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**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

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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.

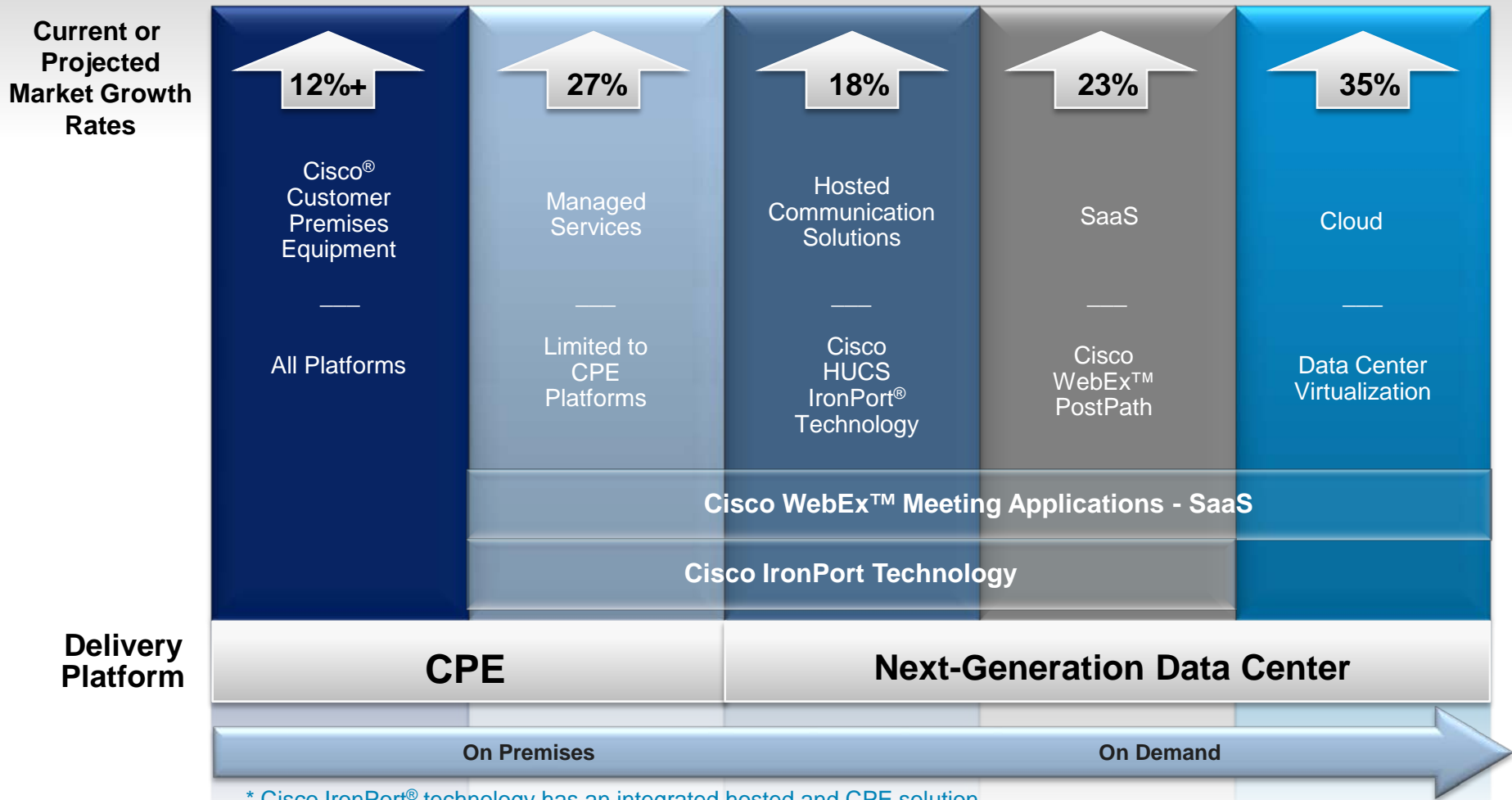


Managed Services Are **Proactively Monitored** and Providers Can Troubleshoot Incidents from the NOC According to Defined **Service-Level Agreements (SLAs)** Negotiated with End Users.



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



* 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

Wherever the
Customer Is...

Customer

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



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
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Wherever the
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Customer

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

Collaboration
Services

Data Center/
Virtualization
Services

IP NGN 2.0

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

Managed Data Center
Services (Application and
Content Acceleration)

Co-Located and Hosted
Data Center Solutions

Virtual Private Data
Center and Cloud—
Customer Premises

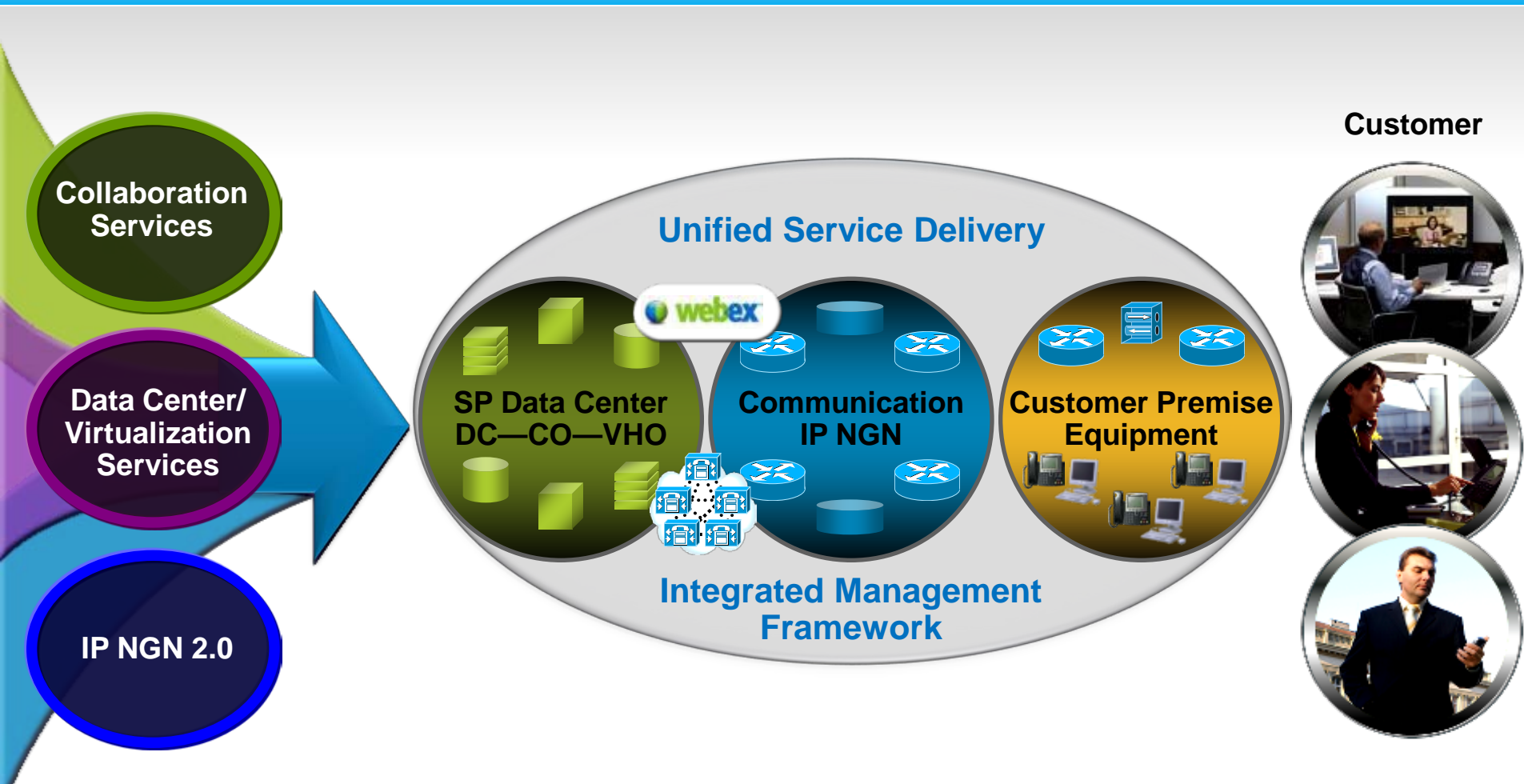
Virtual Private Data
Center and Cloud—
Service Provider

