



Cisco Intelligent Automation for Cloud & Compute

Lars Bo Iversen / Hans Donnerborg

Intelligent Automation Solutions Business Unit

Business Drivers for Private Cloud

Long Provisioning Times for New Services

- Lack of agility
- High cost of IT staff
- Business-it dissonance

High Capital Costs Due to Provisioning for Peak Loads

- Low capacity utilization
- High operating costs
- Overcrowding of datacenter

Pressure to Move Towards Proactive SLA Management

- Labor-intensive, manual processes for service management

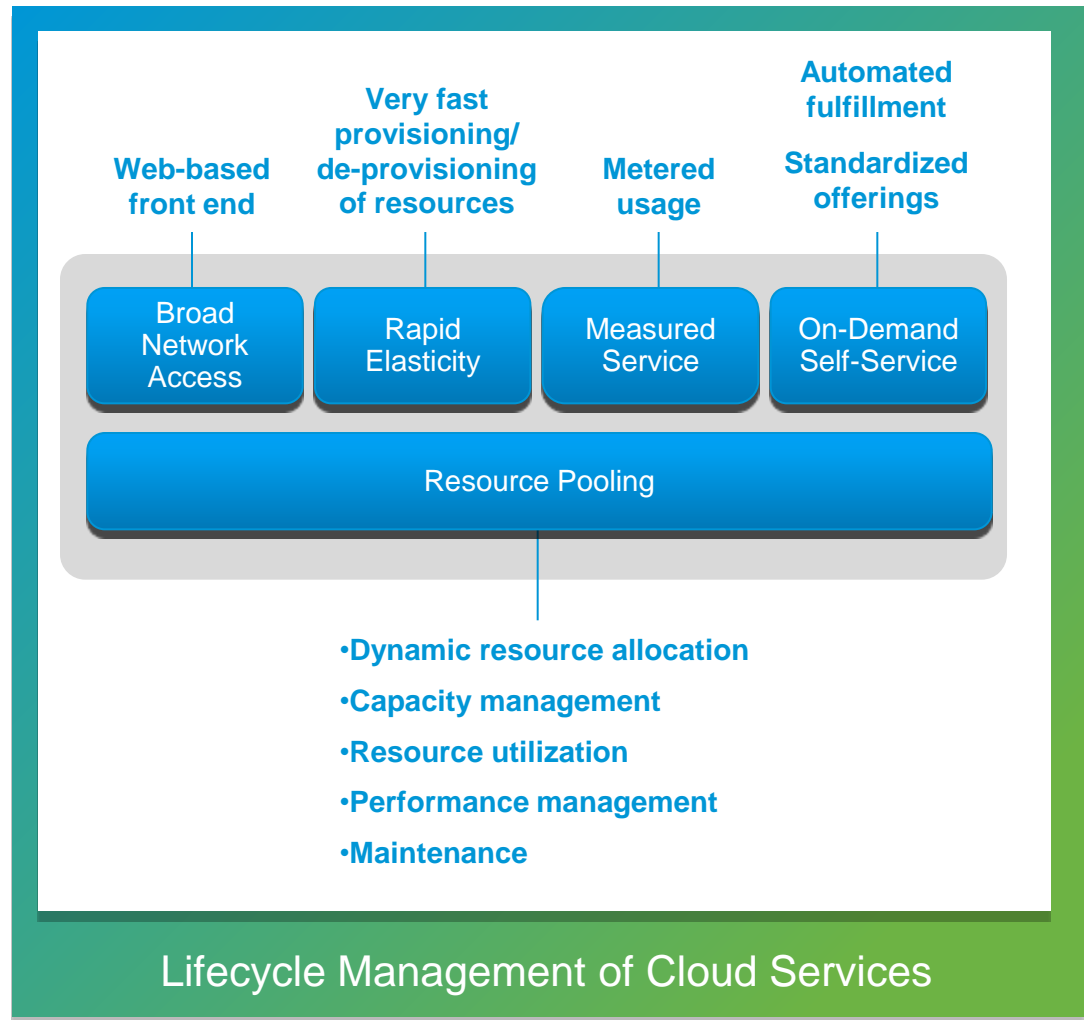
Lack of Centralized Control and Governance

