The Cloud Era

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Agenda

Cloud Opportunity

Cisco’s Strategy and Differentiation

Cloud Architecture

Next Steps
Things Change
Modern Business

Business Focus
- Products, offerings
- Customer service
- Employee productivity

Beneath the Waterline
- Infrastructure sprawl, complexity
- Low asset utilization
- High operations overhead
- Difficult to manage, scale, optimize, reconfigure, maintain

Impact
- Low agility, efficiency, resilience
- Reduced competitiveness

What the Business Sees
Supporting Infrastructure
“...we need a solution that enables us to respond to customers within hours instead of days”

“I need to achieve greater cost efficiency and increased IT agility...an elusive combination...”

“At the end of the day, I just want to simply, confidently say ‘yes’ to my business.”
Data Center is today at a Critical Juncture
Convergence of Traditional IT and new Business Pressures

Empowered User
Realtime Information
Collaborative Applications
Economic Uncertainty

New Business Pressures

Operational Challenges

Energy Consumption
Asset Utilization
Complex Provisioning
Integrity and Availability
The Beginning of a Major Shift

Traditional Data Centers

Cloud Computing
Public or Private

Adoption Curve

2000 2005 2010
Data Center Architectural Evolution

Data Center 1.0
- Mainframe
- Centralized

Data Center 2.0
- Client-Server and Distributed Computing
- Decentralized

Data Center 3.0
- Service-Oriented and cloud
- Virtualized

Application Architecture Evolution
# NIST Cloud Definition

## Essential Characteristics
- **Measured Service**
- **Rapid Elasticity**
- **On-Demand Self Service**
- **Broad Network Access**
- **Resource Pooling**

## Service Models
- **Infrastructure as a Service (IaaS)**
- **Platform as a Service (PaaS)**
- **Software as a Service (SaaS)**
- **Business Processes as a Service (PaaS)**

## Deployment Models
- **Public**
- **Private**
- **Hybrid**
- **Community**
The Cloud Market Opportunity

2011-2012 IaaS grows $2B

2011-2012 SaaS grows $12B

Source: Forester, April 21, 2011
Harnessing the Cloud Opportunity

Demand Side

- Collaboration
- Borderless Networks
- Data Center / Virtualization
- Other Enterprise Applications

Supply Side

- Private Cloud
- Hybrid Cloud
- Public Cloud
- XaaS
- VXI
- HCS
- laaS

Next Generation Internet
Harnessing the Cloud Opportunity

Demand Side

- CAPEX and OPEX constraints
- Convergence of data center and network architectures
- Advances in virtualization, compute, network intelligence

Collaboration | Data Center / Virtualization
Borderless Networks | Other Enterprise Applications

Next Generation Internet

- XaaS
- VXI
- HCS
- IaaS
Harnessing the Cloud Opportunity

Demand Side

- Demand for SLA based, secure cloud services
- Leverage network investment
- New competitive offerings

Supply Side

- Private Cloud
- Hybrid Cloud
- Public Cloud

Next Generation Internet

- XaaS
- VXI
- HCS
- IaaS
Vertical Cloud Opportunity

Network as the Platform
Seamlessly and Securely Connected

Media
Government
Financial Services
Healthcare
Games
Pharma
2011 Cloud Headlines for Service Providers

- Verizon sees clouds rising to $150 billion by 2020
- Research Report: Majority of Enterprises to Move to Hybrid Cloud by 2015
- UBS estimates Amazon Web Services business is $3.4B to $3.8B
- Telecom Italia and SAP Collaborate on Cloud Computing
- T-Systems Consortium Wins Healthcare Cloud Project
Acquisitions are Shaping the Cloud Market

January 27, 2011
“Verizon Acquires Cloud Service Company Terremark for $1.4B.”

February 27, 2011
“Time Warner Cable Acquires NaviSite for $230M.”

April 27, 2011
“CenturyLink acquires Savvis in $2.5B deal.”

June 7, 2011
“Telefónica signs agreement to purchase Acens”

July 15, 2010
“Japan's NTT to buy Dimension Data for $3.2B”
Agenda

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SP Cloud Architecture

Next Steps
Cisco’s Cloud Vision

Enabling Cloud Services
Based on our Network Platform Advantage
Cisco’s Cloud Strategy

Enabling Cloud Services
Based on our Network Platform Advantage

Tailored Solutions for Building Clouds
Enable customers to build and operate public or private clouds

Rich Ecosystem with Integrated Solutions
Enable customers to deploy tested, best of breed solutions

Accelerate the Use of Cloud Services
Enable customers to deploy cloud services to collaborate and secure their business
Cloud Case Study
Cisco IT Elastic Infrastructure Services (CITEIS)

<table>
<thead>
<tr>
<th>Platform</th>
<th>IT Maint / Innovation</th>
<th>Speed of Delivery</th>
<th>Average TCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legacy Computer Platform</td>
<td>70%/30%</td>
<td>6-8 Weeks</td>
<td>37%</td>
</tr>
<tr>
<td>Unified Computing Platform</td>
<td>60%/40%</td>
<td>2-3 Weeks</td>
<td>27%</td>
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<tr>
<td>Unified Computing Platform</td>
<td>40%/60%</td>
<td>15 Minutes</td>
<td>-27%</td>
</tr>
</tbody>
</table>

Legacy Computer Platform: 100% Physical
Unified Computing Platform: 25% Physical : 75% Virtual
100% Automated