Enterprise Data Center
Extension



Cisco Unified Service Delivery

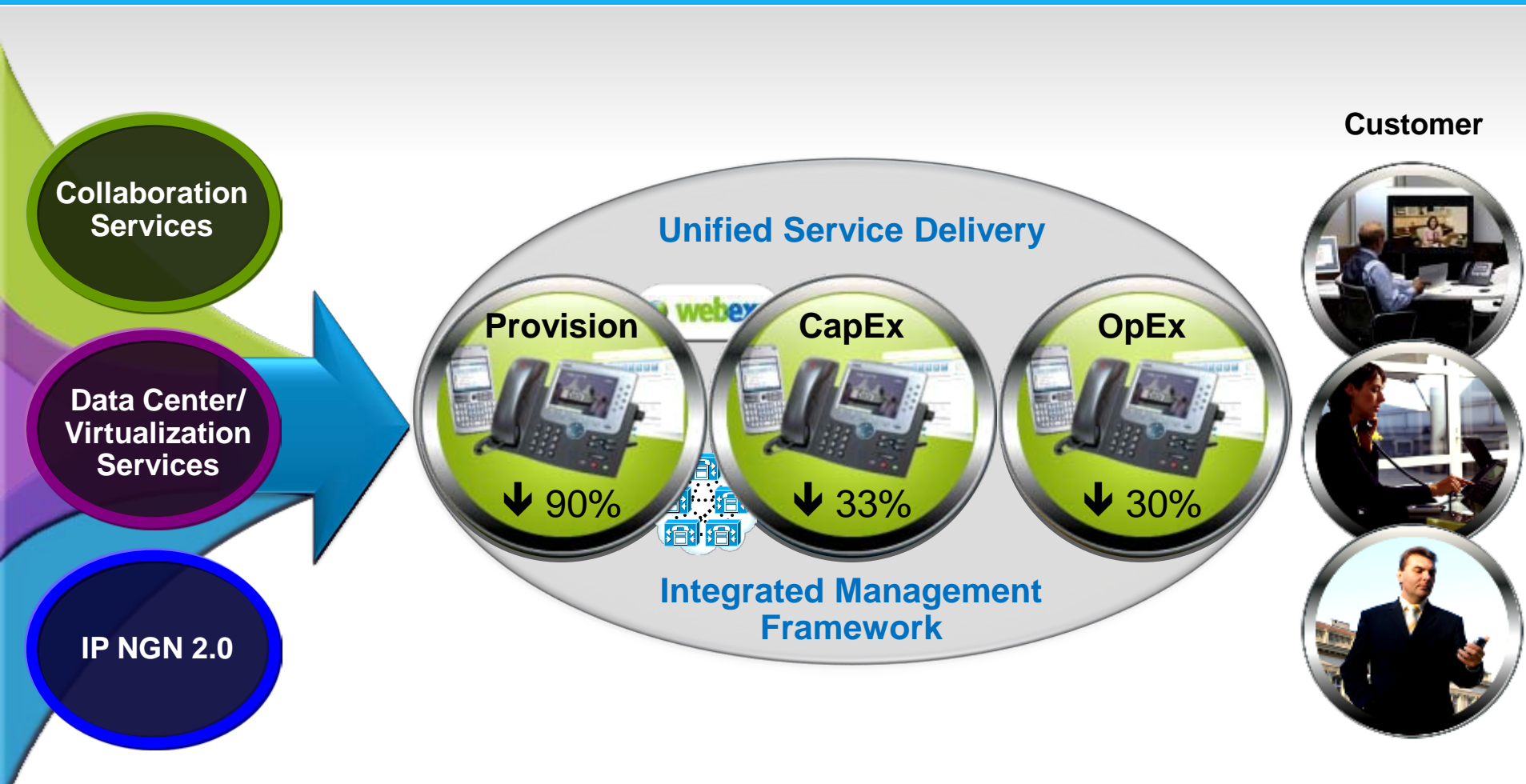
All Services, One Network: Lower TCO + Fast Time to Market



Example of Cost Savings: Collaboration Services

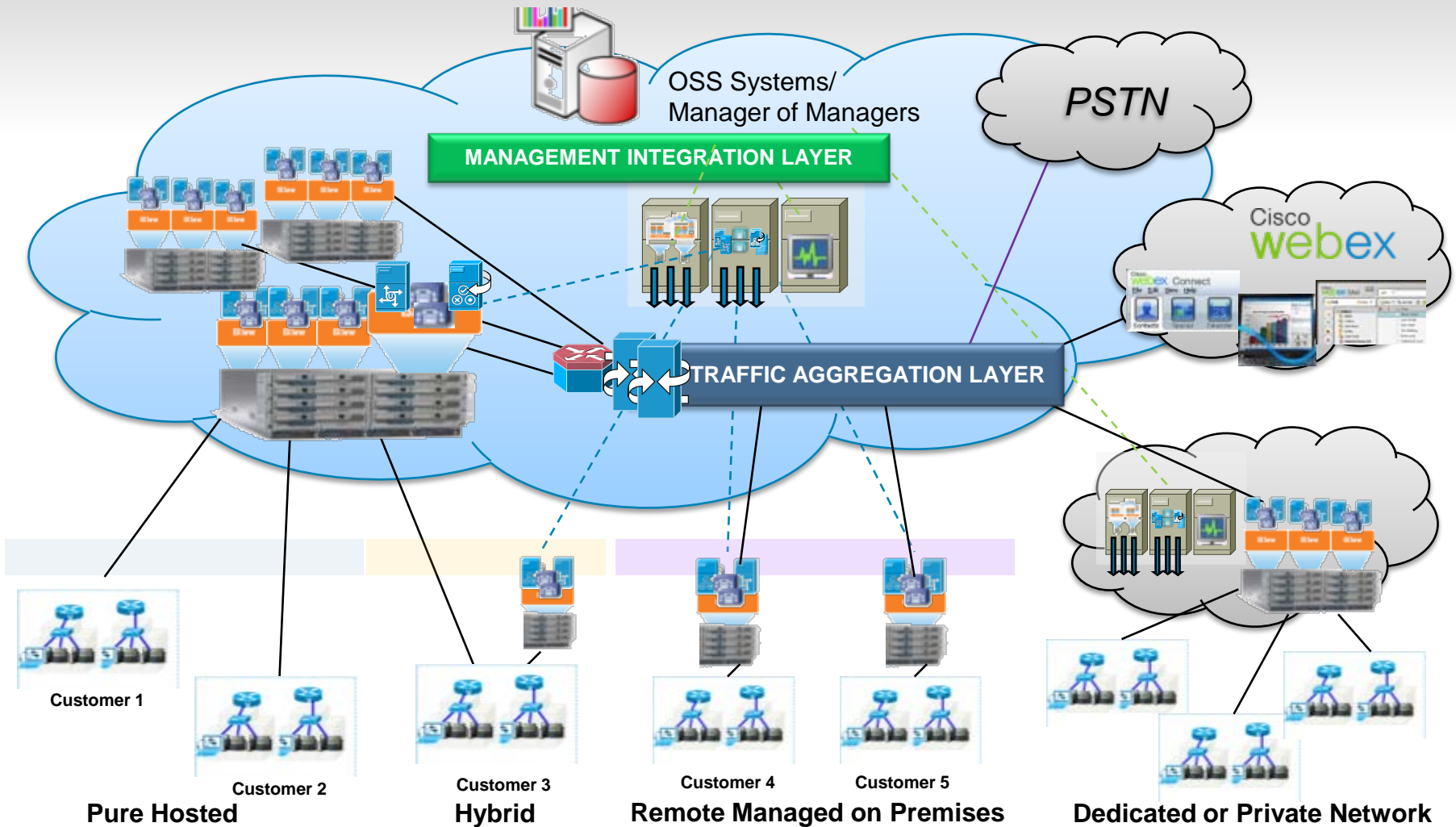
Cisco Unified Service Delivery

All Services, One Network: Lower TCO + Fast Time to Market



Example of Cost Savings: Collaboration Services

Virtualized Unified Communications Services In the Cloud, On Premises, or a Hybrid



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.