- High error rates due to disconnected processes
- Infrastructure sprawl

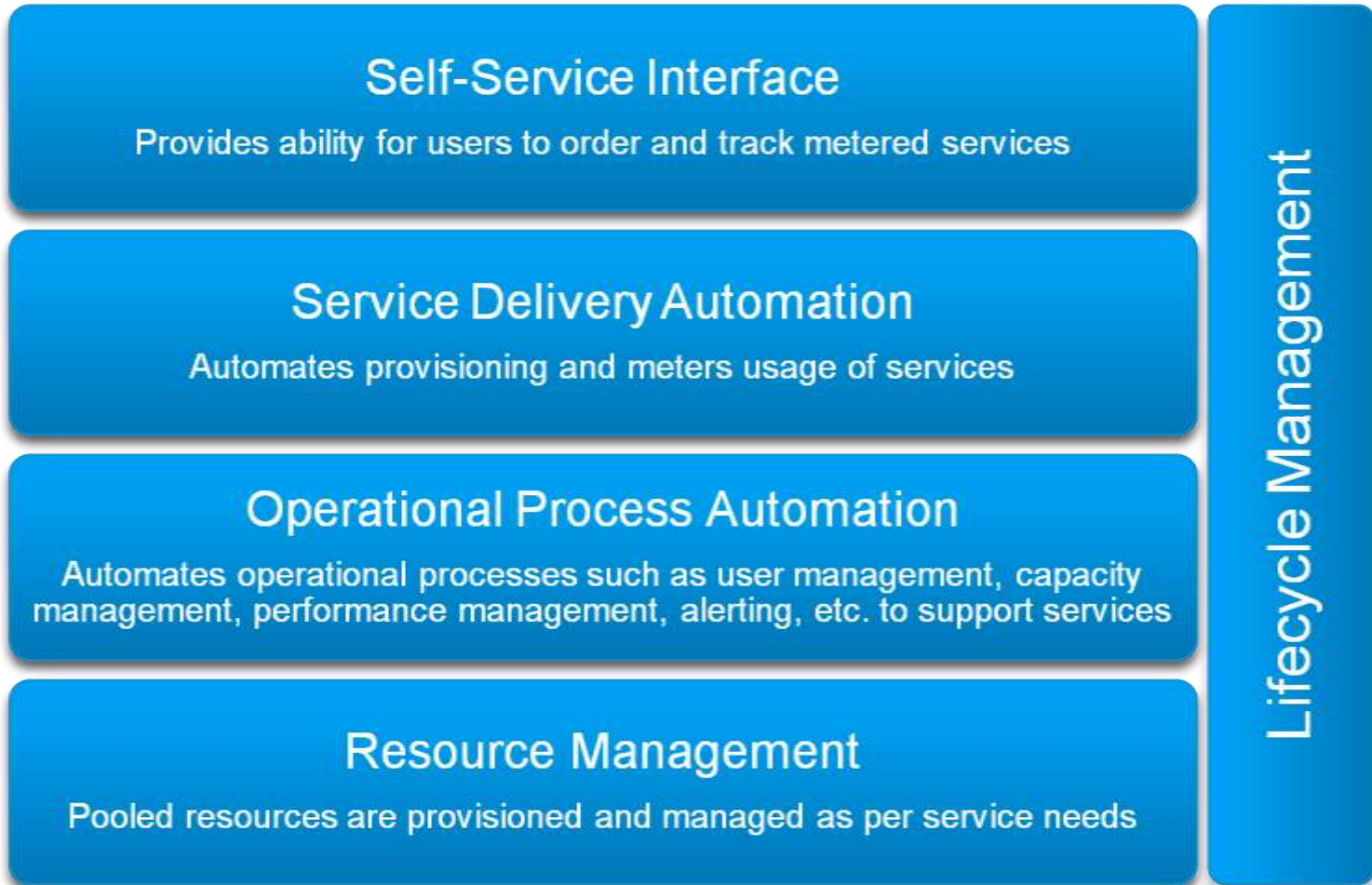
Lack of
IT-Business
Alignment

Elements of Private Cloud Computing

- **Self-Service Interface:** Provides ability for users to order and track metered services
- **Service Delivery Automation:** Automates provisioning and meters usage of services
- **Resource Management:** Resources are provisioned and managed as per service needs
- **Operational Process Automation:** Automates operational processes such as user management, capacity management, service level management, service desk integration, alerting...
- **Lifecycle Management**



