IP Innovation for Customer Success

Paolo Campoli
Head of SP Architectures and Vertical Sales
Cisco, European Markets
The Network as the Platform…

“Cisco’s strategy is based on catching market transitions—the market transitions that affect our customers. With the proliferation of video and collaborative Web 2.0 technologies, the network continues to evolve from the plumbing of the Internet—providing connectivity—to the platform that will change the way we work, live, play and learn.”

John Chambers, Chairman and CEO, Cisco
Western Europe IP Traffic Growth
Consumer IP traffic outpaces business IP traffic (traffic volume and growth rate)

36% CAGR 2009–2014

Global Consumer Internet Traffic Growth

Video replaces P2P as top traffic type in 2010

36% CAGR 2009–2014

* VoIP, Online Gaming, and Video Calling contribute 1% or less in 2014.

Challenge of Shifting Environment

- Monetization: New revenue streams
- Optimization: Efficient delivery
- Profitability: Revenue, Traffic

Animated slide
Service Provider Business Challenges
Value Shifting from Simple Access to Service Enablement

Innovate in Rapidly Changing Environment

Monetize core assets

Optimize Costs

Reduce Operational Complexity
Optimize costs

Reduced Price per Bit

$ per Gig

Packet Transport

E.g. Core Routing

93%
Fix the basics: make the network intelligent

$ / \text{bit}$

$\text{TCO}$ of traffic

$\text{TCO of Intelligence}$

$\text{Centralized}$ $\rightarrow$ $\text{L4-L7 intelligence}$ $\rightarrow$ $\text{Distributed}$
Focus on core assets

1. IP NGN Infrastructure
   - Access Routing
   - IP+Optical
   - NGA - FTTH
   - IP Edge
   - IP Core

2. The Mobile Internet
   - Mobile Packet Core, IP RAN, Monetization, 4G / LTE, Mobile video

3. IP & TV
   - IP STB
   - Headends
   - RF overlay
   - VQE
   - Videoscape
   - Content Distribution
   - Collaboration Broadcasters / OTT

4. Communication & Collaboration
   - Hosted Communication
   - B2B Telepresence
   - Web collaboration
   - Application aware VPN

5. DC / Virtualization
   - Datacenter consolidation
   - Virtualization
   - Automation
   - DC Interconnect, IP

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Responding to Change
Capturing Market Transitions

Disruptors

- Video
- Collaboration

Future of Work
- Rapid business-model innovation
- Intra-company and inter-company collaboration
- Millennials: Balancing privacy & openness

Future of Connected Life
- Pervasive mobile Internet
- Content sharing among communities
- Lifestyle optimization

Future of Computing
- From mainframe to minicomputer to client-server Web and cloud
- Blurring of private and public value chains
- 40% of ICT to be delivered via Cloud, XaaS
- Video
- Mobility
- Virtualization
Video is pervasive in Enterprise organizations: what do they need from you, Mr. SP?

Quality of Experience

Planning | Auto Configuration | Visibility and Monitoring | Rapid Problem Resolution | Optimization

Any to Any Video Adaptation

Automation and rapid problem resolution in the network to deliver application quality of experience, particularly video
A remote expert joins a TelePresence session between the VP of sales and the customer ad-hoc via TelePresence. Hmmm… Mediatrace identifies the bottleneck to be between NY and London.
What do they need in the SP network?

- IP Video SLA
- IP embedded video monitoring (VidMon)
- IP Multicast for SD and HD streams, Multicast VPN
- End to end design and consistency
Value shifting to Cloud and Devices

**Consumer Behavior**
- Video = 91% of consumer IP traffic by 2014
- Netflix = 20% of US downstream internet traffic in peak times
- Online Video Snacking: 11.4 Hour / month

**Broadcasters and Media**
- New distribution platform & interactive content – Sky Sport TV on iPad / RTL on iPhone & iPad
- Hybrid Broadcast Broadband TV: HbbTV
- New business models – Hulu 2009 revenue: $100M, 1st half 2010 revenue: $100M

**CE/Over The Top**
- Brand power
- Building application & content eco-systems
- New Streaming subscription services

**Service Provider**
- Multi-screen offering becoming table stakes
- Rising churn and Subscriber acquisition cost
- Partnerships & Vertical Integration
Connected TV Forecast (2009-2014)

Source: Quarterly TV Design and Features Report
TiVo Bows iPad App

NOVEMBER 22, 2010

ALVISO, Calif. -- TiVo Inc. (NASDAQ:TIVO - News), a leader in advanced television services, including digital video recorders (DVRs), today announced a powerful new TiVo app for the iPad. The app will be available for free from the Apple iTunes App store in the coming weeks. The TiVo® Premiere App enables you to search, browse, explore and share your favorite entertainment all without interrupting whatever is playing on your TV. Since the app works in tandem with what you are watching, iPad is now the ultimate remote control and companion device for TiVo Premiere users.