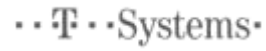
Distributed computing and virtualization

- 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

Multiservice Bundles – e.g., IaaS + Unified Communications Voice + Connectivity

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

MULTITENANT PORTAL

JSR 168 Portal or Portal Framework

SERVICE ORCHESTRATION

Service Enablement

Service Fault Management

Service Quality Management

CapEx Reduction

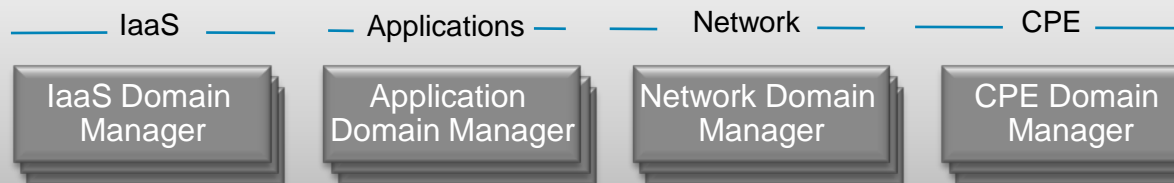
- Standards-based integration (extended SID) based on open integration of domain managers and service orchestration systems

INTEGRATION LAYER

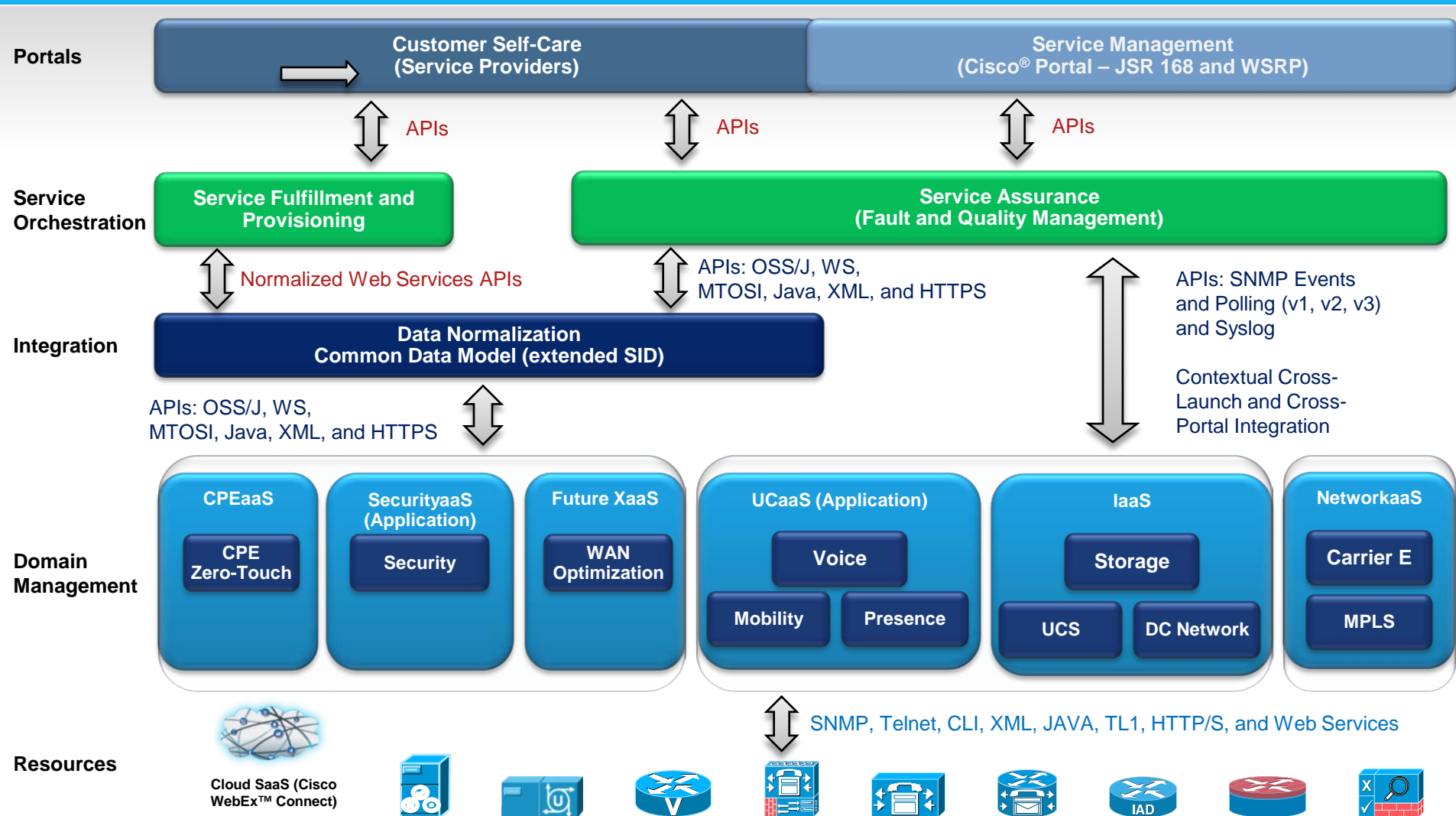
Data Normalization and Mapping Message Routing