Elements of Private Cloud Computing



Cisco Intelligent Automation Cloud Offers

Cloud Automation

Non-Technical User Orders a “SQL Server”
and Everything Is Provisioned

Compute Automation

Technical User Manages IT Processes Across
Compute Tools

Cisco Intelligent Automation for **Cloud**

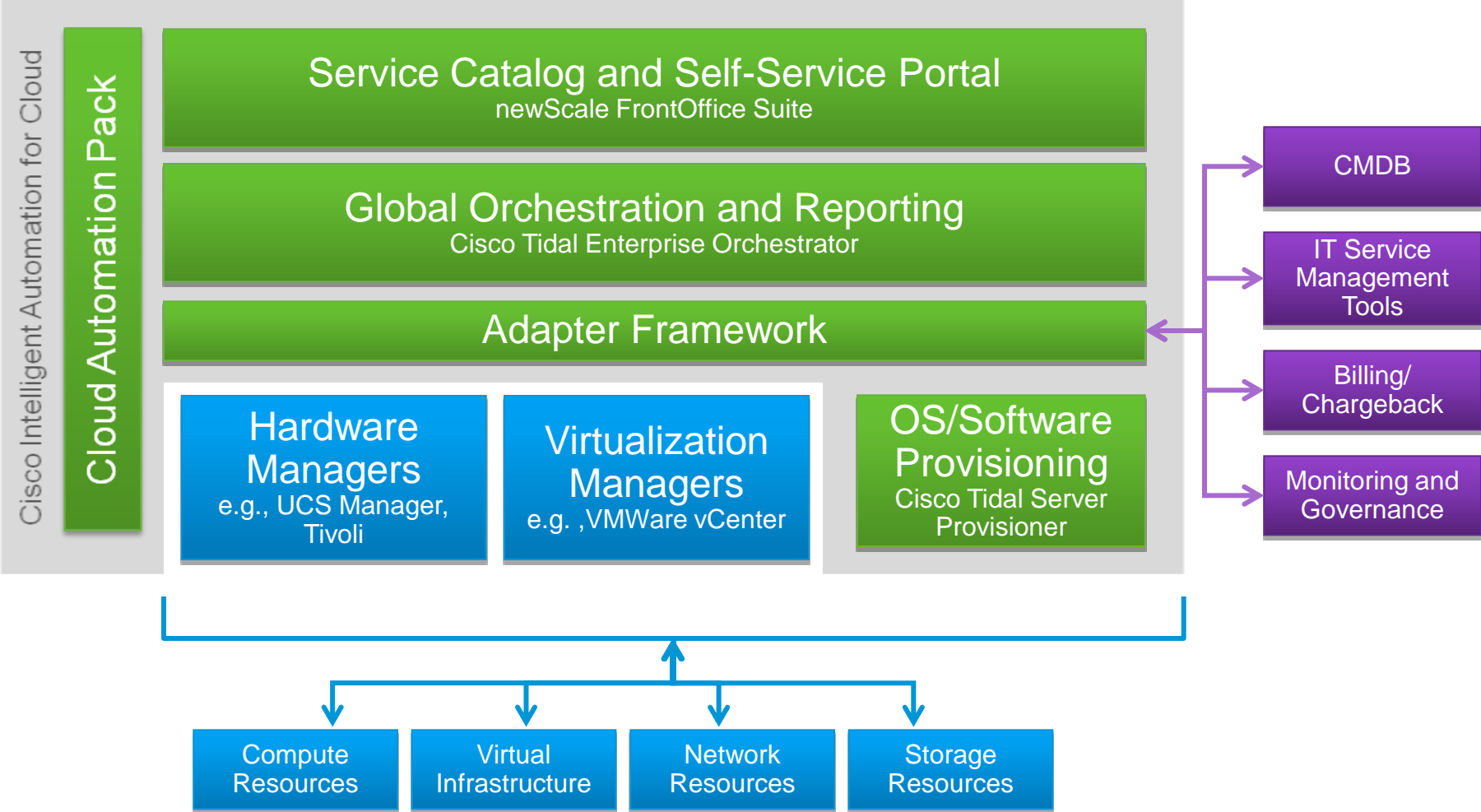
Cisco Intelligent Automation for **Compute**

