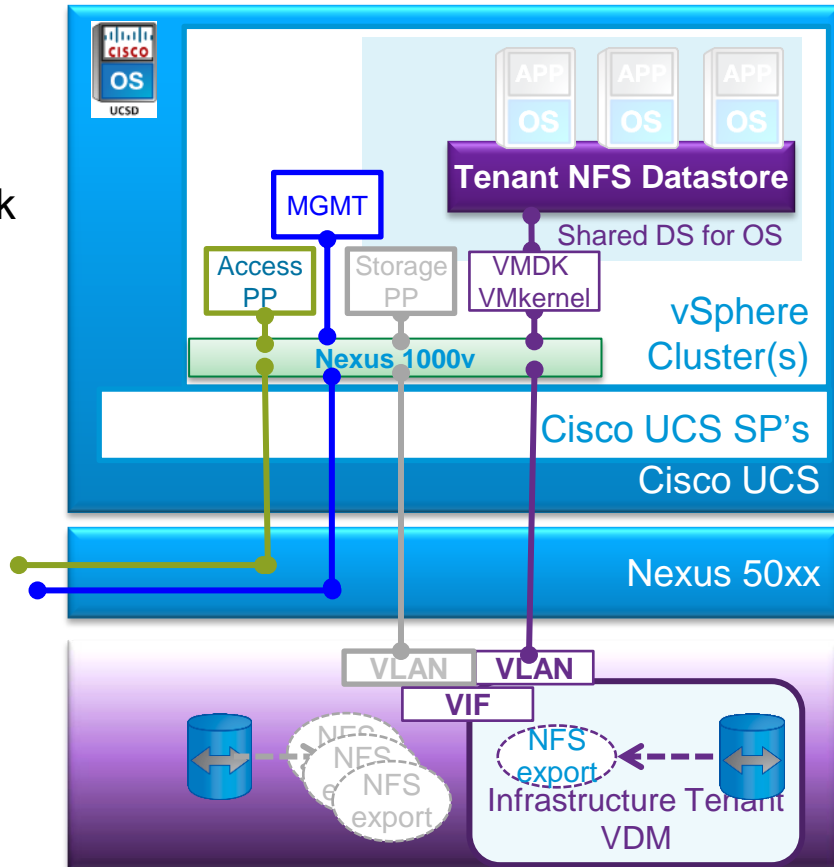


# End-to-End **Virtual** Application Infrastructure Deployment (Con't)



# Tenant Structure - Example

- Infrastructure
  - Create Port Groups
  - Create VLAN's in Storage & Network
  - Update Trunks on Switches

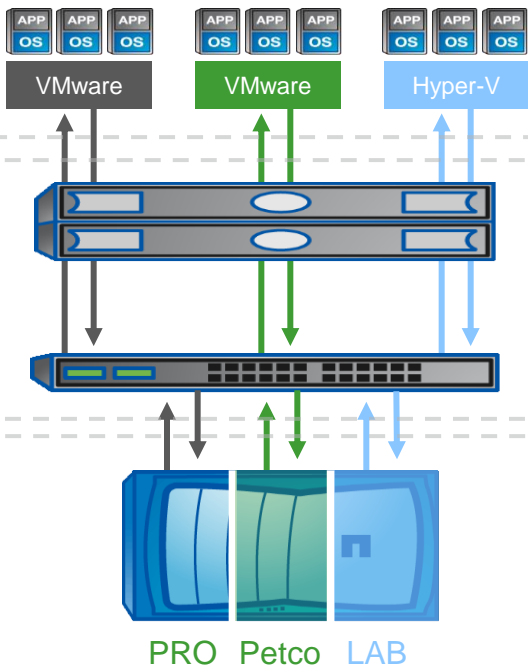


## Network Legend

- Access Network
- MGMTNetwork
- Storage Network



# Bringing Infrastructure Together (Example...)



Data Centre

## Description

### VI Infrastructure:

- a> Define Port Groups and **VLAN Tag** on DvSwitch
- b> Add **VMKNic's** for **NFS Export Use per Cluster**
- c> **Mount NFS DataStores (DS\_OS, DS\_SWP, DS\_Data)**