By bringing its best in class high-definition user interface to iPad, TiVo has created a true two-screen TV experience. TiVo Premiere users will get access to a full set of TiVo capabilities on iPad, providing a richer TV viewing experience for both live TV and Internet video while kicking back on the sofa. Plus, users will also be able to schedule and manage their DVR recordings while on-the-go.

TiVo Inc. (Nasdaq: TIVO)
Video moving to **Cloud**

**Netflix Deployed on AWS**

- **Content**:
  - Video Masters
  - EC2
  - S3
  - CDN

- **Logs**:
  - S3
  - EMR
  - Hadoop
  - Hive
  - Business Intelligence

- **Play**:
  - DRM
  - CDN Routing
  - Bookmarks
  - Logging

- **WWW**:
  - Search
  - Movie Choosing
  - Ratings
  - Similar

- **API**:
  - Metadata
  - Device Config
  - TV Movie Choosing
  - Mobile iPhone
Google TV
Introducing Cisco Videoscape

Integrated TV Experiences
Across Devices, Networks & Content

Investment Protection
Extended to Legacy Infrastructure

Cloud + Network + Client
Quality of Experience

Cisco Videoscape
Competitive Differentiation

- Unified experience beyond TV
- Unified experience beyond Android & Apple devices
- Universal Guide
- Search with VoD catalogue & DVR recordings
- SP customized UI & UX
- Quality of Experience

Did We Mention DVR?
Consumer IP "discretionary" spending patterns

Fixed … Mobile

- Be informed
- Communicate
- Be entertained
- Home automation
- Assisted living
- Home office

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Open Services Platform—App-stores?

<table>
<thead>
<tr>
<th>Apps for Working Out</th>
<th>Apps for Around the House</th>
<th>Apps for Going Out</th>
<th>Apps for Managing Money</th>
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<td>8 Featured Apps</td>
<td>7 Featured Apps</td>
<td>8 Featured Apps</td>
<td>9 Featured Apps</td>
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<tr>
<td>Work out with fitness apps that</td>
<td>Let iPhone lend a hand around the</td>
<td>Find places to eat, people to see,</td>
<td>Money matters with apps that help you budget, save, and spend smart</td>
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Apple Store Worldwide Revenues ($ in MM) (Figure 3)

![Graph showing Apple Store Worldwide Revenues (in millions) from 2004 to 2011. The graph shows fluctuations in revenues and year-over-year change.](image)
IP Managed Services

Home Gateway

Multi-use Options

- SmartPlug
- Internet Enabled TV / DMA
- Family Room STB
- USB Flash Drive / Disk Storage
- File Server
- Thermostats
- Alarm Panels
- UPnP A/V / DLNA Media Server
- Internet Radio
- USB 2.0
- VoIP SIP/IMS Analog Phones (FXS)
- Broadband Internet
- 802.11n WiFi
- 10/100/1000 Ethernet
- Z-Wave / ZigBee
- Sensors (Smoke Detector, Radiator Valve)
- eHealth
- 3G/4G Mobile Data Internet
- Smart Meter
Cisco’s Service Provider Business Architectures
Redefining the SPs’ Value Proposition in Two Key Value Chains

Managed/Cloud Services
NGN Infrastructure
Video and Connected Home
Mobile Internet

Business to Business
Business to Consumer
OTTs are benchmarking SPs

Recently the FCC adopted a version of net neutrality in the right direction. The focus is on fair-play within and between the ISPs’s network.

Delivering Internet video in scale creates costs for the ISPs and the Internet video suppliers. ISPs need to ensure that they have a realistic service level agreement with their CDN partners, to let in the bits their customers expect.

As long as we pay for getting the bits, we don’t think they should be able to use their economic leverage to make us pay them to let in the bits their customers want. As long as we are paying for the bits, the ISP’s network, and requiring us to pay, the ISP’s needs in other parts of their business are inappropriate reflection of their last mile exclusive. Is it open, regional, no-charges model should shut off a certain ISP unless those ISPs pay the same voluntary agreement on this open, regional, no-charges model, but without any commitment to maintain it going forward.