Supports heterogeneous infrastructure — both virtual and physical

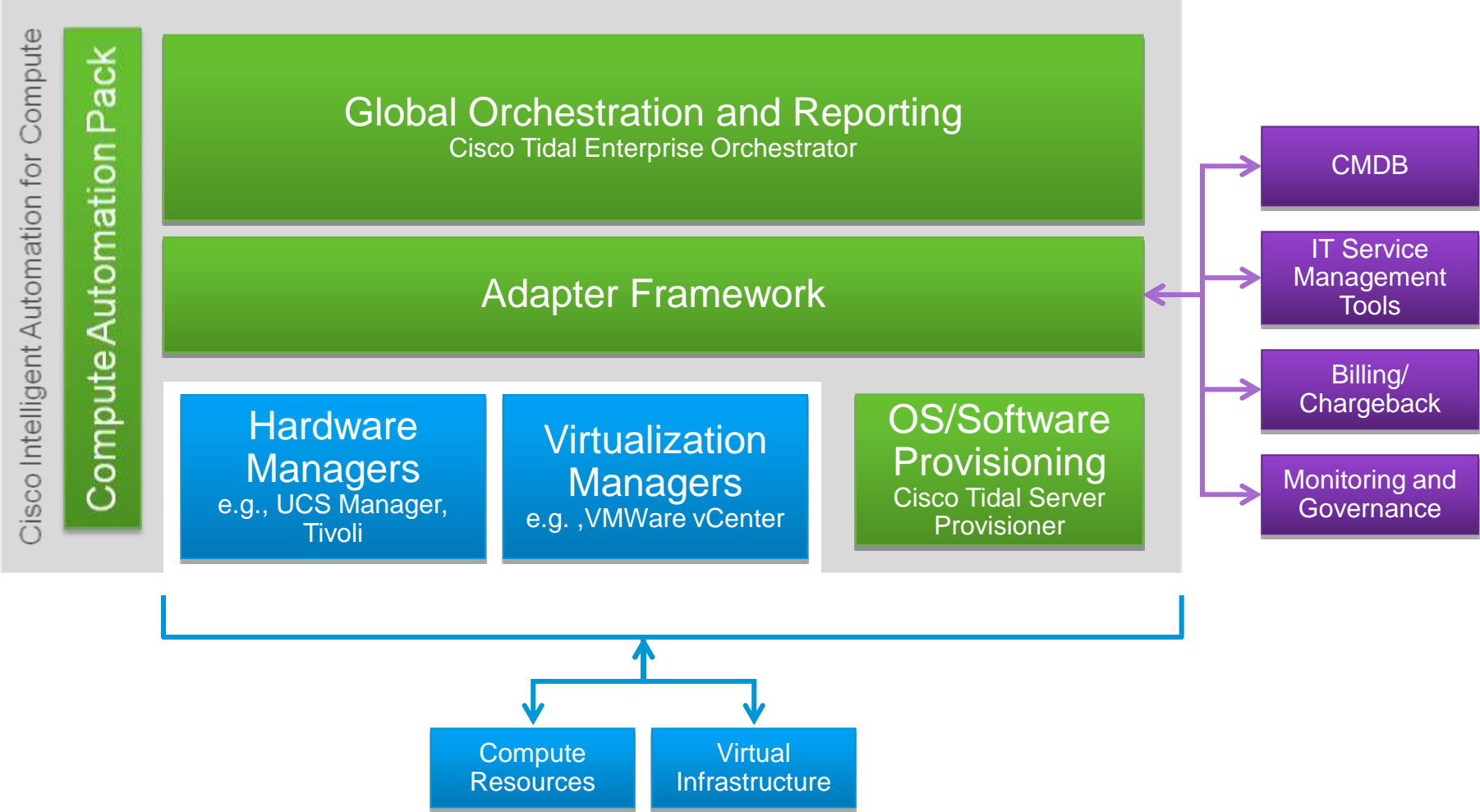
Set of sample automation packs

Full Infrastructure as a Service (IaaS) stack	Global orchestration across compute resources: server/virtual server, OS and application software,
Order to global orchestration to infrastructure provisioning	Services engagement for integration for CMDB, ticketing, monitoring, etc.
Orchestration of compute, network and storage provisioning and deployment, OS and software provisioning	
Services engagement for setting up automation workflows, and integration for metering, chargeback, CMDB, ticketing, monitoring, etc.	

Cisco Intelligent Automation for Cloud



Cisco Intelligent Automation for Compute



Solution Highlights

Intelligent Automation for Cloud

Service catalog and ordering portal provides 1-stop shopping for infrastructure as a service

Single point orchestration of provisioning across all required components—compute, virtualization, network and storage

Intelligent Automation for Compute

Software provisioning including OS and application provisioning

Open Architecture provides for integration with existing CMDB and ITIL investments and tools

Automation of ongoing operations

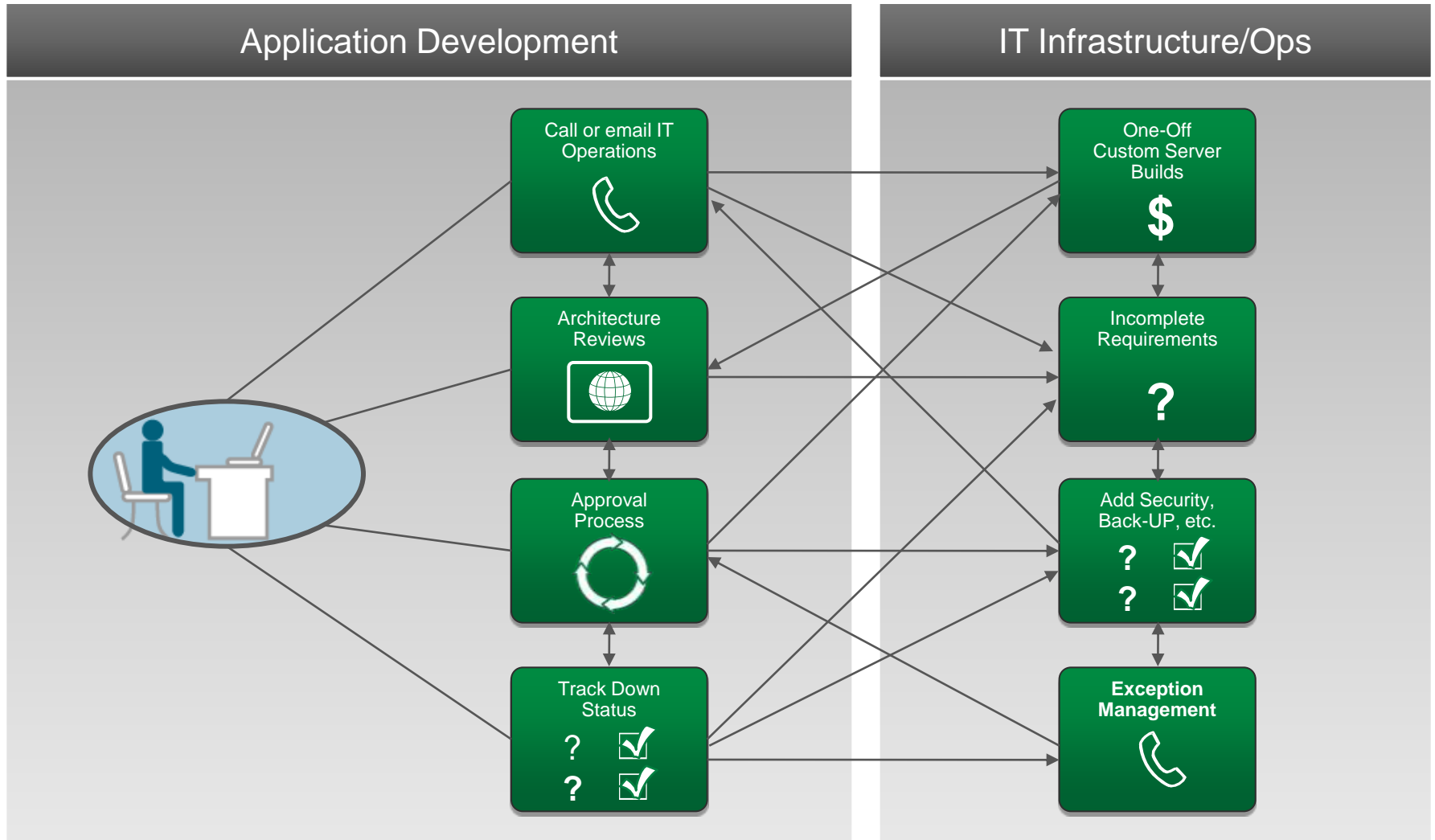
The image displays two screenshots of cloud management software. The left screenshot shows the 'newScale MyServices' interface, which includes a navigation menu with options like 'Home', 'Requests', 'Copy Request', 'Order as Backup', 'Service Status', and 'Authorizations'. The main content area features a 'compute on demand' banner and a list of services such as 'VM Linux DB 2', 'VM App Server 2', 'VM Web Linux 2', 'VM Linux DB 1', and 'WEBDEV_3K2LP'. Below this is a 'My Backlog' section with a table of requests and a 'Request Details' section for a specific request.

