How to Deploy a Private Cloud and Prepare for a World of Many Clouds

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- John Manville – VP, Cisco IT, Global Infrastructure Services
Agenda

- Cisco Perspective on Cloud
- Cisco IT’s Cloud Journey:
  CITEIS: Cisco IT Elastic Infrastructure Services
- Drill Down and Demo of CITEIS
- Getting Started
Tomorrow’s IT—World of Many Clouds
Enabling Multiple IT Sourcing Models

Hybrid Cloud

Public Cloud Services

Private Cloud

Traditional Data Center
# Powering Cloud Computing

Infrastructure Capabilities Matter More Than Ever

## CLOUD REQUIREMENTS

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<th>Requirement</th>
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<td>Infrastructure as a Service</td>
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<td>Self Service Consumption Model</td>
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<td>Elastic Resource Allocation</td>
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## IDEAL INFRASTRUCTURE

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<th>Feature</th>
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<td>Simplified management</td>
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<td>Lower service provisioning cost</td>
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<td>Integrated compute, network, and storage resources</td>
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<td>Physical resources deployed through API’s and policies</td>
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<td>Rapid scalability of virtual and physical</td>
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Cisco Unified Data Center
The Platform for Delivering IT-as-a-Service

UNIFIED FABRIC

UNIFIED COMPUTING

UNIFIED MANAGEMENT
Legacy Management
Slow, Complex, Brittle, Expensive

Cloud Management
Fast, Simple, Flexible, Cost-Effective

Legacy IT

IT-as-a-Service
- Measured Service
- Rapid Elasticity
- On-Demand Self Service
- Broad Network Access
- Resource Pooling

Compute
Network
Storage
Unified Management for Cloud
IT-as-a-Service Requires a New Management Approach

Self-Service Portal and Orchestration

On-Demand, Self-Service Provisioning of IT Resources
Policy-Based, Model-Driven Approach Reduces TCO
Easiest to Use and Deploy, Delivers Faster Time to Value

Infrastructure Resource Mgmt

Optimized for Cisco Architectures, Complements Existing IT Systems and Management Tools

Automation
Intelligence
Flexibility
Unified Management for Cloud
Automation and Orchestration Designed for IT-as-a-Service

Cisco Intelligent Automation for Cloud

Cisco Intelligent Automation for Cloud

Cisco Unified Computing System Manager

Cisco Network Services Manager

Unified Management Partner Ecosystem
Cisco Intelligent Automation for Cloud
IT Self-Service Storefront

Cisco Cloud Portal Example:
Cisco IT Deployment—CITEIS Virtual Data Center

Welcome to CITEIS VDC
Your Virtual Data Center
Cisco now offers the option to create your own Virtual Data Center. These services allow you to acquire the virtual resources you need for as long as you need them, with an abundance of supporting services, including additional network and storage capacity.

CITEIS VDC Knowledge Center

Overview
Virtual Data Center Services
- Pre-paid resource pools
- Virtual resources reserved and guaranteed
- Tenants allocate and manage resources based on their specific needs
- Minimum one quarter subscription commitment required

TIP: Scroll down this page to see a list of the virtual resources you already own. Click on one to see a list of services you can order for that resource.

Sign up and manage a VDC
Sign your group up for resources in your own virtual data center.

Registrar yourself or your group for VDC services
Add units
Add network capacity
Add storage

Order new resources
Get new vApps, VMs, and related services.

Manage your resources
Extend leases, configure, delete, restore VMs...
Cisco Intelligent Automation for Cloud
Orchestration-Based Automation

Cisco Process Orchestrator Example:
Provision virtual data center (VDC)
Cisco Intelligent Automation for Cloud
Unified Management – Automated Self-Service Provisioning

FROM 8 WEEKS TO 15 MINUTES

Architect | Design | Where Can We Put It? | Procure | Install Automated Self-Service | Configure | Secure | Is It Ready?

Capacity On-Demand | Policy-Based Provisioning | Built-In Governance

Manual
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Cisco IT Data Center Facts

300 locations in 165+ countries
460 offices
37 Cisco data centers
64,000+ employees

334,000 sq. ft. of data center space
35.6 MW of UPS power to raised floors
80% servers virtualized in new DCs, 71% overall
80+% virtualization goal
CITEIS: Cisco IT’s Cloud Journey

Server Virtualization

Image Repository Service Catalog
OVF  OVA

PaaS
• Web Server
• Application Server
• Database Server
• Integration Services

Unified Infrastructure
Virtualization
Automation
Self-service
Multi-tenancy
Elasticity

Cisco IT Elastic Infrastructure Service (CITEIS)

Cisco Nexus
Cisco UCS x86

Cisco Intelligent Automation for Cloud

Logical Segmentation Control, Security and Fault Isolation

Cisco Intercloud Hybrid

*OVF = Open Virtualization Format
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Key Features
Enable Self-Service, Security and Multi-Tenant Operations

Client Self-Service Portal
- Complete control requesting Infrastructure resources
- Simple, easy-to-use interface
- End-to-end automation reduces time to market
- API Model

Customized Virtual Images & Appliances
- Upload customized images into CITEIS; make them available via the self-service portal
- Choose pre-configured images provided by GIS and/or other CITEIS users

Automation
- Creation of a Virtual Data Center (VDC)
- E2E PaaS & IaaS Provisioning
- Client enabled automation tasks
- Workload mobility between VDCs

Support Services
- Option for GIS support of your virtual environments or you can support your own
- Seamless support for PaaS and IaaS services

Security / Segmentation
- Define entitlement rights to specific users for resource access
- Logical segmentation between tenants; your resources guaranteed and segmented
- Virtual Security Zones

