Unified Service Delivery Management – Unified Communications Voice in an Intercloud Environment Catalyst Demonstration
Agenda

1. Managed Services Definition
2. Market Dynamics and Opportunity
3. Unified Service Delivery
4. Catalyst Project Details
5. Summary
Managed Services Definition

Communications and Information Technologies Are Delivered as Finished Solutions, Managed Remotely by Highly Skilled Professionals from a Network Operations Center (NOC) – CPE and Network-Based.

Managed Services Are Proactively Monitored and Providers Can Troubleshoot Incidents from the NOC According to Defined Service-Level Agreements (SLAs) Negotiated with End Users.

Managed Services Are Offered on an Operating-Expense Basis That May Not Require Capital Outlay for the End User Customer, Regardless of CPE Ownership.
Increasing Demand for “On-Demand” Services Is Fueling New Business Models

Current or Projected Market Growth Rates

- **12%**
  - Cisco® Customer Premises Equipment
  - All Platforms

- **27%**
  - Managed Services
  - Limited to CPE Platforms

- **18%**
  - Hosted Communication Solutions
  - Cisco HUCS IronPort® Technology

- **23%**
  - SaaS
  - Cisco WebEx™ PostPath

- **35%**
  - Cloud
  - Data Center Virtualization

Cisco WebEx™ Meeting Applications - SaaS
Cisco IronPort Technology

Delivery Platform

CPE | Next-Generation Data Center
--- | ---
On Premises | On Demand

* Cisco IronPort® technology has an integrated hosted and CPE solution.
* Forrester Research, March 2009: Cisco commissioned research on Global Managed Services Opportunity
Cisco Managed Service Architecture
One Platform for “Unified Services Delivery”

With “Application-Fluent” WAN (App + Network) Services Ensuring Security and “Quality of Experience”

Innovation
Integrated Application Management and Network Management Framework

Collaboration Services

Data Center/ Virtualization Services

IP NGN 2.0

Unified Service Delivery

SP Data Center Integrated Mgmt Framework

Communication IP NGN

Customer Premise Equipment

Innovation
Enable Basic Data Center Services (Hosting and Co-Located)

Innovation
Enable Managed and Hosted Unified Communications

Wherever the Customer Is…
Cisco Managed Service Architecture
One Platform for “Unified Services Delivery”

With “Application-Fluent” WAN (App + Network) Services Ensuring Security and “Quality of Experience”

Innovation
Integrated Application Management and Network Management Framework

Wherever the Customer Is…

Collaboration Services

Data Center/ Virtualization Services

IP NGN 2.0

Unified Service Delivery
Unified Service Delivery: All Services, One Architecture
Optimized Security and Quality of Experience

Innovation
Enable Basic Data Center Services (Hosting and Co-Located)

Innovation
Enable Managed and Hosted Unified Communications
Data Center and Virtualization Services
Enabling Virtual Private Clouds

Cisco’s Innovative New Platforms and Services
Enable Delivery of High-Value, Virtualized Data Center Services

Yankee Group believes 80 percent of the opportunity for SPs in cloud computing during the next three years lies in switching current enterprise-hosted services over to private or virtual private clouds. (Feb 2009)
Data Center and Virtualization Services
Enabling Virtual Private Clouds

Cisco’s Innovative New Platforms and Services
Enable Delivery of High-Value, Virtualized Data Center Services

- Collaboration Services
- Data Center/Virtualization Services
- IP NGN 2.0

Virtual Private Cloud—Customer Premises
Virtual Private Cloud—Service Provider
Enterprise Data Center Extension

Yankee Group believes 80 percent of the opportunity for SPs in cloud computing during the next three years lies in switching current enterprise-hosted services over to private or virtual private clouds. (Feb 2009)
Cisco Unified Service Delivery
All Services, One Network: Lower TCO + Fast Time to Market

Example of Cost Savings: Collaboration Services
Cisco Unified Service Delivery
All Services, One Network: Lower TCO + Fast Time to Market

Example of Cost Savings: Collaboration Services

<table>
<thead>
<tr>
<th>Provision</th>
<th>CapEx</th>
<th>OpEx</th>
</tr>
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<tbody>
<tr>
<td>↓ 90%</td>
<td>↓ 33%</td>
<td>↓ 30%</td>
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Integrated Management Framework
Virtualized Unified Communications Services
In the Cloud, On Premises, or a Hybrid

TRAFFIC AGGREGATION LAYER

OSS Systems/
Manager of Managers

MANAGEMENT INTEGRATION LAYER

PSTN

Customer 1

Customer 2

Customer 3

Customer 4

Customer 5

Pure Hosted

Hybrid

Remote Managed on Premises

Dedicated or Private Network
Unified Service Delivery
Management Challenges

Managing service delivery across multiple connected domains

- Service providers must accelerate delivery of new services and are challenged with offerings spanning multiple technology domains: application, security, IP NGN (Layer 3 and Layer 2 VPN), and mobility.

