We Are at the Very Beginning of a Major Shift

Adoption Curve

Traditional Data Centers

Cloud Computing Public or Private

Beginning to look like computing is on a path to follow the same course as electrical power generation...
Hype cycle in full swing!!

Last year we recognized that our processes were far too complex.

So we put them into the cloud.

Let the clouds make your life easier.
Cloud Traffic increases 2010 - 2015

Cloud Traffic Will Be Over One-Third of DC Traffic by 2015

33% CAGR 2010-15

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Cloud Datacenter</th>
<th>Traditional Datacenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>11%</td>
<td>89%</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>29%</td>
<td>71%</td>
</tr>
<tr>
<td>2015</td>
<td>34%</td>
<td>66%</td>
</tr>
</tbody>
</table>

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Growth of Connected Devices

- **2007**: 1/10th of a Device per Person on Earth
- **2010**: 5 Devices per Person on Earth
- **2013**: 7 Devices per Person on Earth
- **2020**: 70~ Devices per Person on Earth

Source: Forrester Research, Cisco IBSG
Cisco’s Top 5 Priorities

1. Leadership in the Core… Routing / Switching & Services including Security and Mobility
2. Collaboration
3. Data Center / Virtualization
4. Video
5. Architectures for Business Transformation

“They are the key drivers of the future of the network… the constants that will guide us”
Enable Cloud Services by Uniquely Combining the Unified Data Center and Cloud Intelligent Network

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

Connect to Cloud with Confidence
Enable customers to connect users to Cloud with Visibility, Security, Availability and Performance

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

Innovative Cloud Applications
Enable customers to deploy cloud services to collaborate and enhance their experience
Fabric Scale: “Think Beyond the Box”
Cisco Takes the Fabric Beyond the Data Center

- Geographical Span (between DCs)
  - Mobility: LISP, OTV
  - Scale: Fabricpath, FEX
  - Unified I/O L2/L3
  - VM-aware VDC
- System Scale (within DCs)
  - Intelligent Services For P-V-C
  - Unified I/O L2/L3
  - VM-aware VDC

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Cisco CloudVerse
Unified Data Center and the Intelligent Network to Deliver Cloud Services

Assured Experience
Dynamic, Efficient Agility
Secure
Accelerated Deployment

Cloud Applications
Unified Data Center
Cloud Intelligent Network
Cloud Enablement Services

50% TCO Savings
Cisco CloudVerse
Product Portfolio

Cloud Applications

Unified
Data Center

Cloud Intelligent Network

Cloud Enablement

Collaboration, Video
Virtual Desk top, Security, IaaS

Nexus
Family
CIAC, UCSM, NSM

UCS
Family

CRS
Family
Cisco Prime

ASR
Family

ISR
Family

Cisco Technical &
Professional Services

Customer Collaboration
Telepresence

Collaboration Applications
Unified Data Center
The Platform for Delivering IT as a Service

Business Objectives

IT Service Offerings

On-Demand Services

Unified Fabric
Highly Secure, Scalable

Unified Management
Automated “Self-Service” Resource Provisioning

Unified Computing
Modular Self-Integrating Computing Elements
Traditional Data Center Approach

Complexity Grows With Number of Apps

- Corp
  - App
  - OS
  - Physical Server
  - DB
- Mktg
  - App
  - OS
  - Physical Server
- Finance
  - App
  - OS
  - Physical Server
  - DB
- Engineering
  - App
  - OS
  - Physical Server
  - Storage
- HR
  - App
  - OS
  - Physical Server
  - DB

Poor Utilization

Inflexible Infrastructure
Cloud-based IT Delivery Model
Simpler – Flexible - More cost effective