The right screenshot shows the 'Cisco Total Server Provisioner' interface. It features a navigation menu with 'Main Menu', 'MAC-Independent Provisioning', 'MAC-Specific Provisioning', 'MAC-Specific Imaging', 'Help', and 'Logout'. The main content area displays a table of MAC-Specific Provisioning Rules. The table has columns for 'Rule Name', 'Host Name', 'IP Address', 'MAC Address', 'Rule Template', 'Processing', and 'Status/Check'. Below the table are instructions for creating and editing rules, such as 'Click on the "Add MAC-Specific Rule" button to create a Rule (operating system, application, network, and other parameters) to be installed onto a physical system or virtual machine based on its MAC address.'

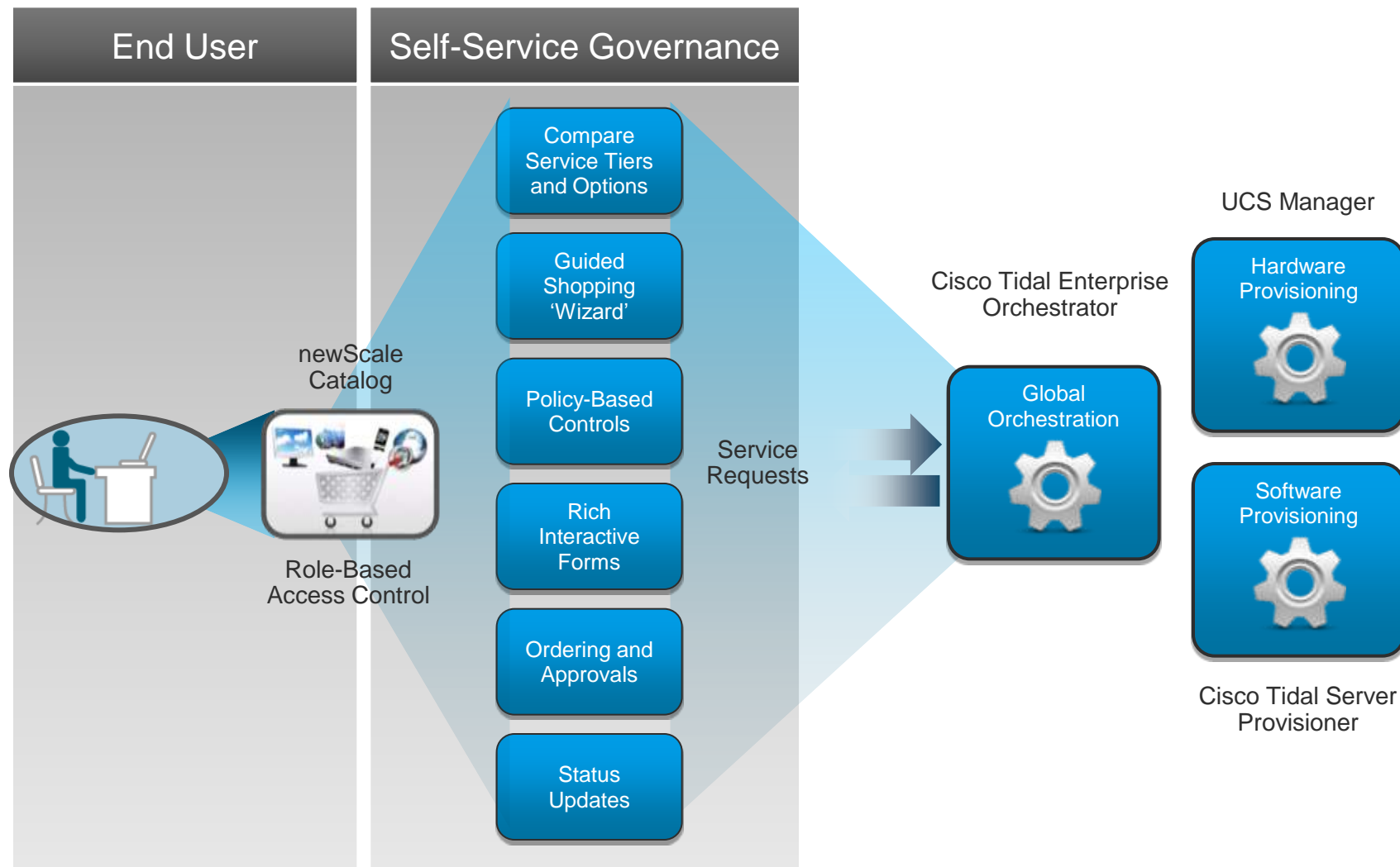
Rule Name	Host Name	IP Address	MAC Address	Rule Template	Processing	Status/Check
UCSD44	UCSD44	192.168.0.234	08:11:10:26:34:05	Red Hat Enterprise Linux 5.5 (64-bit)	Ready	Ready
UCSD43	UCSD43	192.168.0.213	08:11:10:60:30:49	Windows Server 2008 R2 Standard	Ready	Link Update
UCSD45	UCSD45	192.168.0.219	08:11:10:62:87:18	Ubuntu 10.04 LTS (64-bit Server)	Ready	Link Update
UCSD46	UCSD46	192.168.0.216	02:15:00:00:00:00	Ubuntu 10.04 LTS (64-bit Server)	Ready	Ready