Support Services
- Option for GIS support of your virtual environments or you can support your own
- Seamless support for PaaS and IaaS services

Adoption
- 60 VDC Clients
- Per qtr VDC revenue generation

Service Enhancements
- Support for on-demand services
- Remedy integration
- Change Mgmt Automation – IaaS & PaaS

Customer Repeatable Solution
- Cisco UCS-based virtualization solution
- Cisco Service Catalog
- Cisco Orchestrator

Metering & Billing
- Support for subscription-based billing with pay-as-you-go capabilities
- Single, aggregated billing for purchased PaaS and IaaS resources
Service Overview

- Self-service, self-managed personal infrastructure on-demand
- Ideal for sandbox and proof-of-concept
- Minimal SLAs with best-effort support
- Cisco Cloud Portal standardized offerings for available purchase
- End-users limited to two virtual machines at any given time
- Thirty day initial lease extendable up to ninety days managed via Cisco Intelligent Automation for Cloud
- Express vApp template catalog open to end-users for custom vApps and sharing
Service Overview

- Tenants allocate and manage resources
- On-boarding integrated with Active Directory using customer controllable group access
- Cisco Cloud Portal maintains standardized orderable building blocks and value-add offerings
- CPU, Memory, Storage virtual resources reserved and guaranteed based on vDC blocks
- Managed Internal, Managed DMZ and Self-managed offerings available
- Tenant network segmentation enforced through Intelligent Automation for Cloud
- Enhanced infrastructure services available for additional charges, ACL, Load Balancing, Storage
- Quarterly subscription with minimum requirement of one quarter
Demonstration
CITEIS: Solution Components

**Cisco Intelligent Automation for Cloud**
- Cisco Cloud Portal
- Self-Service—Service Catalog
- Cisco Process Orchestrator
- Automation Packs
- Adapters
- Provisioning—Integration

**Resource Managers**
- Cisco UCS Manager
  - System IP Address Mgmt — Host Mgmt
  - Remedy Incident Mgmt — Change Mgmt
  - VDC Resource Mgmt
    - vCloud — vSphere — vCenter
  - Active Directory Group Mgmt — Profile Mgmt
  - rPath Image Mgmt — PaaS Image Library
- Cisco Network Services Manager

**Network Resources**

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Cisco Confidential 20
Execution Strategy

Today's applications

Tomorrow's applications

PaaS

Generational change
New operating model

Expand PaaS

Future State

Additional Security
Web Services Database
Tiered SLA
Mission-Critical (Gen2)

Operating Model

Service Catalog
Self Service vAppliance
Standards-only Lifecycle Agnostic

IaaS

CITEIS Gen 1
Virtual Machine
CITEIS Gen 2

Storage
Network DMZ
Multi-tenancy

OS Config
Policy-based Security
Transparent mobility
Location Agnostic
Elastic scaling
Multi-DC
Hybrid

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Cloud Architecture Stack

Client
- Administrator
- Business Operator

Provider
- Administrator
- Service Manager

Service Portal
- Service Catalog
- Administrative Portal
- Billing Portal

Service Management
- Provisioning (Fulfillment)
- Assurance (Fault)
- Accounting (Metering)
- Capacity (Supply/Demand)
- Security
- Entitlement
- Orchestration
- CMDB
- Analytics

IaaS
- Virtual
- NW Services: FW, SLB
- Network
- Compute
- Storage

PaaS
- DB Schema
- Message Queue
- JVM

SaaS
- Collab

RM = Resource Manager

Current Cisco Technology
CITEIS Next Steps
Focus on Process Automation, PaaS, Hybrid Cloud

CITEIS Today
- Automated VM provisioning
- Automated UCS configuration
- Service catalog integration
- Metering and show-back
- DMZ Offering
- Multi-tenancy
- Self-service pilot
- Monitoring enhancements
- Tiered offerings
- Automated provisioning of network and server load balancing
- Cluster-level capacity management
- Virtual machine changes

Q4CY12
- Cloud Portal self-service
- Orchestration via Process Orchestrator
- IaaS API support
- Multi-tenancy enhancements and capabilities
- Metering and billing
- Entitlements

Future...
- Image storefront PaaS enablement
- Extended scaling
- Integrated change management
- Filer storage offering
- Cloud bursting
- Change transparency
- Workload elasticity
- Service assurance
- Policy management

IaaS Deployment

PaaS Enablement

Hybrid Cloud Extension
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Cisco Intelligent Automation for Cloud
Starter Edition
Introducing Cisco Intelligent Automation for Cloud Starter Edition

A Starting Point for your Cloud Journey with Cisco UCS

Order VMs and Physical Servers with Automated Provisioning

Easy-to-Use End-Self-Service and Administrator Web Portal

Virtual or Physical?
Ordering a new server is as easy as picking from one of the options below. Virtual machines provide a choice between a preconfigured template to configure your server, or starting from scratch and choosing the operating system of your choice. The physical server option always offers a choice of operating system.

Order a Virtual Machine from a Template
Order a new virtual machine from a template you select.

Order a Virtual Machine and Install an OS
Order a new virtual machine running either the Windows or Linux operating system.

Order a Physical Server
Order a physical server from the cloud pool, running either the Windows or Linux operating system.
Cisco Intelligent Automation for Cloud

Starter Edition – Features & Benefits

Pre-Built Portal Content and Workflows to Accelerate Time to Cloud

Deployment of Compute-as-a-Service on Cisco UCS to Improve Agility

Self-Service Provisioning and Automation for both Virtual and Physical

Control Over Resources and Consumption with Lifecycle Management

Ability to Grow Deployment and Expand to New Use Cases with Upgrade Path
Thank you.