Time to Market

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

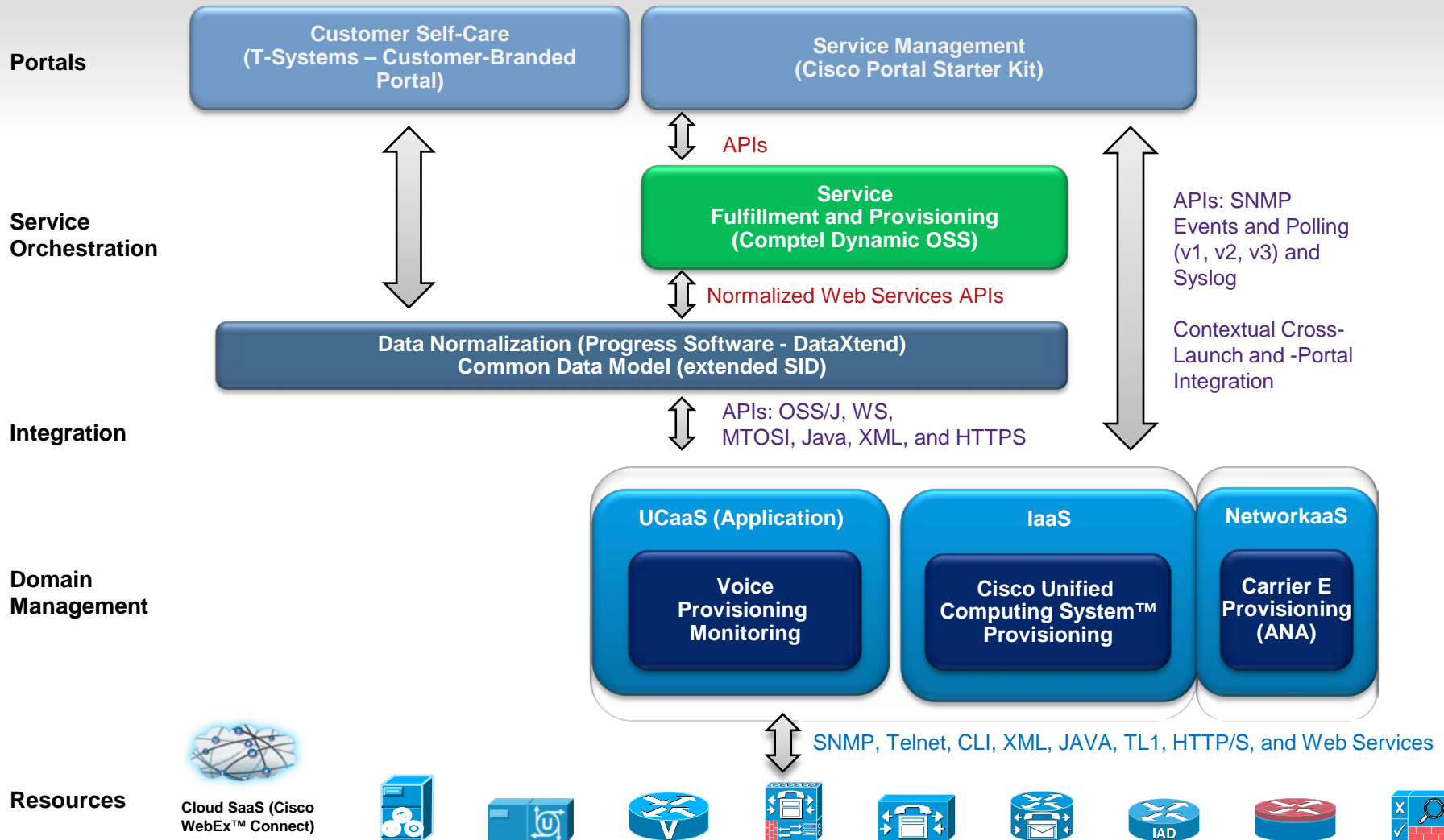


Unified Service Management Framework Details



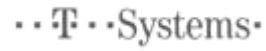
Management World 2010 Catalyst

Fulfillment of Cloud-Based Managed Voice



Management Components

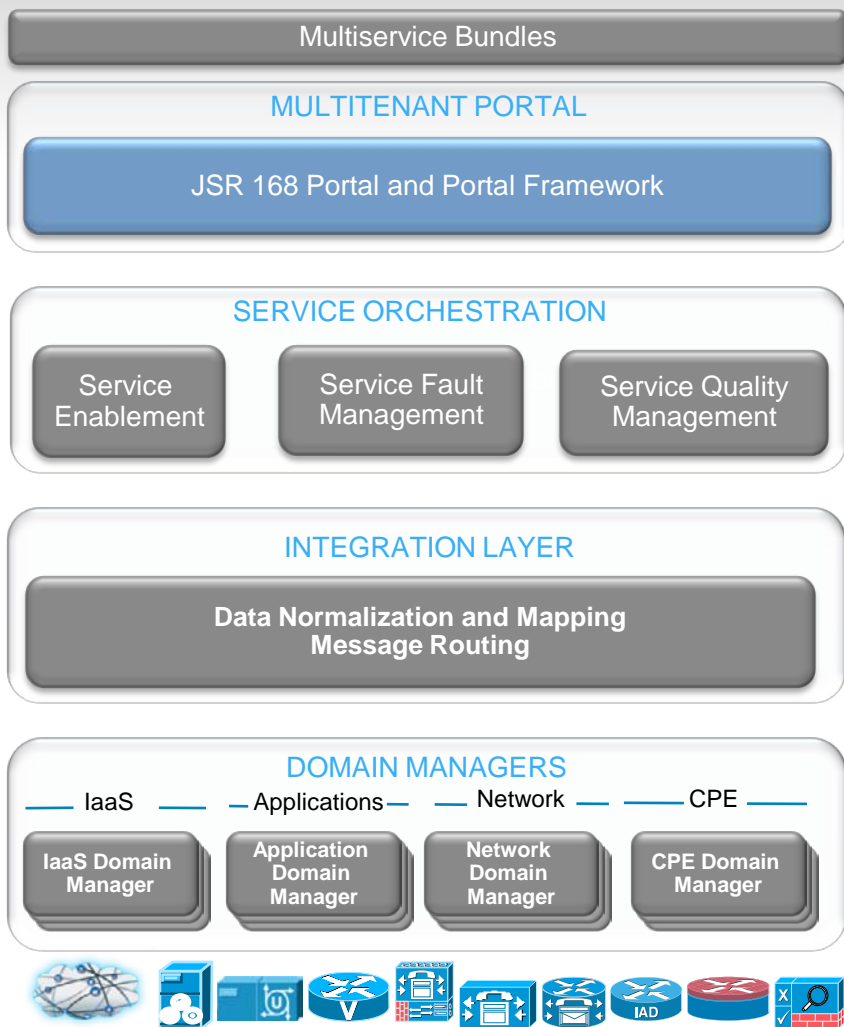
Capability	Description	Tools Description
Portals - Service management portal - Customer self-care portal	Aggregated view of all enabled customer services Launch point to examine specific customer instances Customer-accessible portal for service self-care	Cisco provides the service manager “starter kit” portal to support the delivery of a service provider-branded portal. T-Systems provides the customer self-care portal as a branded service.
Service orchestration – Service enablement and fulfillment Order management Workflow Service activation	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	Provided by Comptel Dynamic OSS, delivering: -Order management -Workflow -Active catalog -Activation through Cisco® domain managers
Integration layer	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	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.
Domain managers - Application management	Unified communications application management Server and virtual machine management Network connectivity management	Cisco Unified Communications Management Suite: -Cisco Unified Provisioning Manager -Cisco Unified Communications Operations Manager -Cisco Unified Computing System® Manager for server management -VMware vSphere for virtual machine management -Cisco Active Network Abstraction for network resource and service management



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

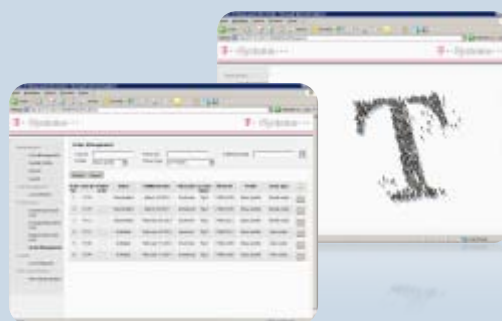
Presentation Layer Overview

Order and Service Activation



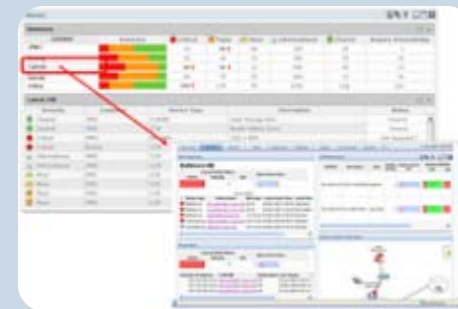
Provide a Web-Based Order Mechanism Customized to Your Brand, Creating New Customer Deployments and Orchestrating New Service Offerings.

Customer Self-Care



Provide Customers Access to Their Existing Service to Enable Self-Care Management Through a Branded Portal.

Service Provider Service Manager Dashboard



Provide Your Service Managers with a Single-Pane-of-Glass over Multiple Customer Instances. Monitor Service-Provisioning Tasks, Monitor Aggregated Service Across Customers, and Offer Roll-Based Access for Different Service Managers.

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

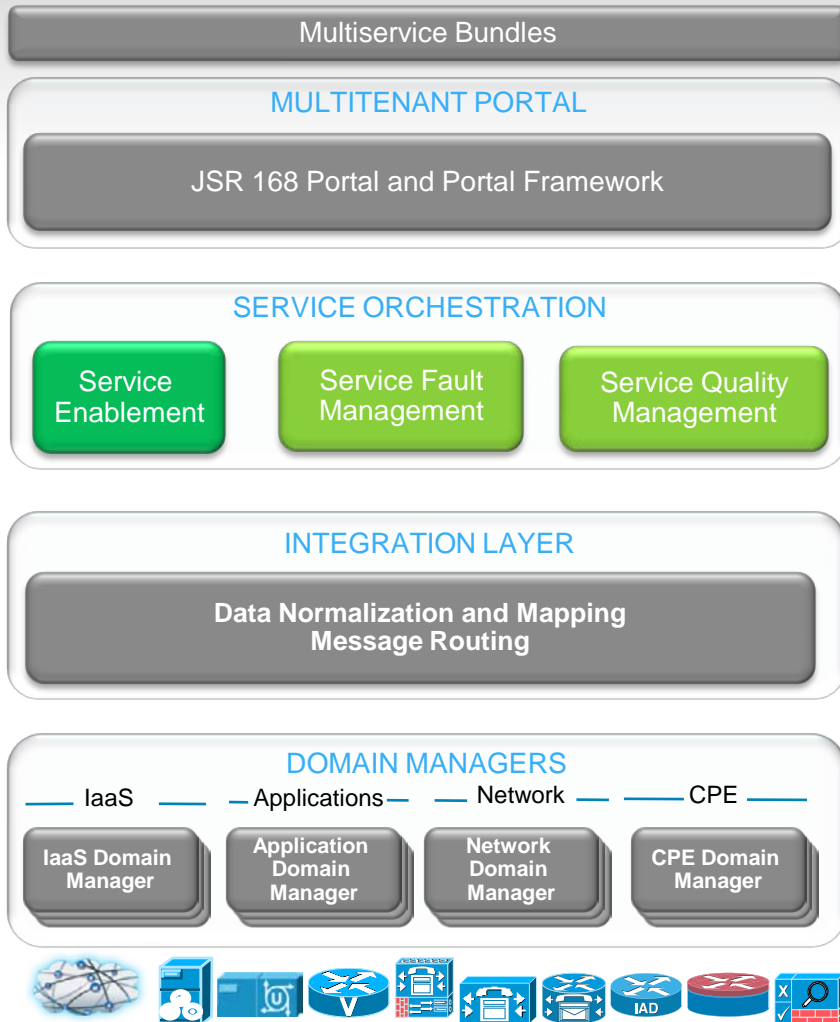
Inventory

- 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 a 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