Use Case: Application Dev/Test

Complex, Time-Consuming, Expensive Provisioning Process



Service Delivery with Cisco Intelligent Automation for Cloud



Our Solution at Work

Tracking for Pay-Per-Use

Service	Quantity	Unit Price	Total Price
Application Server	10	\$100.00	\$1,000.00
Database Server	5	\$200.00	\$1,000.00
Network	10	\$100.00	\$1,000.00
Storage	10	\$100.00	\$1,000.00
Security Ops DR	10	\$100.00	\$1,000.00

Review Offerings,
Get Quotes

Chargeback
or Showback

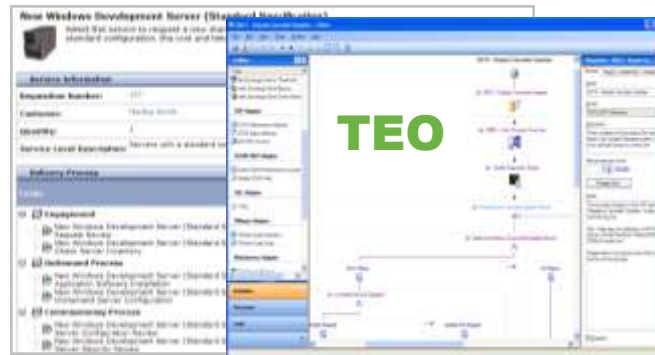
Self-Service

Define and Publish
Standard Options

Approvals & Controls

Orchestrate
Delivery

Report
Consumption



Process Coordination and
Delivery Automation



Architecture & IT



Application Server
Database Server

Server
Provisioning



Network



Storage



Security
Ops
DR



Lifecycle
Management

Tidal Enterprise Orchestration Platform

Cisco UCS Manager

- Activate UCS Firmware
- Associate UCS Service Profile to S...
- Bind UCS Service Profile to Template
- Boot UCS Server
- Collect UCS Statistics
- Correlate UCS Faults
- Create UCS Configuration Backup
- Create UCS Host Firmware Package
- Create UCS Management Firmware...
- Create UCS Service Profile from Te...
- Delete UCS Service Profile
- Disassociate UCS Service Profile
- Download UCS Firmware Package ...
- Execute UCS Manager Command
- Find UCS Managed Objects
- Get UCS Fabric Interconnect Confi...
- Get UCS Interface Card Configurati...
- Get UCS ID Module Configuration
- Get UCS Server Configuration
- Modify UCS Service Profile
- Shutdown UCS Server
- Unbind UCS Service Profile from T...
- Update UCS Firmware

SAP - ABAP

- CCMS Performance Attribute
- CCMS Status Attribute
- Complete CCMS Alert
- Correlate CCMS Alerts
- Get SAP Server Down Time
- SAP RFC Function

VMware Adapter

- Clone Virtual Machine
- Create Snapshot
- Enter VM Host Maintenance Mode
- Exit VM Host Maintenance Mode
- Migrate Virtual Machine
- Power Down Host to Standby
- Power Off Virtual Machine
- Power On Virtual Machine
- Power Up Host from Standby
- Query Host Properties
- Query Virtual Machine Properties
- Query Virtual Machine Snapshots
- Reboot Guest
- Reboot VM Host
- Reconfigure Virtual Machine
- Relocate Virtual Machine
- Remove All Snapshots
- Remove Snapshot
- Rename Snapshot
- Reset Virtual Machine
- Revert to Current Snapshot
- Revert to Snapshot
- Shutdown Guest
- Standby Guest
- Suspend Virtual Machine
- Upgrade Virtual Machine Hardware
- Upgrade Virtual Machine Tools

Database - Oracle

- Bulk Insert Into Oracle
- Check Oracle Library Cache
- Check Oracle Row Cache Hit Ratio
- Check Oracle Table Scan
- Delete from Oracle
- Display Oracle Free Memory
- Execute Oracle SQL Script
- Insert Into Oracle
- List Oracle Heavy Queries
- List Oracle Running SQL Queries
- Oracle Database Lock
- Oracle Table Space
- Select from Oracle
- Update Oracle

Terminal

- Close Terminal Session
- Execute Terminal Command(s)
- Open Terminal Session

Secure Shell (SSH)

- Execute Unix/Linux SSH Command
- Execute Unix/Linux SSH Script
- Get File
- Put File

Intelligent Process Editor

No Code Setup

Adapter Toolbox

Drag and Drop Activities

Automation Summary Report (next screen)