Tomorrow, we’ll publish on our blog ongoing performance statistics about ISPs collected from our 20 million subscribers detailing which ISPs provide the best, most consistent high speed internet for streaming Netflix. We can tell you now, though, that for our subscribers streaming Netflix, Charter is the highest-performance ISP in the United States.
Next Generation Content Delivery Platforms
- Customizing CDN for the marketplace

Simon Orme, BT Wholesale
Jean-Christophe Dessange, Cisco

September 2010
End-to-End Network Intelligence
Network Monetization, Optimization, and Service Velocity

Cisco solutions help you attract new customers, retain existing customers, and move all customers up the value chain.
Mobile Internet: It’s there…

More Mobile Devices

By 2014…

More Mobile Data

>5B devices + M2M

39-fold traffic increase

Enhanced Computing

Rich Media Apps/Content

Mobile outgrows Fixed 2.4X

Video = 66% of traffic mix

3,900% Increase in Data Traffic from 2009–2014

Packet Core Economic Value

Cost Savings
- CAPEX
- OPEX

Monetization
- Revenue

Incremental Core Investment

Intelligent Packet Core

Radio Backhaul

2G/3G

LTE

RAN

"Off-Net" Over-The Top Content

"On-Net" Managed/Hosted Content
MONETIZATION: Maximize Revenue With Tiered Prices
High ARPU from power users; Grow TAM to low-end

A business case developed by Cisco with Network Strategy Partners projects a US operator with 1.5 million mobile data subscribers would grow to 2.2 million subscribers (47% growth), increase revenue by US$22.9 million per month, and realize an ARPU increase of US$6.85 per month (14% increase in ARPU).
We Are at the Very Beginning of a Major Shift

Cloud total addressable market estimated at $70B in 2010—10% of Data Center market…IDC 2011

By 2015, 50% of all CIOs expect to operate the majority of their applications/infrastructures via the cloud …

Gartner 2011
Service Providers: Unique opportunity in converged Network-IT Cloud services

**Typical Players**

- Internet Companies ("OTT")
  - Windows Azure
  - Amazon Web Services
  - Google

- Service Providers
  - AT&T
  - Swisscom
  - TeliaSonera
  - Deutsche Telekom
  - BT

- Systems Integrators & Server Vendors
  - HP
  - IBM

**Unique Assets - Competitive Advantage**

- Internet Companies ("OTT")
  - Global Footprint
  - Massive Scale
  - Fast Moving

- Service Providers
  - End-to-End Network/IT
  - Security & SLAs
  - Application QoS to CPE

- Systems Integrators & Server Vendors
  - Strong SI Capability
  - Enterprise Trust
  - SMB Channels/Brand

**Challenges**

- Internet Companies ("OTT")
  - Stability Concerns
  - Security & privacy

- Service Providers
  - Priced higher than OTTs
  - Professional service capabilities vs. large SIs

- Systems Integrators & Server Vendors
  - No End-to-End Control

Source: Cisco IBSG SP
Cisco’s Cloud Strategy
Addressing Our Customers’ Business Challenges

Deliver products, solutions & services to organizations to build secure Clouds

Enable Service Providers to deliver secure Cloud + Network solutions and services to customers

Advance the market for Cloud by driving technology innovation, open standards and ecosystem development
Unified Service Delivery: Transforming Services with a Secure Virtual Experience

Secure Virtual Experience

Unified Service Delivery

SP Data Center

IP NGN

Entertainment

Information

Collaboration
Unified Service Delivery
Trusted Pathway to Cloud Service Offers

Unified Computing
- Unified Computing System
  - Nexus 1000V

Virtualization
- Nexus Family

Unified Fabric
- Nexus Family

Unified Service Delivery
- SP Data Center DC—CO—VHO
- Communication IP NGN

Foundation Technologies
- IOS, IOS-XR, Medianet
- APM, WAAS, Mgd. Security
- Video Delivery Product Suite
- CRS / ASR Families
- Network Intelligence and Quality
- Security and Application Performance
- Media Aware Distribution
- Peering and Interconnect
“Service Aware” IP NGN

- VQE – Error Repair & Fast Channel Change
- Integrated Caching & Streaming
- Inline Video Monitoring
- High Density for VoD Bandwidth Requirements
- Best-in-Class Multicast Replication & QoS for Broadcast Video

- Flexible Multiple applications – scalable and adaptable architecture
- Personalized Experience
  - Virtual personal channels
  - Personalized ads
- Content Choices
  - VoD, Online, User generated content

- Error Repair at edge
- Integration of Error Repair at edge

- Error Repair & Fast Channel Change (VQE)
- Internet Cache
- TV Cache
- Video Probe

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Cisco’s Service Provider Strategy
Focus on Key Market Transitions
Addressing the fundamentals

Monetization

Optimization

Innovation

Operational Excellence