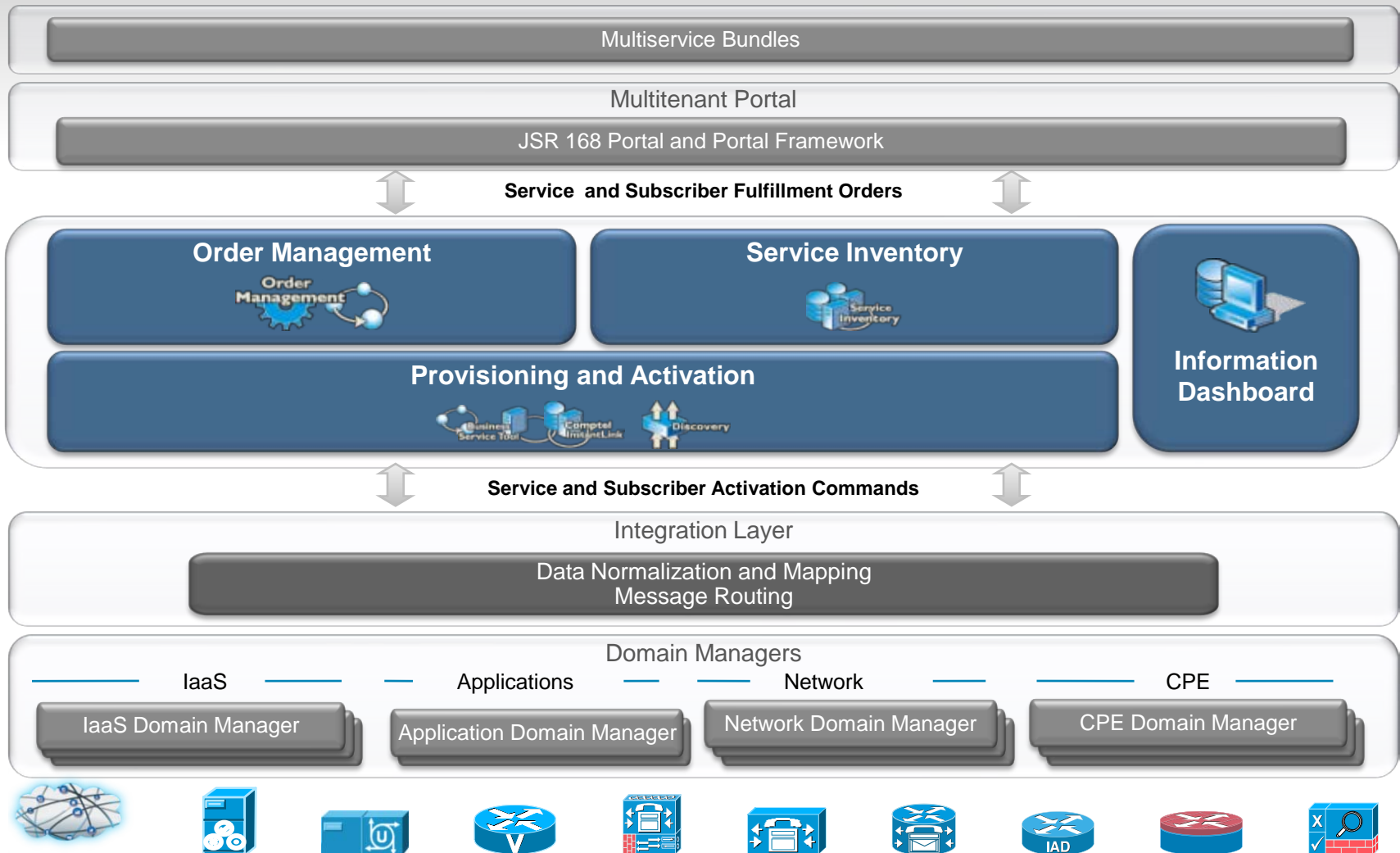
Service orchestration – Service enablement and fulfillment, assurance, and billing

- 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

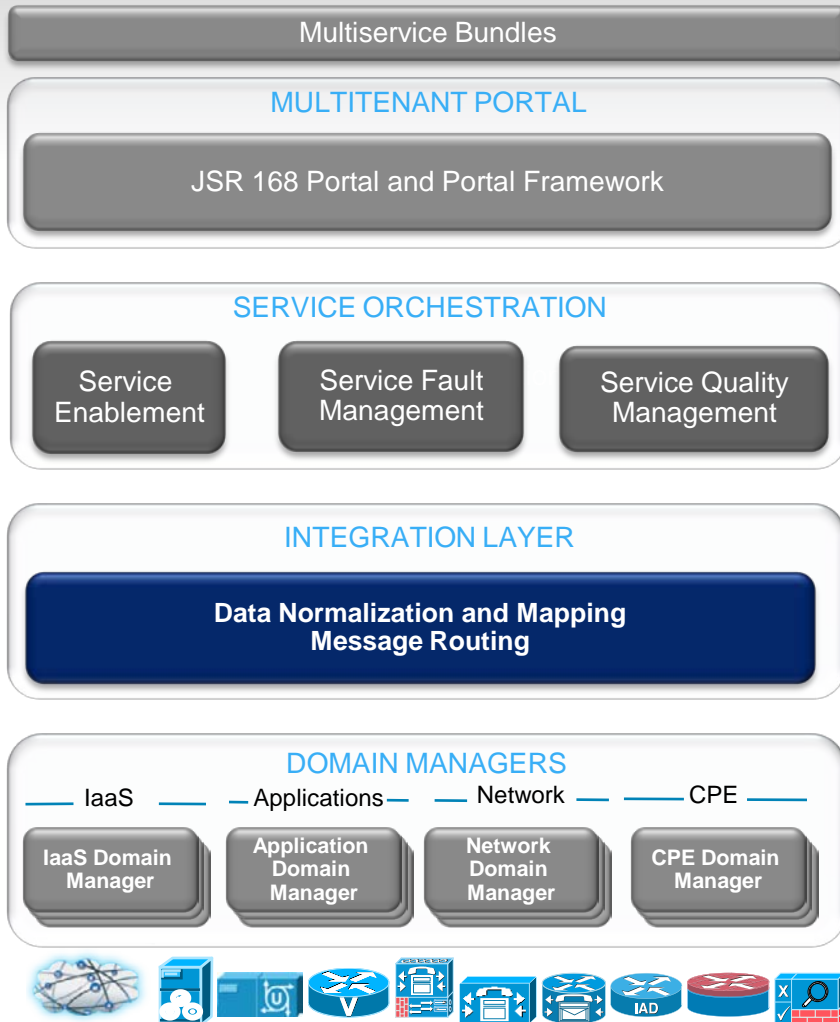
Service enablement – Management World Nice 2010 Focus

- 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



Integration Layer: Summary



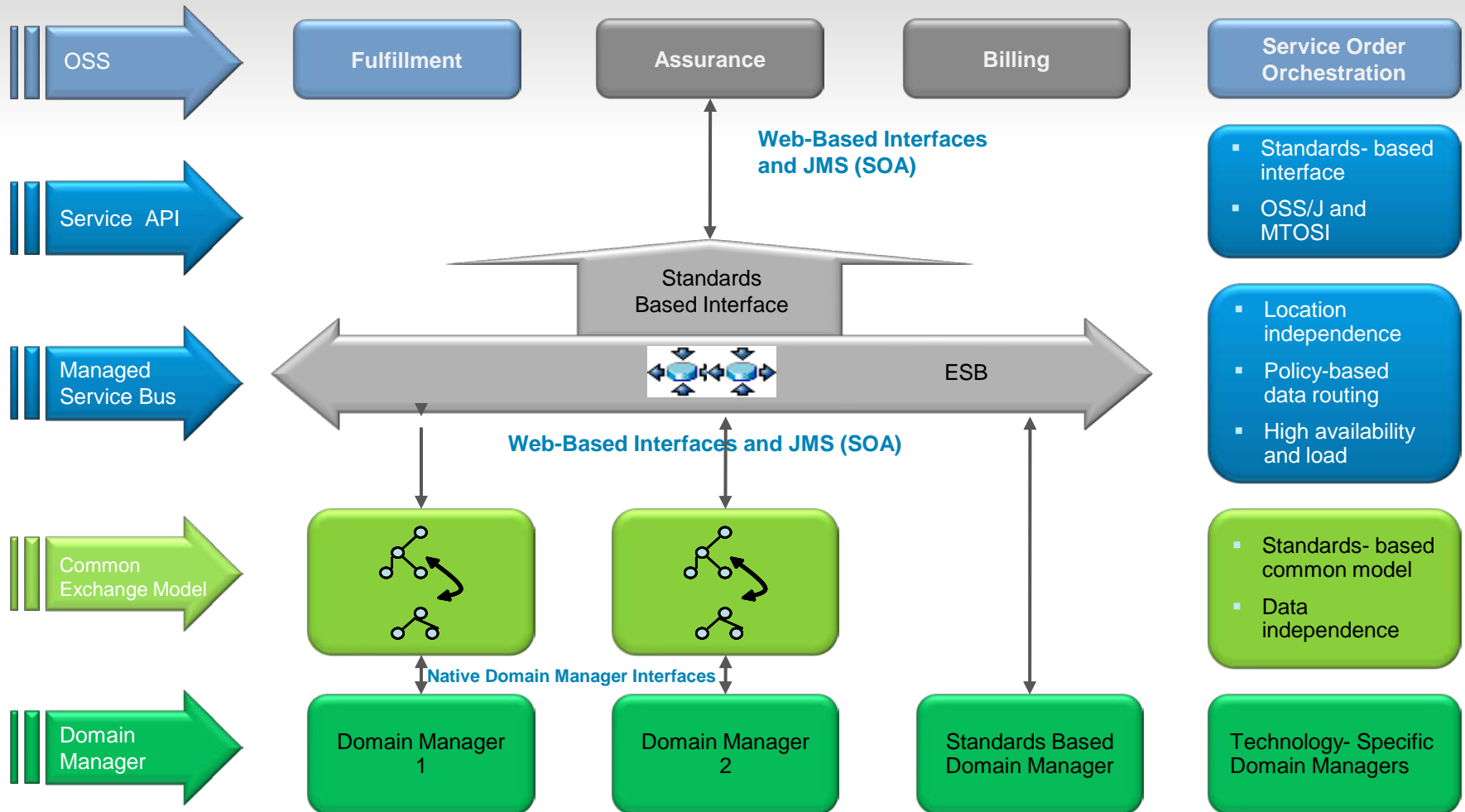
- ## Integration acceleration and efficiency

