Multi-Cloud and Application Centric Modeling, Deployment and Management with Cisco CloudCenter (CliQr)

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BRKCLD-2008
Agenda

• Introduction
• Architecture
• Anatomy of an Application Profile
• Integrations
• Demos
• Additional Reference Material
• Q&A
A widening Cloud Gap

Between what cloud applications require…

…and what IT is capable of reliably and confidently supporting today.
### Growing IT complexity: your landscape

#### Understanding the Cloud Gap

<table>
<thead>
<tr>
<th>HQ</th>
<th>Data centers</th>
<th>Hosting / Colocation</th>
<th>Private cloud</th>
<th>Public Clouds</th>
<th>Branch</th>
<th>Devices</th>
<th>Internet of Things</th>
</tr>
</thead>
</table>

- **HQ**: Headquarters
- **Data centers**: Centralized data storage and processing facilities
- **Hosting / Colocation**: Hosting services provided by third-party facilities
- **Private cloud**: Cloud computing services hosted on privately owned servers
- **Public Clouds**: Cloud computing services hosted by third-party providers
- **Branch**: Remote locations
- **Devices**: Client devices
- **Internet of Things (IoT)**: Interconnected physical devices and objects

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The true challenges of hybrid cloud

What’s in the Cloud Gap?

Managing both traditional & cloud applications
Data center automation
New skillsets
Multicloud security
Application lifecycle management
Application performance monitoring
IT as a broker
New network needs
DevOps environments

Hybrid Cloud

HQ | Data centers | Hosting / Colocation | Private cloud | Public Clouds | Branch | Devices | Internet of Things
---|---|---|---|---|---|---|---

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Reimagine your cloud for a hybrid IT world

New requirements

AGILITY
PERFORMANCE
RISK
COST

HYBRID IT OPERATIONS
RISK MANAGEMENT
VISIBILITY & INSIGHTS
SECURE CONNECTIVITY

Hybrid Cloud

HQ  Data centers  Hosting / Colocation  Private cloud  Public Clouds  Branch  Devices  Internet of Things
Our Approach

A cloud neutral approach to your hybrid IT world
CloudCenter Unique Value
Model Once. Deploy and Manage Anywhere.

One Integrated Platform
Lifecycle Management
New and Existing Applications

Data Center
Private Cloud
Public Cloud

One Integrated Platform
Lifecycle Management
New and Existing Applications

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What Does "Model Once" Mean?

**Infrastructure-Centric**
- Cloud-Specific workflows and Scripts
- Labor /Services Intensive

**Script-Based**
- Unique Script / Workflow

**Application Profile-Based**
- Application-Centric
- Cloud-Agnostic
- Low TCO

**Application-Centric**
- Cloud-Agnostic

- Unique Script / Workflow

- Unique Script / Workflow

- Unique Script / Workflow
Hybrid Cloud Management

One Platform

Cloud Agnostic

Manager

Application Profile

Cloud API-Specific

Orchestrator

Orchestrator

Orchestrator

Secure
Scalable
API
Extendable
Multi-tenant
Enterprise Class

UI
CLI
API

Manager
Profile
Orchestrator

Secure
Scalable
Extendable
Multi-tenant
Secure

- SAML 2.0 SSO
- User/Group RBAC
- Object-level ACL
- n-level Multi-tenancy

- AES-256 Encrypted DB
  - Cloud Credentials
  - Key Storage
  - Optional HSM integration
  - Browser-based secure VNC/RDP/SSH access

- VM access based on unique C3 generated SSH key pair for each user per cloud environment
- Ability to use user’s own SSH key
- Network placement and firewall rules
- Support optional SDN integration such as Cisco ACI
Scalable

10,000 VMs per Environment
Extendable

Platform Integration
ITSM | Build Automation (Jenkins)

Tool Integration

**Hooks**
- Scripts
- Events

**Security**
- SSO
- HSM

**Infrastructure**
- IPAM
- DNS

Content Integration
- Docker
- Puppet, Chef
- Components
- User Content
- Vendor Content

Cloud APIs
- Datacenter Private and Public Cloud

APIs
- DEPLOY
- MODEL
- MANAGE

Extendable

Secure

Scalable

Multi-tenant

API

Extendable Cloud APIs

Multi-tenant

Cisco live!
Multi-Tenant

Peer Tenant

Isolation

Partial Isolation

Sub-Tenant
Cisco CloudCenter Multi-tenancy
Cisco CloudCenter Tenant Object Model
Anatomy of an Application Profile
Basics Terminology

- **An application profile** is comprised of services.
- The **services** define a function of the application (e.g. web, firewall, database, etc.).
- Services are instantiated using **packages** and customized using artifacts.
- **Artifacts** can consist of scripts, code snippets, applications.
- **Repositories** contain the artifacts and can contain packages.
Application Profile