Distributed computing and virtualization

- The service provider data center environment is being virtualized.
- Applications are no longer tied to specific servers and can migrate as load builds or failure conditions are encountered.
- Service management solutions (OSS and NMS frameworks) need to be flexible and move with underlying applications.

Infrastructure and application hosting

- Self-managed enterprise customers must view, update, and monitor their services.
- Service provider operators need to be able to view, update, and monitor services without requiring expert knowledge of underlying technology domains.

Service providers require an integrated, flexible, automated, service-focused intercloud management system.
The Management Framework
Cisco Management Framework Overview
Management for Multidomain Services

OpEx Reduction
- Multiservice portals for order capture, service provider operations and customer self-care
- Service orchestration – consistency in provisioning and management of services across domains
- Automated service provisioning and assurance

CapEx Reduction
- Standards-based integration (extended SID) based on open integration of domain managers and service orchestration systems

Time to Market
- Best-of-class domain managers synchronized with device feature availability – service enablement from device functions

MULTITENANT PORTAL
- JSR 168 Portal or Portal Framework

SERVICE ORCHESTRATION
- Service Enablement
- Service Fault Management
- Service Quality Management

INTEGRATION LAYER
- Data Normalization and Mapping Message Routing

Multiservice Bundles – e.g., IaaS + Unified Communications Voice + Connectivity
Management World 2010 Catalyst
Fulfillment of Cloud-Based Managed Voice

Portals

Customer Self-Care (T-Systems – Customer-Branded Portal)

Service Management (Cisco Portal Starter Kit)

Service Fulfillment and Provisioning (Comptel Dynamic OSS)

APIs: OSS/J, WS, MTOSI, Java, XML, and HTTPS

Normalized Web Services APIs

Data Normalization (Progress Software - DataXtend)
Common Data Model (extended SID)

Domain Management

UCaaS (Application)

Voice Provisioning Monitoring

IaaS

Cisco Unified Computing System™ Provisioning

NetworkaaS

Carrier E Provisioning (ANA)

APIs: SNMP, Telnet, CLI, XML, JAVA, TL1, HTTP/S, and Web Services

Contextual Cross-Launch and -Portal Integration

APIs: SNMP Events and Polling (v1, v2, v3) and Syslog

Integration

Service Orchestration

Resources

Cloud SaaS (Cisco WebEx™ Connect)
## Management Components

<table>
<thead>
<tr>
<th>Capability</th>
<th>Description</th>
<th>Tools Description</th>
</tr>
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<tbody>
<tr>
<td>Portals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Service management portal</td>
<td>Aggregated view of all enabled customer services Launch point to examine specific customer instances Customer-accessible portal for service self-care</td>
<td>Cisco provides the service manager “starter kit” portal to support the delivery of a service provider-branded portal. T-Systems provides the customer self-care portal as a branded service.</td>
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<tr>
<td>- Customer self-care portal</td>
<td></td>
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<tr>
<td>Service orchestration – Service enablement and fulfillment</td>
<td>Order management – Decomposition of a service order into constituent domain components Workflow - Orchestration of the activation of building blocks through domain management applications Activation – Communication to south-bound domain managers to accelerate specific component activations</td>
<td>Provided by Comptel Dynamic OSS, delivering: -Order management -Workflow -Active catalog -Activation through Cisco® domain managers</td>
</tr>
<tr>
<td>Integration layer</td>
<td>Enables the Service Orchestration system to integrate in a loose standards-based framework with the domain management applications Provides data normalization through a common data model with data mappings to northbound and southbound systems</td>
<td>The common data model is an extension of the SID model. The implementation of the model and the data mappings are provided by the DXSI product from Progress Software.</td>
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Management Layers
Presentation Layer: Summary

Graphical interfaces for managed services

- Service provider service managers
  - Single-pane-of-glass aggregating customers for which service manager is responsible
  - Aggregated view of all customer instances in the service manager's region
  - Cross launch to customer-specific instances of domain manager GUIs through context-sensitive linking
  - Role-based control of data visibility based on service manager responsibilities
  - Single sign-on

- Customer end users
  - Self-care interface for customers to manage their existing services
  - Moves, adds, changes, and deletes of subscribers and subscribers services

- System administrators
  - Management of users, security, and role-based access
### Presentation Layer Overview

<table>
<thead>
<tr>
<th>Order and Service Activation</th>
<th>Customer Self-Care</th>
<th>Service Provider Service Manager Dashboard</th>
</tr>
</thead>
</table>
Presentation Layer
Customer Self-Care Portal