Virtualization
Unified Infrastructure and Automation
Introducing CITEIS – Concept
A Framework for Providing Infrastructure as a Service

Before CITEIS

- Machine-oriented
- Manual provisioning
- Hard to control utilization

- High provisioning & ops cost
- Extended provisioning time
- Configuration risk

After CITEIS

- Service-oriented
- Self-service; automated provisioning
- Elasticity (capacity-on-demand)

- Optimized provisioning & ops cost
- Rapid provisioning
- Increased Resiliency and Availability
Open Cloud Ecosystem

End User

Cisco Architectures

Cloud Service Provider

- Cisco Capital
- Technology Partners
- Systems and Services Mgt
- Vertical VARs
- Technology VARs
- Cisco Services
- Software ISVs
- Technology Partners

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Service Creation Methodology is Essential

Envision
innovative new cloud services

Build & Operate
Unmatched technology and partner ecosystem

Market & Sell
Demand creation and fulfillment

Product Management

Engineering and Operations

Sales and Marketing
Agenda

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Cloud Architecture

Next Steps
Requirements for Cloud Services

Security and Policies
- Identity
- Roles
- Access
- Authentication
- Entitlement

Availability and Performance
- Server Performance
- Response time
- WAN performance

Flexible Deployment & Consumption
- On-demand deployment
- Multi-tenant controls

Return on Investment
- Pay as you go
- Visible ROI
- Service selection

Interoperability and Mobility
- Work load mobility
- Server to Server
- DC to DC
Where is the customer on this Journey?
Cisco Intelligent Automation for Cloud

Cloud Automation Pack

Service Catalog and Self-Service Portal
newScale FrontOffice Suite

Global Orchestration & Reporting
Cisco Tidal Enterprise Orchestrator

Adapter Framework

Hardware Managers
eg. UCS Manager, Tivoli

Virtualization Managers
eg. VMware vCenter

OS / Software Provisioning
Cisco Tidal Server Provisioner

Compute Resources
Virtual Infrastructure
Network Resources
Storage Resources

CMDB
IT Service Management Tools
Billing/Chargeback
Monitoring & Governance
Cloud Requires Factory + Storefront

1. Servers
2. Virtualization
3. OSs / Middleware / DB
4. Applications
5. Mgmt. / Auto. / Orch.
6. User Portal

Data Center Facilities, Power, Cooling, Space

DC Integration & Migration

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Cloud Capability Matrix

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
<th>Facilities / Infrastructure</th>
<th>Virtualization</th>
<th>OS / Middleware / DB</th>
<th>Applications</th>
<th>Management / Automation / Orchestration / DC Interface</th>
<th>User Interface</th>
<th>Service Management / Service Catalog</th>
<th>Finance / Chargeback</th>
<th>Process / Governance / Operations</th>
<th>Security / Compliance</th>
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<tbody>
<tr>
<td>5</td>
<td>Public Cloud</td>
<td></td>
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</tbody>
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Factory + Storefront
Cisco Intelligent Automation for Cloud

- Enable the IT Storefront:
  - Service Portal
  - Service Catalog
  - Policy-based controls
  - Lifecycle management
  - Pay-per-use tracking

- Enable the IT Factory:
  - Day 1 orchestration and automation
  - Day 2 management and scheduling

- Across hybrid physical, virtual, and cloud environments, from desktop to data center

- Proven in deployments by the world’s largest companies
### CIA: Sample Customers

<table>
<thead>
<tr>
<th>Financial Services</th>
<th>Energy &amp; Chemical</th>
<th>Healthcare</th>
<th>Technology &amp; Telco</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fidelity</td>
<td>ExxonMobil</td>
<td>Kaiser Permanente</td>
<td>Siemens</td>
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<td>American Express</td>
<td>Oxy</td>
<td>Johnson &amp; Johnson</td>
<td>AT&amp;T</td>
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<td>Deutsche Bank</td>
<td>Shell</td>
<td>BC HealthCare</td>
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<td>Novartis</td>
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<td>Charles Schwab</td>
<td>RIO TINTO</td>
<td>Makenesson</td>
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<td>Wells Fargo</td>
<td>BS GROUP</td>
<td>Genentech</td>
<td>Vodafone</td>
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<tr>
<td>Improve Capital</td>
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<td>Genentech</td>
<td>IBM</td>
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<table>
<thead>
<tr>
<th>Diversified</th>
<th>Government</th>
<th>Insurance</th>
<th>Retail &amp; Hospitality</th>
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</thead>
<tbody>
<tr>
<td>Ford</td>
<td>US Army Corps of Engineers</td>
<td>Mutual of Omaha</td>
<td>GAP</td>
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<tr>
<td>Intel</td>
<td>SAC</td>
<td>Metlife</td>
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<td>Bombardier</td>
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<tr>
<td>Nike</td>
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<td>Marriott</td>
</tr>
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</table>

**CIAC platform has attracted blue-chip customers across a variety of vertical markets**
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SP Cloud Architecture

Next Steps
Enabling the Journey to Cloud Summary – Next Steps

1. Cloud momentum is accelerating
2. Cisco’s strategy is to enable cloud providers
3. Cloud monetizes your network investment
4. The network, unified computing, virtualization, and automation make the cloud possible
5. Cisco’s Envision, Build & Operate, Market & Sell enable faster time to value
Thank you.