Cisco Day – Sophia Antipolis

June 10th, 2016
Agenda

08h30 - 09h15  Welcome
09h15 - 09h45  Introduction : Cisco SP Strategy, Priorities and Innovation
09h45 - 10h15  Cisco and Opensource
10h15 - 10h45  Break
10h45 - 11h30  Datacenter Solutions
11h30 - 12h15  Cisco NFV infrastructure
12h15 - 13h45  Lunch
13h45 - 14h45  Enabling Cross-Domain Service Activation
14h45 - 15h45  Virtualizing SP Services
15h45 - 16h15  Break
16h15 - 17h00  Update on IOT solutions
16h30 - 17h30  Co-Innovating with Customers
Cisco Days Introduction
Cisco SP Strategy, Priorities and Innovation

Agnès Dessaints
@AgnesDessaints

June 10th, 2016
Mobile Internet Traffic Growing Rapidly

<table>
<thead>
<tr>
<th>Year</th>
<th>Exabytes per Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>3.7 EB</td>
</tr>
<tr>
<td>2016</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td></td>
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53% CAGR

31 EB

Global Service Provider Revenue Flat

-0.5 to 2% CAGR

The Mobile Landscape Expanding

<table>
<thead>
<tr>
<th>Year</th>
<th>Mobile Connections</th>
<th>Faster Mobile Speeds</th>
<th>More Mobile Users</th>
<th>More Mobile Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>7.9 Billion</td>
<td>2.0 Mbps</td>
<td>4.8 Billion</td>
<td>55% of Traffic</td>
</tr>
<tr>
<td>2020</td>
<td>11.6 Billion</td>
<td>6.5 Mbps</td>
<td>5.5 Billion</td>
<td>75% of Traffic</td>
</tr>
</tbody>
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OTTs Capturing The Value

- Music
- Messaging
- Transport
Cisco Service Provider Strategy
Enable Service Provider Business Transformation

Increase Revenue
Enable Service Innovation
Grow Market Share / Expand Addressable Market
Create New Business Models

Reduce Operating Expense
Automate Service Delivery and Operational Processes
Optimize Infrastructure / Match Deployed Capacity to Demand
Increase Resource Utilization

Enhance Agility
Support Flexible Resource Deployment / Provisioning
Accelerate Time to Market / Time to Revenue
Enable Customer Self Service
Pillars of Innovation – Build, Buy, Partner, Invest & co-dev approach

- **Build**
  - R&D spend ~13% of revenue, ~7 Milliards
  - 25,000 Engineers

- **Buy**
  - Business Divestiture: Linksys
  - ~170 acquisitions

- **Partner**
  - ~2B in Equity Investments
  - Top Corporate Venture in # of deals, # of exits, and dollar invested

- **Integrate**
  - Enhanced governance: with Executive accountability
Cisco Reactive Network
Interaction Among all Components of Service Creation & Delivery
Architecture for the Open Network
Open, Elastic, Application and Services

- Compute, network and storage
- Cisco SP core networking, video, cloud and mobile assets
- Open, standards-based
- Automation, security and orchestration
- Interoperable with multiple vendor VNFs
- End-user and system applications
- Delivers new services (B2B/B2C)
Cisco Evolved Programmable Network

Silicon
No Trade-Off: Both Performance + Intelligence
High Bandwidth for Video vs. High Transaction Rate for SDN

Systems
Common Technology Foundation for CapEx & OpEx Savings
Converged IP + Optical Unified Access

Software
Applications and Services Move into the Cloud
Virtualization for Scale SDN for Control and Efficiency

End-to-End Automation / Orchestration

Cisco Investments

- Custom NPUs & Fabrics
- Coherent Optical DSPs
- Silicon Photonics (SiP)

- NCS 6000, ASR 9900, ASR 900
  Integrated DWDM
  nV Optical with nLight Restoration

- NFV, SR
  Virtualized IOS-XR
  Open APIs

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Cisco Optical Technology Investments

Prime NMS, EPN-M, nLight™

Coherent DSP

Performance vs Time to Market

100G → 250G → 600G
SW Selectable

Pluggable Optics
Deferred Cost

ROADM
Any to any connectivity

PCE, CTP, Multi layer Planning tool, Tail-f NCS

eXR
Thin, Agile and Programmable Software

Cisco leadership in Metro DWDM

ASIC Evolution

CPAK

CFP2
Cisco Evolved Services Platform

- Model driven, end-to-end service lifecycle and customer experience focus
- Seamless integration with existing and future OSS/BSS environment
- Loosely-coupled and modular architecture leveraging open APIs and standard protocols
- Orchestration across multi-domain & multi-layer provides centralized policy and services across entire network

Service-Intent API

Orchestration, Service & Policy Implementation

- Branch/CPE Control
- Multi-layer WAN SDN
- DC & NFV Control
- VNF Manager

SDN / APIs

- CLI/SNMP
- Netconf/YANG
- BGP
- Segment Routing
- PCEP
- Openflow
- Openstack / vCenter

CPE | Metro and Access | WAN | Data Centre
---|------------------|-----|----------

Multi Vendor End to End Management & Orchestration (Physical & Virtual)
Cisco’s Role in NFV

Open Standards Based Platform

Driving Ecosystem

- DC and Networking
- Carrier Grade Solution
- Contributing in Standards
- Multiple VNFs
- Partner Ecosystem
- Pre-Integration and Validation

Openstack

OPNFV

OPENDAYLIGHT

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What Is DevNet?