Approvals and Human Interface

Drag and Drop Logic

The screenshot displays the Intelligent Process Editor interface for a workflow titled "Contoso - Restart Sales Order Queue". The interface includes a menu bar (File, Edit, View, Tools, Actions, Help), a toolbar, and a left-hand sidebar with sections for "Active Directory", "Assigned Tasks", and "Activities". The main workspace shows a flowchart with the following steps: "Select Orders in Pending Status" (with a database icon), "Orders Pending Exceed Threshold", "Approval Automation Summary" (with a report icon), "Create Approval To Restart Application" (with a checkmark icon), "Process Approval Choice", "Restart Application", "Confirm All Services Stopped", and two parallel paths: "Orders Inbound" and "Orders Processing". Each path includes "Inbound Service State" and "Processing Service State" (with a magnifying glass icon), followed by "Stop If Started" (with a stop sign icon). A right-hand pane shows the "Properties" for the "Select Orders in Pending Status" activity, with the "SQL" tab selected. The "SQL command text" is:

```
SELECT TOP 1000 [OrderNumber]
,[CustomerNumber]
,[OrderAmount]
,[Status]
,[ReceivedTime]
,[ProcessedTime]
,[Reviewed]
,[CreditAuthorized]
FROM [Contoso Corporation].[dbo].[Contoso Sales Orders]
WHERE [Status] = 'Pending'
```

 Below the SQL text are fields for "Columns:" and "Row number per page:" (set to 100), and "Maximum number of rows:" (set to 200). There are also checkboxes for "Return all columns of Select statement" and "Use database target query timeout".

TIGHT UCS INTEGRATION

The screenshot displays the Cisco Unified Computing System Manager (UCS Manager) interface. The main window, titled "Install ESX on UCS Server - Viewer", shows a workflow diagram with the following steps:

- Parallel Block containing:
 - Associate UCS Service Profile to Server
 - Shutdown UCS Server
 - Set vNIC DN
 - Get vNIC FC Properties for Service Profile
 - Create Zone and SAN Provisioning
- Service Profile Created and Associated
- Remove VLANs from First vNIC
- Get Provisioning VLAN from Table
- Associate Provisioning VLAN to Service Profile UCS
- Set Assigned MacAddress

On the right, a "Properties" pane shows a notification: "To: Start of Tomorrow Thu 1/13/2011 12:00 AM". Below it is a table with the following data:

Duration	Executor	Runtime User	Categor
00:00:01	Automation Servi...		Cloud 0
00:00:08	Automation Servi...		Cloud 0

The bottom right pane shows the "Cisco Unified Computing System Manager - DUBLABUCS02" interface. The "Fault Summary" section displays 4 errors, 4 warnings, 5 errors, and 14 alerts. The "Actions" pane lists various management tasks such as "Create Organization", "Create Service Profile", and "Create Server Pool". The "Properties" pane shows details for a "Harpreet" organization, including its name and description.

Virtualization Integration is Key

The image displays two windows from a vSphere environment. The top window, titled "Install ESX on UCS Server - Viewer", shows a vertical flowchart of the installation process. The steps are: ESX Reset on UCS, Wait for ESX Host - Ping ESX Server (IP and URL), Configure VLAN on ESX Host vswitch, Add Original VLANs to Back to vNIC, ESX Network Reconfigured, Select vCenter Target, and Add New Host to vCenter. The bottom window, titled "vcenter01.dublabcus.local - vSphere Client", shows the vSphere Client interface. The left pane displays a tree view of the vCenter inventory, including "C3-Lab", "Dubai UCS Lab", "Infrastructure", "Lab App Infrastructure", "VM_LAB", "ta2 Datacenter", and "Temp-DC". The right pane shows a "Getting Started" page with a "What is a Datacenter?" section.

Install ESX on UCS Server - Viewer

- ESX Reset on UCS
- Wait for ESX Host - Ping ESX Server (IP and URL)
- Configure VLAN on ESX Host vswitch
- Add Original VLANs to Back to vNIC
- ESX Network Reconfigured
- Select vCenter Target
- Add New Host to vCenter

vcenter01.dublabcus.local - vSphere Client

Inventory: Hosts and Clusters

C3-Lab

- Getting Started
- Summary
- Virtual Machines
- Hosts
- IP Pools
- Performance

What is a Datacenter?

A datacenter is the primary container of inventory objects such as hosts and virtual machines. From the datacenter, you can add and organize inventory objects. Typically, you add hosts, folders, and clusters to a datacenter.

vCenter Server can contain multiple datacenters. Large companies might use multiple datacenters to represent organizational units in their enterprise.