- 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

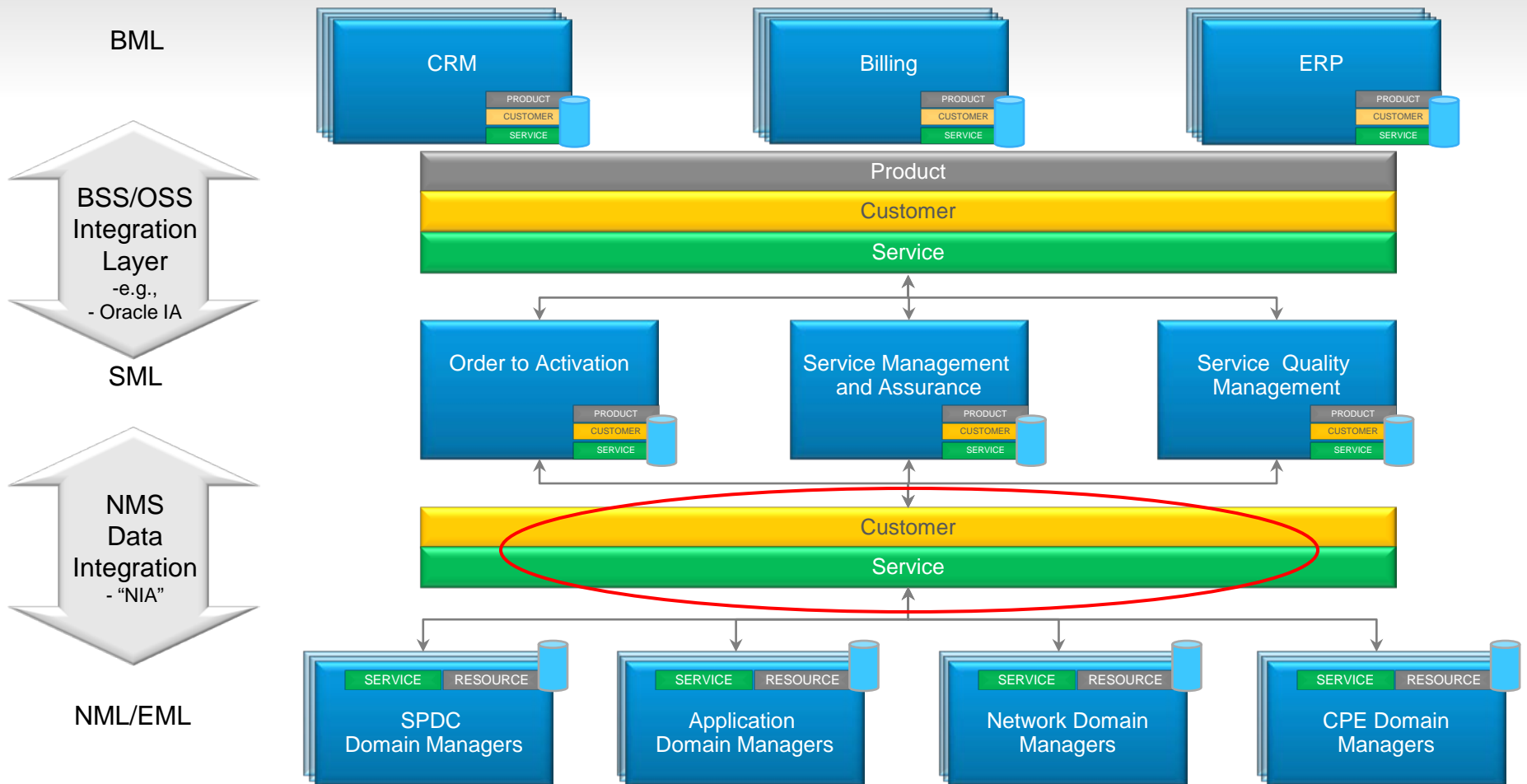
- Incremental migration toward standard data and APIs

Integration Layer Overview



Shared Data – Extensions of SID

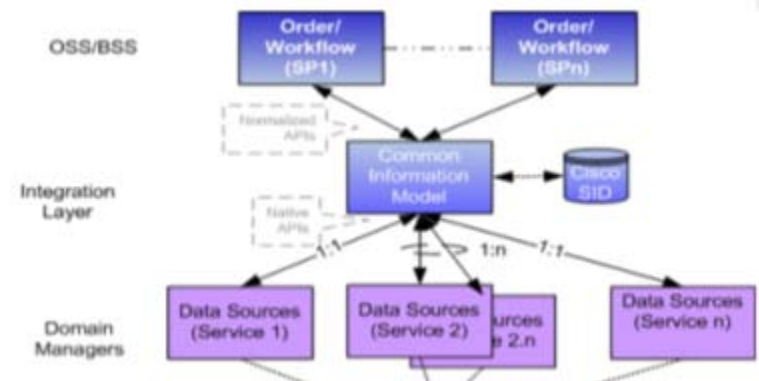
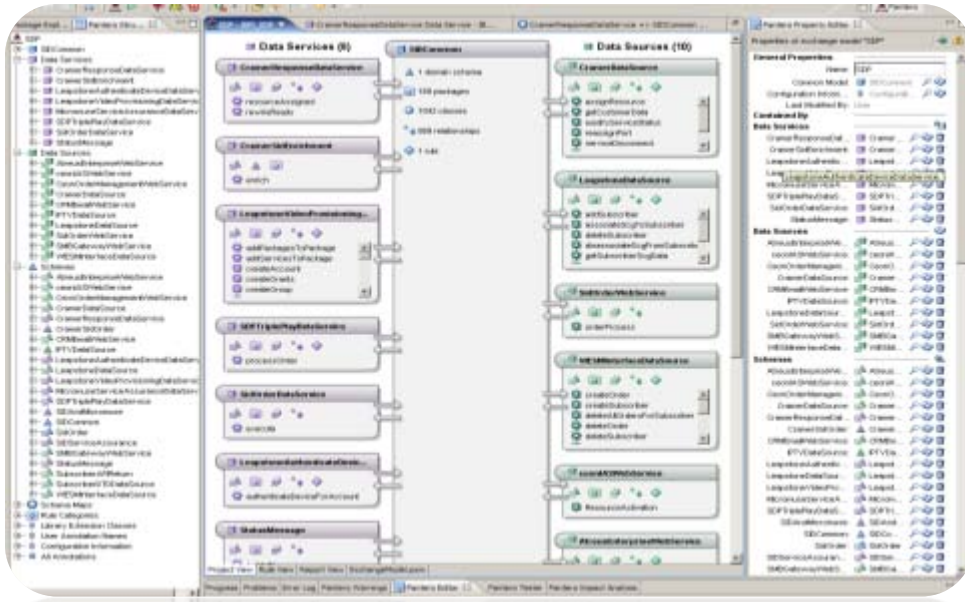
The Layers of Data Integration and Cisco Focus

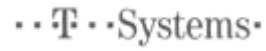


Integration Layer

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

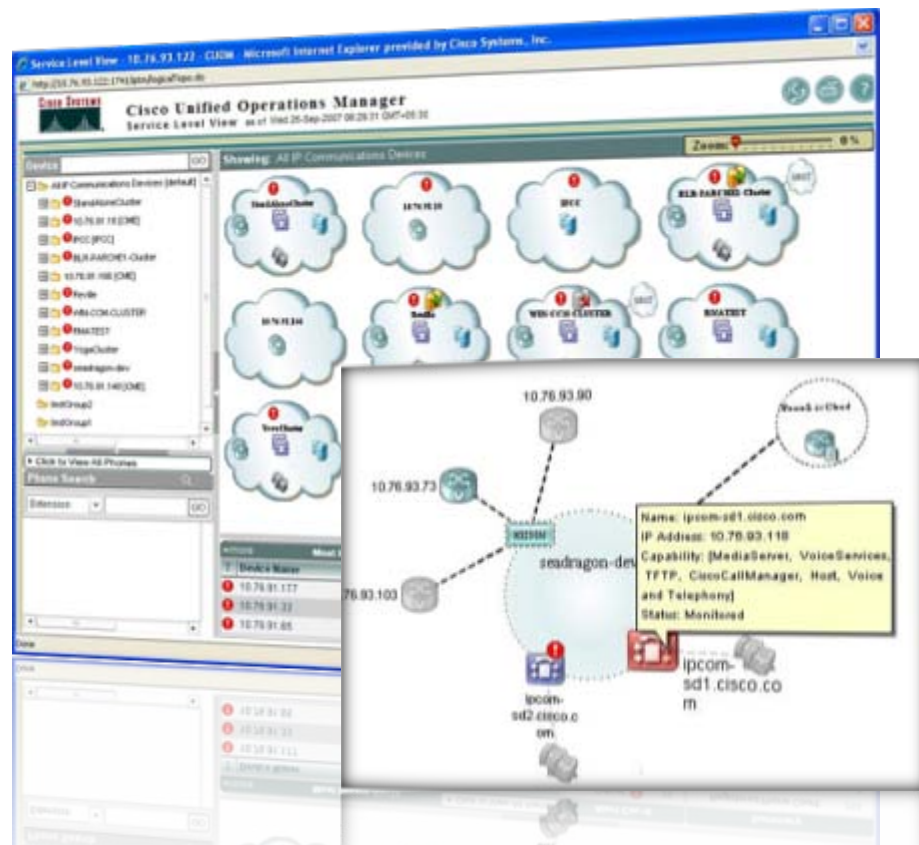
Proactive Network and Fault Management

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.