Authentication and authorization
- Single sign-on through active directory

Multilanguage support
- Actual: English and German

User management
- Create, change, and delete users

Order management
- Create or cancel orders, and view created or cancelled orders (overview)
- Order details launched from overview list

Inventory
- Service-related information (products and features) stored in a service inventory
- Resources (network elements, terminal equipment, and element manager such as Cisco® Unified Communications Manager)
- User-related data stored in active directory
- Order data stored in an order database

Processes and services that are handled by the customer self-care portal
- Workflow engine for fulfillment
- Order management
- User management
Orchestration Layer: Summary

**Multiservice Bundles**

**MULTITENANT PORTAL**

JSR 168 Portal and Portal Framework

**SERVICE ORCHESTRATION**

- Service Enablement
- Service Fault Management
- Service Quality Management

**INTEGRATION LAYER**

Data Normalization and Mapping
Message Routing

**DOMAIN MANAGERS**

- IaaS
- Applications
- Network
- CPE

- IaaS Domain Manager
- Application Domain Manager
- Network Domain Manager
- CPE Domain Manager

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**Service orchestration – Service enablement and fulfillment, assurance, and billing**

- New customer orders from the point of capture to the validated fulfillment
- Service status, service quality, and customer experience management
- Usage, mediation, and customer billing

**Service enablement – Management World Nice 2010 Focus**

- Order management
  - Decompose complex service orders into constituent parts and monitor order status
- Workflow
  - Manage the activation process – prioritization, sequencing, and verification
- Service inventory
  - Knowledge of end-to-end services and associated resources
- Service Activation
  - Communication to domain management applications for activation of service components
- Active Catalog
  - Construct composite services from component services and manage service dependencies and northbound APIs
  - catalog federation enabling wholesale and retail service models
Comptel Fulfillment
Solution Modules

Multiservice Bundles

Multitenant Portal
JSR 168 Portal and Portal Framework

Service and Subscriber Fulfillment Orders

Order Management
Service Inventory
Provisioning and Activation
Information Dashboard

Service and Subscriber Activation Commands

Integration Layer
Data Normalization and Mapping
Message Routing

Domain Managers
IaaS Domain Manager
Application Domain Manager
Network Domain Manager
CPE Domain Manager
Integration Layer: Summary

- **Integration acceleration and efficiency**
  - Cost-effective incremental rollout of new services
  - Domain managers selected for functions, not APIs
  - Reduced dependency on domain manager roadmaps
  - Hide complexity of integration of multiple domains from service manager

- **Standards compliance**
  - Incremental migration toward standard data and APIs
Integration Layer Overview

- **OSS**
- **Fulfillment**
- **Assurance**
- **Billing**

**Service Order Orchestration**
- Standards-based interface
- OSS/J and MTOSI

**Managed Service Bus**
- Location independence
- Policy-based data routing
- High availability and load

**Service API**

**Managed Service Bus**
- Standards-based common model
- Data independence

**Common Exchange Model**

**Domain Manager**
- Domain Manager 1
- Domain Manager 2
- Standards Based Domain Manager

**Technology-Specific Domain Managers**

**Native Domain Manager Interfaces**

**ESB**
- Web-Based Interfaces and JMS (SOA)

**Standards Based Interface**
- Web-Based Interfaces and JMS (SOA)
**Shared Data – Extensions of SID**

**The Layers of Data Integration and Cisco Focus**

**BML**

**CRM**

**Billing**

**ERP**

**BSS/OSS Integration Layer**
- e.g.,
- Oracle IA

**SML**

**NMS Data Integration**
- "NIA"

**NML/EML**

**SPDC Domain Managers**

**Application Domain Managers**

**Network Domain Managers**

**CPE Domain Managers**
Integration Layer
Data Normalization Using DXSI from Progress Software

- Normalization of APIs into an extension of the Shared Information Data Model (SID)
- Requirement and transformation to open standards for APIs (OSS/J and WSDL)
- Governance environment to manage data model and mappings
Domain Managers
Cisco Unified Provisioning Manager
Simplifying Deployment and Ongoing Administration

Allow delegation of routine adds and changes to regionalized customer staff:

- Intuitive GUI makes daily operations simple.

Permit central service provider staff to quickly deploy new sites while maintaining control of routine changes through policy:

- Streamline deployments through templates, bulk import, and policies.
- Define rules and workflow that matches business processes.
- Define access and delegation of tasks.
- Audit and track all changes.
Operations Manager
Proactive Network and Fault Management

Allow monitoring of unified communications environment by operations staff:

- Real-time monitoring is performed across every unified communications device, endpoint, and link.
- Graphical views and interface make it easy to rapidly isolate faults in the network.
- Notification to email, SNMP traps, and syslog ensures your network can be monitored 24 hours a day.