Cloud Infrastructure Service

- Corp
  - App
  - OS
  - Virtual Machine

- Mktg
  - App
  - OS
  - Virtual Machine

- Finance
  - App
  - OS
  - Virtual Machine

- Engineering
  - App
  - OS
  - Virtual Machine
  - DB Service

- HR
  - App
  - OS
  - Virtual Machine

Physical Server
Storage
Queue
Infrastructure becomes a service

- Corp
  - App
  - OS
  - Virtual Machine
- Mktg
  - App
  - OS
  - Virtual Machine
- Finance
  - App
  - OS
  - Virtual Machine
  - Virtual Machine
- Engineering
  - App
  - OS
  - Virtual Machine
- HR
  - App
  - OS
  - Virtual Machine

API-driven services
Self-service portal
Selective application mgmt

Cloud Infrastructure Service
Pool of shared resources

Physical Server
Storage
Queue
DB Service

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UCS: Unified Compute, Networking, and Storage

Delivered as a Service

Attributes
- On demand, self service
- Measured usage
- Elastic supply
- Network delivered

Services
- Infrastructure-as-a-service
- Comms/Collab-as-a-service
- Virtual desktop
- Video-as-a-service

Pooled Resources

Compute
Network
Storage
Cisco Solution: Virtualized Multi-Tenant Data Center (VMDC)

A unique, multi-tenant, service delivery platform that allows variety and flexibility without sacrificing efficient operations.

- Infrastructure as a Service
- Virtual Desktop Services
- Unified Communications
- Etc…
Policy Based Management Approach

Business Applications and IT Services

Self-Service Portal and Orchestration
- On-Demand Provisioning
- Service Catalog
- Service Governance
- Integration and Automation
- Lifecycle Management
- Pay-Per-Use

Infrastructure Resource Mgmt
- Software Abstraction of Physical Infrastructure
- Seamless Physical-Virtual
- Pooled Resources
- Automated Scaling

Policy-Based Compute
- Service Profiles
- Physical-Virtual, Multi-Hypervisor

Policy-Based Network
- Network Containers
- Dynamic Network Provisioning

Existing IT Management Systems
- Identity Mgmt
- Monitoring
- Service Desk
- CMDB
- ...
Cloud Case Study
Cisco IT Elastic Infrastructure Services (CITEIS)

Legacy Computer Platform
100% Physical

Average TCO
-37%

Legacy Computer Platform
46% Physical : 54% Virtual

Average TCO
Speed of delivery
6-8 Weeks
IT Maint / Innovation
70%/30%

Legacy Computer Platform
25% Physical : 75% Virtual

Average TCO
Speed of Delivery
2-3 Weeks
IT Maint / Innovation
60%/40%

Unified Computing Platform
100% Automated

Average TCO
Speed of Delivery
15 Minutes
IT Maint / Innovation
40%/60%

Virtualization

Unified Infrastructure and Automation
Collaboration Applications and Services
Meetings, IM and Presence
People Centric Virtual Meetings
Rich, Real-Time Communications

PREPARE
MEET
FOLLOW-UP

WebEx
Jabber

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Fabric Extensibility Between Clouds
Enable Deep Connectivity Between Data Centers and Clouds

Unified Fabric, Unified Computing,
Application / Location Transparency LAN Extension

San Jose

Workload Migration

New York

Preserve User Experience

Unified Fabric, Unified Computing,
Application / Location Transparency LAN Extension

ASR 9000

Nexus 7000
Advances in technology and platforms

- Virtualization and internet scale is changing data center architecture

- Network virtualization and software defined networking open up new possibilities
  - Software-defined networks (SDN)
  - Nexus 1kv, VXLAN

- Virtual data centers, hybrid private and public clouds bring flexibility to traditional data centers

- Open source clouds are being developed
  - OpenStack community growing
  - Cisco contributing through Quantum: Network as a Service

- Cisco is bringing its expertise into each of these new areas
A World of Many Clouds

- Media
- Government
- Financial Services
- Healthcare
- Games
- Pharma

Seamlessly Connected
Securely Accessed
An Even Larger Cloud Is on the Horizon

Thank You