### UCS Manager:

- a> Update SP's with Respective Storage **VLAN's**
- b> FI Changes

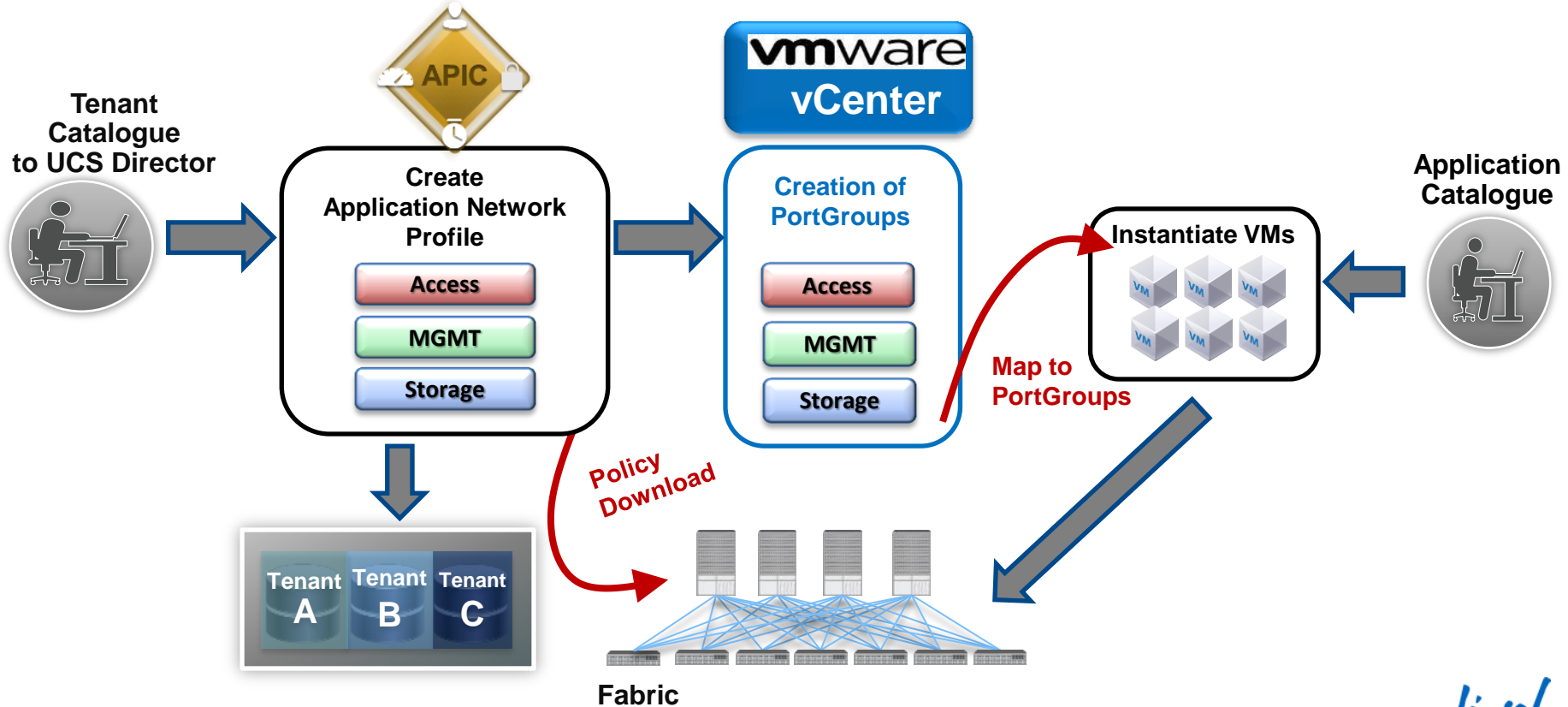
### Fabric:

- a> Create Tenant (Tenant\_Petco) and Bridge Domain
- b> Creates EPG for Common Services (EPG\_Petco)
- c> Create EPG for Storage (EPG\_Petco\_Storage), Map **VLAN** to Storage EPG