Permit service provider staff to:

- Quickly diagnose problems
- Find critical operational information
- Automate routine monitoring criteria and testing processes
Cisco ANA Functional Overview
Discovery, Fault, Activation

Discovery and Visualization
- Network and service maps
- Device physical and logical inventory
- Network topology
- Service discovery (MPLS and VPNs)
- Integratable with northbound inventory systems

Network and Service Troubleshooting
- Graphical fault visualization
- Device and service fault management and troubleshooting
- Topology-based root cause analysis and effect on service
- User-configurable threshold alarms
- Alarm forwarding to northbound systems

NE Configuration and Service Activation
- Device and cross-network commands and workflows
- “Point and click” from GUI or through northbound API
- Open toolkit for user extensions
- Reference library of Carrier Ethernet and MToP activation
- NBI for integration with northbound provisioning and OM systems
Catalyst Demonstration
The offering: Hosted unified communications voice service in a distributed cloud environment

The implementation

- Distributed data center infrastructure
  - Servers and virtual machines across multiple data centers
- Data center applications
  - Unified communications voice applications deployed on virtual infrastructure
- Data center interconnectivity
  - Layer 2 VPN between service provider data centers
- Customer connectivity
  - Layer 3 VPN between service provider data center and customer sites

Use cases

- Service enablement
  - Data center infrastructure and application setup
  - Inter-data center VPN connectivity
  - Customer VPN connectivity
- Service management
  - Unified communications voice subscriber addition, deletion, and modification
  - Data center redundancy - business continuity
Managed Voice Service Management

Infrastructure Service Orchestration

UCSM
Unified Compute Service Management

VSphere
Virtual Machine Management

Cisco® ANA
Network Management Foundation

Layer 2 VPN

VPN

Aggregated Service Management Portal

Customer Self-Care/Service Management Portal JSR 168 Portal Framework

Service Enablement Complet Fulfillment

Data Integration DataXtend

Resource-Facing Network Service and Device Activation

Data Normalization and Data Mapping

Data Center 1

Customer 1
Virtual Machines

Customer 2
Virtual Machines

Customer 3
Virtual Machines

Layer 2 VPN

Customer 1
Virtual Machines

Customer 2
Virtual Machines

Customer 3
Virtual Machines

Customer 1

Customer 2

Customer 3
Service Delivery Framework – Nice Catalyst Partners Service Enablement Focus

- Multiservice Bundles – e.g., IaaS + Unified Communications Voice + Connectivity
- Service Enablement
- Service Fault Management
- Service Quality Management
- Data Normalization and Mapping
- Message Routing
- INTEGRATION LAYER
- Multiservice Cloud Offering
- Service Mgmt Portal
- Data Standardization and Mapping
- DOMAIN MANAGERS
  - IaaS
    - IaaS Domain Manager
  - Applications
    - Application Domain Manager
  - Network
    - Network Domain Manager
  - CPE
    - CPE Domain Manager
- Voice Applications and Network Domain Managers
- Cloud SaaS (Cisco WebEx™ Connect)
  - Infrastructure Domain Managers
  - Customer Self-Care Portal
  - Service Fulfillment
  - COMPTEL
Functional and Product Overview

User Portals
- Service Management Portal
- Customer Portal

Service Orchestration and Enablement
- Order Management Workflow
- Active Catalog
- Service Activation

Integration Middleware
- Message Routing
- Data Mapping and Common Data Model

Domain Management
- Network Management
- Server Management
- Virtual Machine Activation and Management
- Application Management

FUNCTIONS

PRODUCTS
- Cisco® Managed Unified Communications Voice Management Portal
- T-SYSTEMS Branded Customer Self-Care
- Comptel Fulfillment
- Comptel Fulfillment
- BEA AquaLogic
- Progress – DXSI
- Cisco ANA
- Cisco UCS Manager
- Vmware VSphere
- Cisco UPM and UOM
Demo
Intercloud

Bundled Services Built from Multiple Service Offerings
Cloud Encounter –
The Intercloud Relationships Across Catalyst Showcases

- Product Manager
- Service Modeler
- Qwest Customer
- Cloud Providers
- Qwest Network

- Progress COM Order Manager
- Comptel - Active Catalog
- Progress DataXtend
- Service Fabric Broker
- BT Cloud Broker
- Cisco Domain Managers
- Hosted Email
- Hosted Voice

- Qwest – Service Model and Cloud 9
- BT – Cloud Broker
- Comptel - Active Catalog
- Cisco – Voice in the Intercloud