- CloudCenter JSON Format
  - General Information
  - Global Parameters (optional)
  - Global Tags (optional)
  - Application-tiers (Topology)
    - Application service specific settings
    - Application-tier parameters (optional)
    - Application-tier tags (optional)
    - Hardware specification
    - Environment variables

- Support REST API to export/import
Application Profile (cont’d)

- Meta Data
- Custom Parameters
- Application Packages
- Service Settings
- Topology

Reusable Services
- MySQL
- Apache
- Active MQ
- Container
- RDS
- …

Image Mapping
- Windows
- Red Hat
- Ubuntu
- Other
- …
Service Definitions

Service Library

CloudCenter provides out of box services
- Load balancers - Nginx, HA Proxy
- Open source AppServers, Databases, etc.
- AWS RDS & ELB

Users can extend to add their own
- E.g. – Load Balancers - F5, A10, AviNetworks

Types of Service Definitions
- Service Packages with lifecycle scripts
- Service gets installed on VMs
- Container based services
- PaaS
Build Lifecycle Actions – Start
Build Lifecycle Actions – Stop

Service

Service - External
Pre VM Stop
Post VM Stop

Service Agent
Stop
Clean Up

Application Profile

App Tier External
Pre-Stop
Post-Stop

App Tier Service Init

App Tier Node Init

VM Pre Terminate
Cleanup

In-VM

External
Troubleshooting Application VMs

- These issues could be further isolated and resolved by deploying the VM and logging into the VM and looking at the log files.

- One useful tip is to use the `cliqrIgnoreAppFailure` parameter to prevent the VM’s from being terminated on Error state.
  - [http://docs.cloudcenter.cisco.com/display/CCD46/Troubleshooting+Parameters](http://docs.cloudcenter.cisco.com/display/CCD46/Troubleshooting+Parameters)

- Use `agentSendLogMessage` to send feedback to the UI

- Verify that user params and environment variables is `userenv` file
  - `/usr/local/osmosix/etc/userenv`
Integrations
Examples of Integration Ecosystem

• ServiceNow Scoped Application - certified and available in ServiceNow Store

• Prime Service Catalog

• Cisco ACI

• Configuration Management
  Chef, Puppet, Ansible

• DevOps
  Jenkins plug-in, full API documentation (docs.cloudcenter.cisco.com, APIs)

• IPAM products
  ie-Infoblox, Bluecat, etc.

• Tetration
Better Together – Cisco ACI

Seamless Integration
“Zero Touch” automation

Powerful Benefits
• Application Security
• Ops Efficiency
• User Agility

CloudCenter Model-Based Approach

ACI Policy-Based Approach

Application Network Profile
What Is Really Running on My Network?
Cisco Tetration Analytics Application Insight—Dependency Map

Use Cisco Tetration Analytics™ outcome to generate white-list policies

(Service Owner)
Service Category
Service
Service Offering
Application
Dependencies
Security
# Additional Inputs for ADM Runs

## Advanced Configurations

<table>
<thead>
<tr>
<th>Side Information</th>
<th>HAPROXY-lab-20161104 + 1 more</th>
<th>DNS-D-20160809 + 3 more</th>
</tr>
</thead>
</table>

### Load-Balancer Configurations
- DNS Configurations
- IP Address Management Database
- Existing CMDB Information
Application Conversation View

Application clusters conversation views

Conversation details including process bindings
CloudCenter / ServiceNow Integration

End User -> Cloud Marketplace -> Approval Workflow

CloudCenter / ServiceNow Integration

CMDB
- IT Service Management
- IT Ops Management
- IT Business Management

CloudCenter Scoped Application

Admin

Cisco CloudCenter

Manager

Cloud API

CloudCenter Profile

• Inventory Detail
• Deployment status
• Metering Data

Policies and Actions

Events

Data Center

Private Cloud

Public Cloud

Finance

LOB

Procurement
Demo
Monday June 26th
4:00PM | BRKCLD-1011 – Future-proofing your enterprise cloud strategy

Thursday June 29th
10:00 AM | PSOCLD-1235 – Bridging the Cloud Gap: Cisco Solutions for Next Generation Hybrid Cloud
10:30 AM | BRKCLD-2235 – Deploy a Hybrid, Multi-Cloud Container Environment in Less than an Hour

Instructor Led Labs
LTRCLD-1050 – CCC/ACI/UCSD - A Multicloud story - An Infrastructure View

DevNet – DEVNET-1179, DEVNET-1767, DEVNET-1769

dCloud.cisco.com – Cisco CloudCenter 4.8 with ACI 2.2 v1
Q & A
Complete Your Online Session Evaluation

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