### Storage Steps:

- a> Create vServer (Vserver\_Petco)
- b> Create Flex Volume (FlexVol\_Petco0)
- c> Create **LIF, IPspace, VLAN Assignment**
- d> Add Flex Volumes (Flex\_Petco\_OS, Flex\_Petco\_Data, Flex\_Petco\_SW)

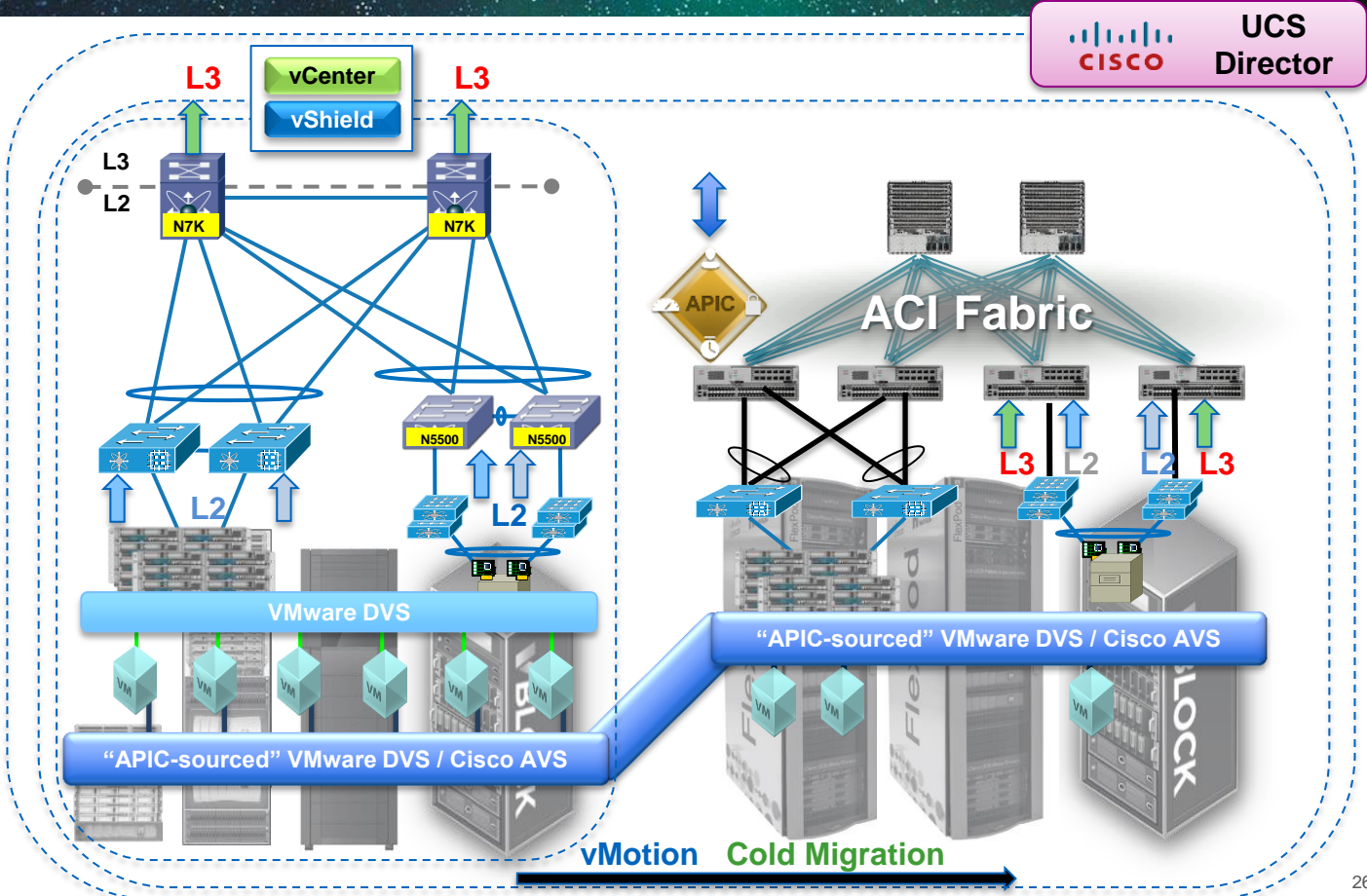
# Application Instantiation with ACI



# Integration / Migration from FlexPod/VBlock to ACI Based POD



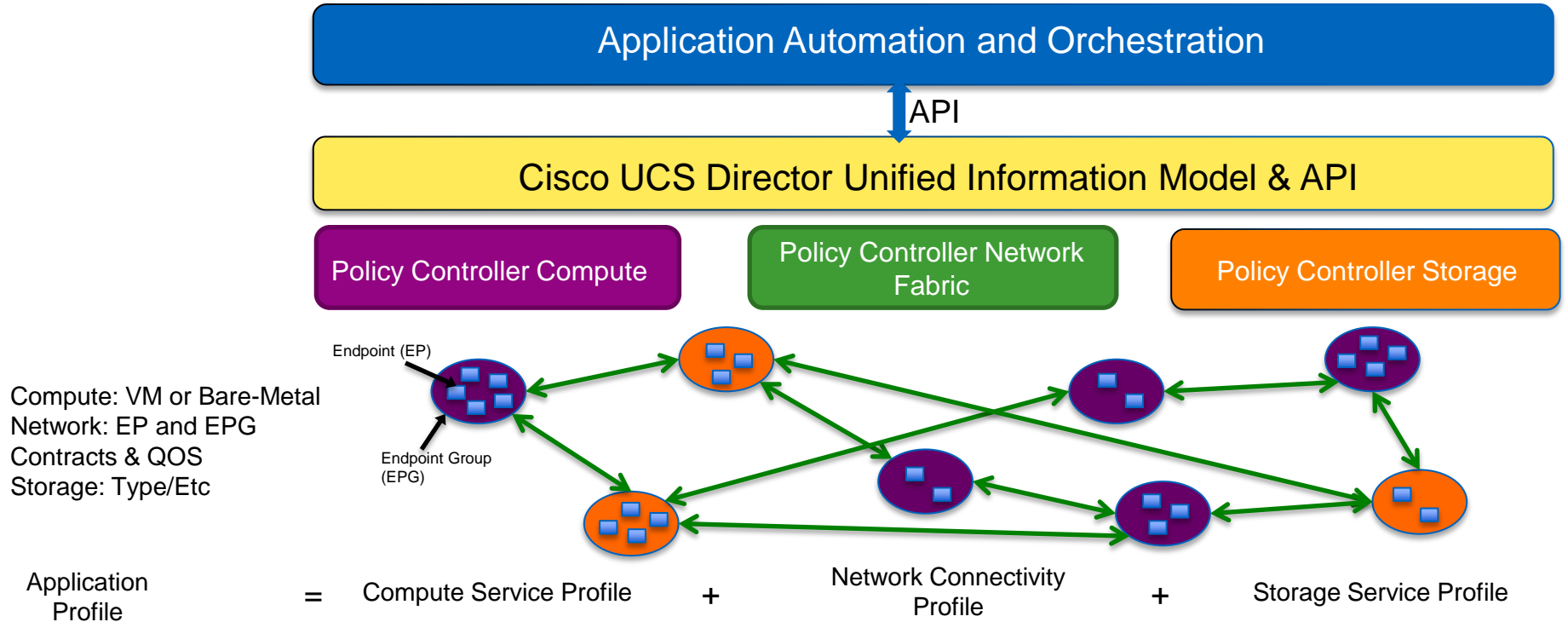
- Migration Strategy for Customer Comes with
  - UCS
  - Nexus
  - Storage
  - FlexPod, Vblock & VSPEX





# UCS Director infrastructure Goal in a Nutshell

User Driven & Policy Based



Designed from the Ground-Up to be Application Centric

# Summary

- UCS Director deepens ability to manage heterogeneous infrastructure
- **Turnkey Solution – ready to use in hours**
  - Automates provisioning and management of converged infrastructures
- **Works With Other Solutions**
  - Northbound API integrates into higher platforms
  - SDK allows for integration
- **Strong Infrastructure & Application Focus**
  - Integration with UCS Manager & UCS Central
  - EMC: VMAX, VNX, VNX2 & NetApp 7 & C-Mode
  - Network Containers for Applications





Q & A

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