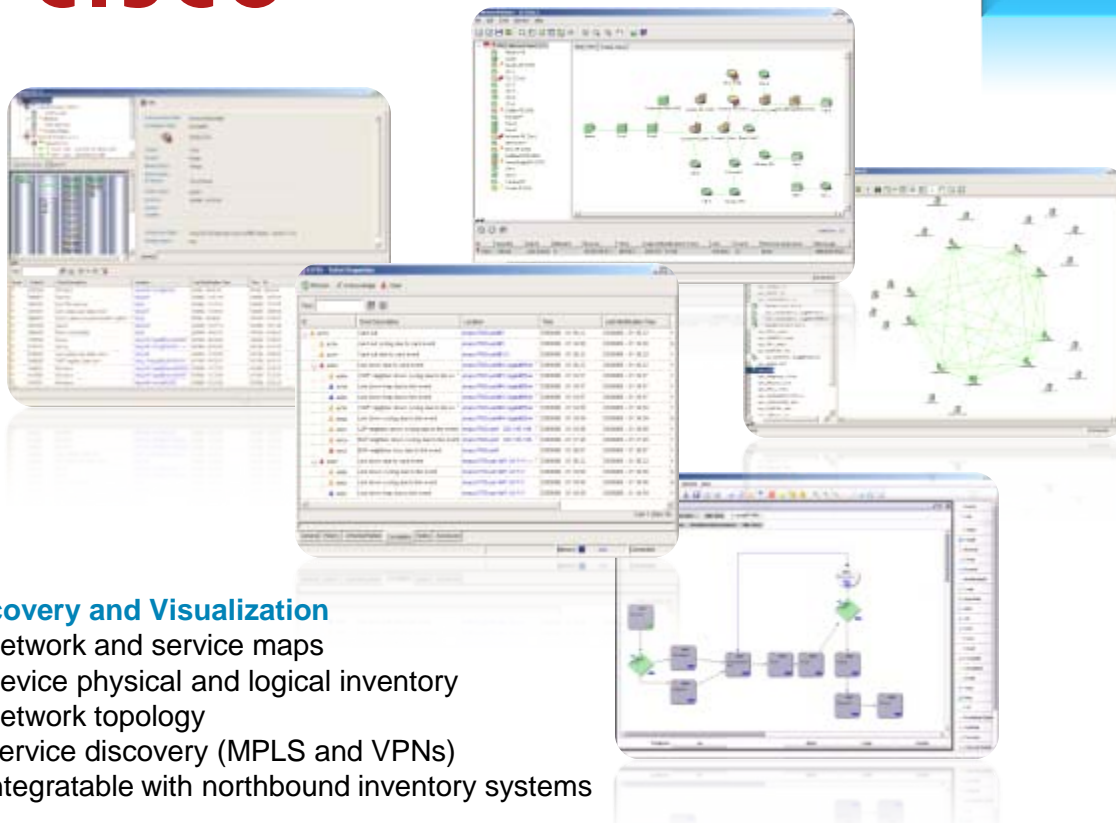
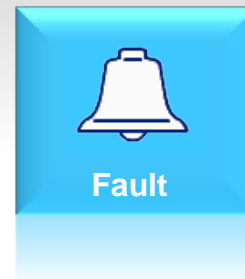
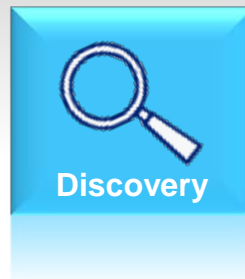
Permit service provider staff to:

- Quickly diagnose problems
- Find critical operational information
- Automate routine monitoring criteria and testing processes



Cisco ANA Functional Overview

Discovery, Fault, Activation



Discovery and Visualization

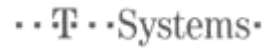
- Network and service maps
- Device physical and logical inventory
- Network topology
- Service discovery (MPLS and VPNs)
- Integratable with northbound inventory systems

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



Management World 2010 - Catalyst Use Case

Cloud-Based Managed Unified Communications Voice Service

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

Management World 2010

Managed Voice Service Management

Customer Self-Care Portal



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



Aggregated Service Management Portal

Customer Service Fulfillment – Order Management and Decomposition and Domain Manager Orchestration

Service Enablement Comptel Fulfillment

COMPTEL

Data Integration DataXtend



Data Normalization and Data Mapping

Resource-Facing Infrastructure Service and Device Activation

UCSM
Unified Compute Service Management

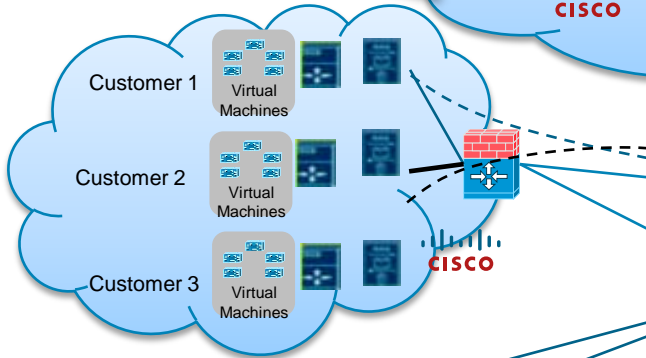
VSphere
Virtual Machine Management

Infrastructure Service Orchestration

Cisco® ANA
Network Management Foundation

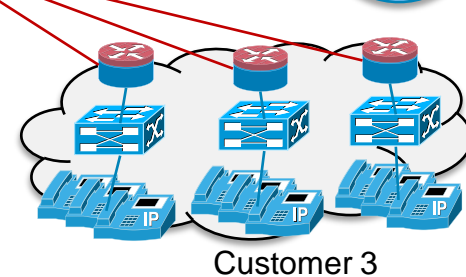
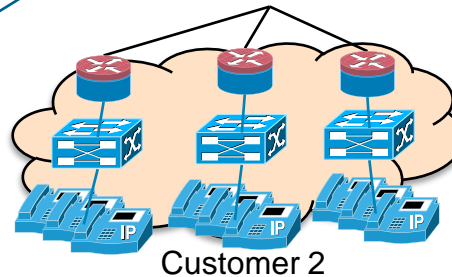
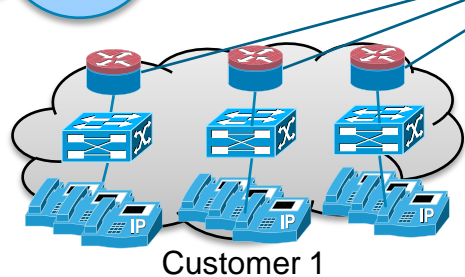
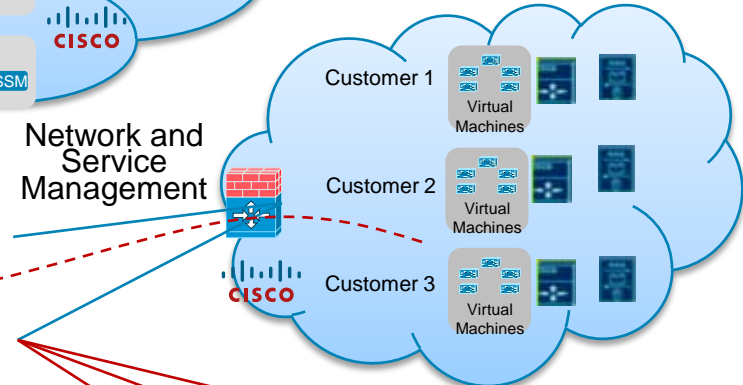
Resource-Facing Network Service and Device Activation