Inventory objects can interact within datacenters, but interaction across datacenters is limited. For example, you can move a virtual machine with vMotion technology

Duration	Executor	Runtime User	Category
00:00:01	Automation Servi...		Cloud 0
00:00:08	Automation Servi...		Cloud 0
00:01:46	Automation Servi...		Cisco C
00:00:02	Automation Servi...		Cloud 0
00:00:09	Automation Servi...		Cloud 0

Video screen shot of bare metal ESX provisioning

Install ESX on UCS Server - Viewer

File Edit View Tools Actions Help

Steps

- Sleep for 15 seconds
- Boot UCS Server
- Wait for UCS Reboot
- Set Service Profile to SAN Boot
- Reset UCS Server
- ESX Reset on UCS
- Wait for ESX Host - Ping ESX Server (IP and UP)
- Configure VLAN on ESX Host vSwitch
- Add Original VLANs to Back to vNIC

Properties

To: [Start of Tomorrow](#)
Thu 1/13/2011 12:00 AM

Duration	Executor	Runtime User	Category
00:00:01	Automation Servi...		Cloud 0
00:00:08	Automation Servi...		Cloud 0
00:01:46	Automation Servi...		Cisco C
00:00:02	Automation Servi...		Cloud 0
00:00:09	Automation Servi...		Cloud 0
00:01:46	Automation Servi...		Cisco C
00:00:03	Automation Servi...		Cloud 0

```
ESX 4.1 http://www.vmware.com
Copyright (c) 2000-2010 VMware, Inc.
* vmmix ... [ ok ]
* compat ... [ ok ]
* vmklinux ... [ ok ]
* tpm ... [ ok ]
* recovery-mode ... [ ok ]
* vmkeventd ... [ ok ]
* usb ... [ ok ]
* microcode ... [ ok ]
* local-storage ... [ ok ]
* local-storage ... [ ok ]
* local-storage ... [ ok ]
* devfs ... [ ok ]
* restore-loopback ... [ ok ]
* mount-cdrom ... [ ok ]
```

IDC Collateral due out soon....



I D C V E N D O R S P O T L I G H T

Automated Provisioning and Orchestration Critical to Effective Private Cloud Operations

March 2011

Adapted from: Market Analysis Perspective: Worldwide Enterprise System Management Software 2010 - Evolving Strategies for Virtual and Cloud Data Centers

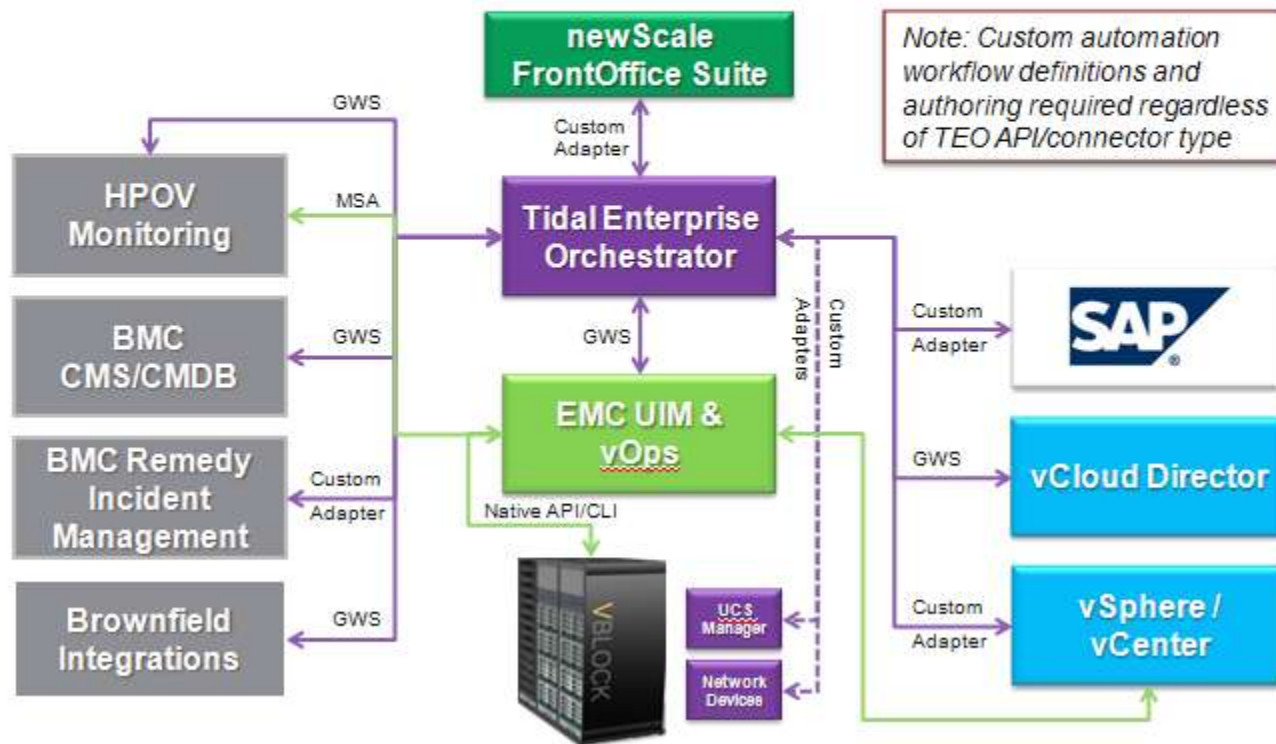
By Tim Grieser and Mary Johnston Turner, December 2010, IDC #226085

Sponsored by Cisco

VCE uses newScale and TEO



Tidal Enterprise Orchestrator Connector View



IA for Cloud / Compute – What is coming next (over 4 quarters)

- Multi-hypervisor white papers and VODs
 - Citrix/Xen
 - HyperV
 - Redhat KVM
 - AIX / HPUX
- Demonstrations across multiple hardware platforms
- vCloud Director Integration
- UIM Integration
- Public Cloud Integration
 - Amazon
 - Savvis
 - Verizon / Terremark
 - Cloud.com



I need a DB server
now.....