Creating a Community of Software Developers who Leverage Cisco Technology in their Work

Enabling a Robust Developer Ecosystem

Engineering Platform APIs  
SDKs and Tools  
Developer Support  
Community Management

Build Compelling and Innovative Apps
Total membership = 370,000

DevNet Zone at Cisco Live – all theaters

Revamped Portal
- Significantly improved developer experience for strategic technologies
- 600k unique visitors YTD
- 230k average page views per month

On boarded 54 new product sets

Created 64 API Docs
50 New Learning Labs
(learning labs, getting started guides, hello world)

Sandbox usage = 7,668 developers using 35 new labs

Conducted 8 Hackathons – last 6 months
(skill zone, API World, Hack Zurich, IOT World Europe, Cancun CL, Paris, Dubai, Hack-Arizona)

DevNet Kids, IEEE Women in Engineering hackathon

Standards and Open Source:
First IETF hackathon, Open Daylight, OpenStack
Global context and new security challenges

- Increases vulnerabilities and expands the attack surface with the advent of LTE and IoE
- Opens SPs to experienced, sophisticated, and well-funded attackers
- Requires a new approach to SP security

Cisco Strategy: Covering the Entire Attack Continuum

Before:
- Discover
- Enforce
- Harden

During:
- Detect
- Block
- Defend

After:
- Scope
- Contain
- RemEDIATE

Go to: http://blogs.cisco.com/talos
Digitization Trends Across Major Industries

**Enable New Business Models**
- Create recurring revenue models with increased customer intimacy

**Transform Business Processes**
- Higher productivity by predictive maintenance and better asset utilization

**Where is the value**

**Connect the Unconnected**
- 50 Billion Smart Connected Devices by 2020

**Hyper-connectivity, IT and OT convergence**

**Over 60% of the IOT value** will be generated in Enterprise deployments

**<1% of data** currently used, more can be used for optimization and prediction

**Interoperability across silo’ed systems** required to capture 40% of IOT value

Source - McKinsey: The Internet of Things: Mapping The Value Beyond The Hype
What Service Providers Think of IoT

- **2.2B** Cellular Devices Expected by 2024
- **95%** Planning to Deploy IoT Within 3 Years
- **63%** Fall Behind Competitively Without IoT
- **50B** Expected IoT Devices by 2020

- Vodafone’s M2M/IoT business line grew **2x** as fast as overall revenue, at 25%
- **21.2%** Growth of AT&T’s Connected Devices

- Service Providers can address ~50% of the IoT opportunity
- SP can capture IoT opportunities through combination of connectivity, professional & managed services (vertical offers, platform services)

Source: Informa Telecoms & Media

Graph showing new growth areas:
- Connectivity
- Platforms
- Application Specific Solutions
- Business Integration

Bar chart comparing growth from 2015 to 2020.
Shift in Revenue Opportunity Expected

Source: Informa Telecoms & Media
Orange / Cisco - IoE/LoRa Project Overview

Orange OSS/BSS

ZTD and Connectivity MGMT Subsystem

- NTP
- AAA/CA/RA
- DHCP
- Syslog
- VPN Connectivity

Field Network Director

LoRa Network Subsystem

- App Connector
- App Connector
- LoRa App Router
- LoRa Network Server

LoRa Network MGMT and Application Enablement

GW ZTD and LRR Software Management

Backhaul IP Orange, Including 4G/LTE

- Cisco LoRa Gateway
- Unlicensed LoRa/ISM Radio
- LoRa Endpoints

Applications

LoRa Network

Server

LoRa App

Router

App

Connector

App

Connector

Field

Network

Director

VPN

Connectivity

NTP
AAA/CA/RA
DHCP
Syslog

GW ZTD and LRR Software Management

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Conclusion

• Cisco is fully committed to SP Transformation

• Cisco aggressively moving to Software:
  • Most of our acquisitions
  • SaaS & PaaS development (Meraki, OpenDNS, Jasper..)

• Cisco has fully embraced NFV:
  • Openness is key
  • Programmability of platforms & virtualization for IT & NFV

• Interaction with Customers moving to co-devpt

Dave Ward – Cisco Chief Architect: « Networks on demand are the future of SDN »
Thank you