Data Center 1



Layer 2 VPN
VPN

Data Center 2

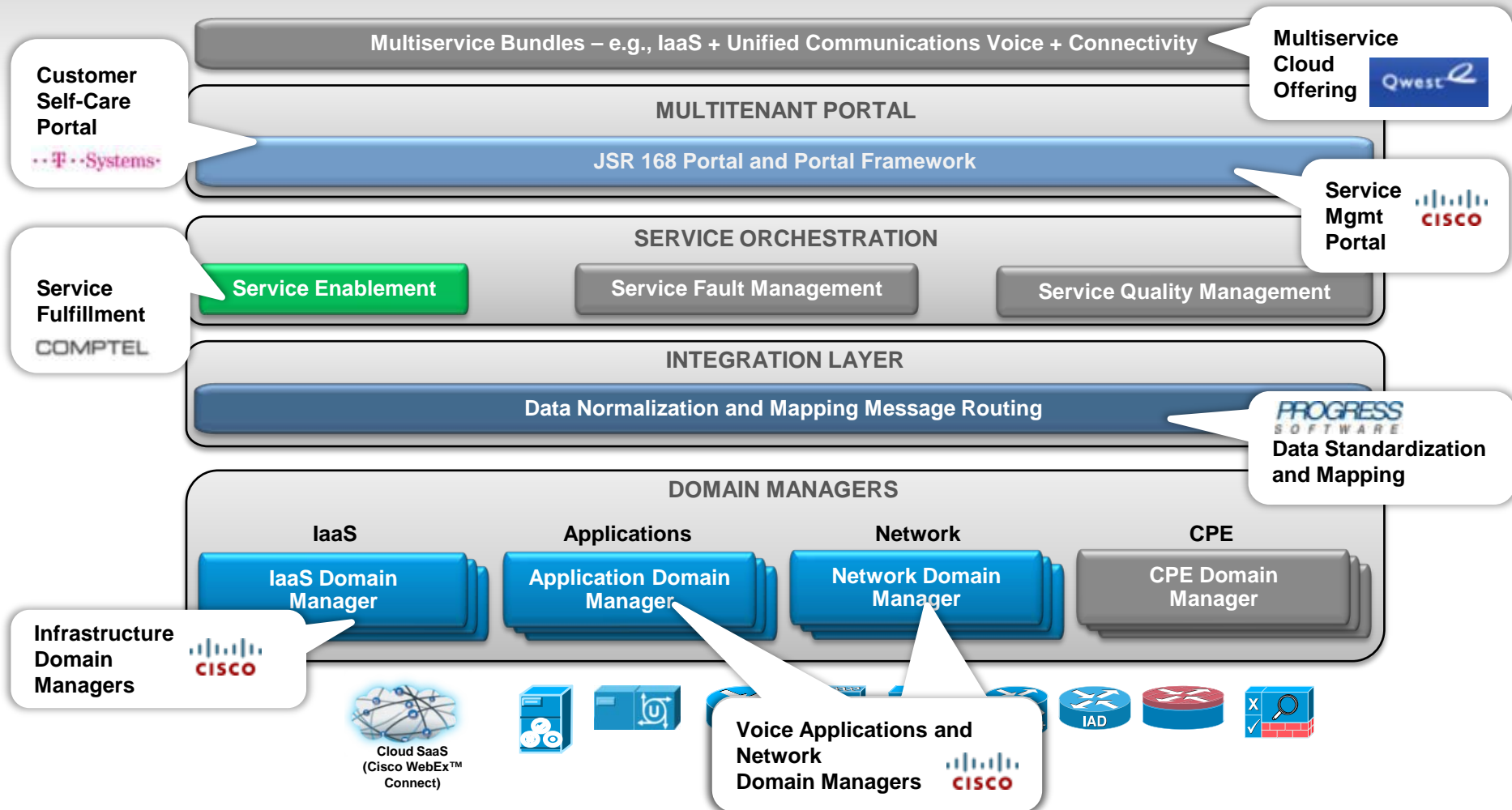


Customer 1

Customer 2

Customer 3

Service Delivery Framework – Nice Catalyst Partners Service Enablement Focus



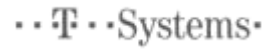
Functional and Product Overview

Service Management Portal	Customer Portal
User Portals	
Order Management Workflow Active Catalog	Service Activation
Service Orchestration and Enablement	
Message Routing	Data Mapping and Common Data Model
Integration Middleware	
Network Management	Server Management
Virtual Machine Activation and Management	Application Management
Domain Management	

FUNCTIONS

Cisco® Managed Unified Communications Voice Management Portal	T-Systems Branded Customer Self-Care
User Portals	
Comptel Fulfillment	Comptel Fulfillment
Service Orchestration and Enablement	
BEA AquaLogic	Progress – DXSI
Integration Middleware	
Cisco ANA	Cisco UCS Manager
Vmware VSphere	Cisco UPM and UOM
Domain Management	

PRODUCTS



Demo



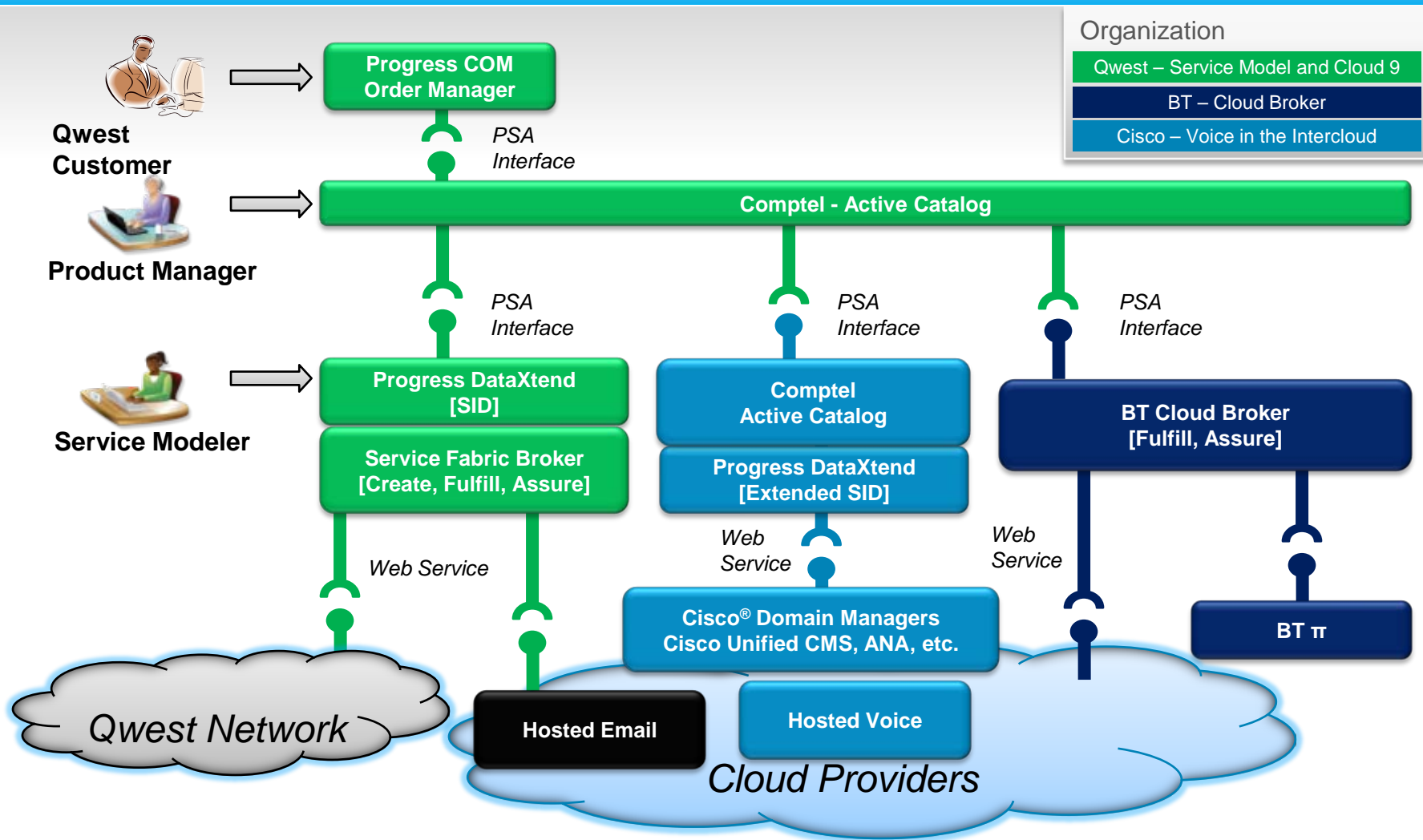


Intercloud

**Bundled Services
Built from Multiple
Service Offerings**



Cloud Encounter – The Intercloud Relationships Across Catalyst Showcases



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