# Development Trend from Cisco System
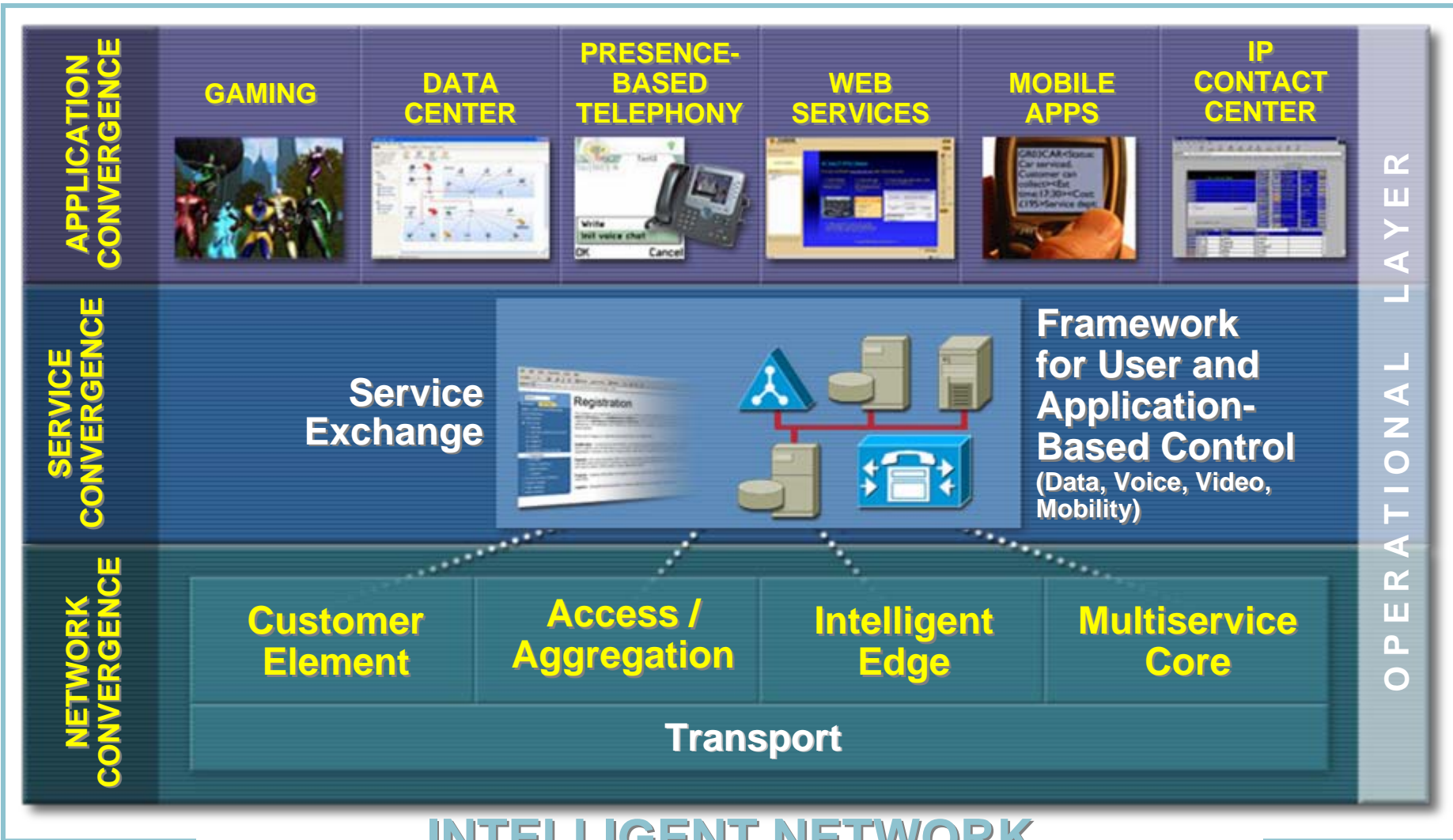
## Kevin Yin

### NGN Solution Architect,

### Cisco System

**CISCO SYSTEMS**

# Cisco IP NGN Layer Architecture

ITU-T

**CISCO SYSTEMS**

**APPLICATION CONVERGENCE**

| GAMING | DATA CENTER | PRESENCE-BASED TELEPHONY | WEB SERVICES | MOBILE APPS | IP CONTACT CENTER |

**SERVICE CONVERGENCE**

Service Exchange

Framework for User and Application-Based Control (Data, Voice, Video, Mobility)

**NETWORK CONVERGENCE**

| Customer Element | Access / Aggregation | Intelligent Edge | Multiservice Core |

Transport

**OPERATIONAL LAYER**

## INTELLIGENT NETWORK

# Cisco IP NGN is powered by Next Generation IP technology

ITU-T

CISCO SYSTEMS

| CUSTOMER ELEMENT | ACCESS / AGGREGATION | INTELLIGENT IP / MPLS EDGE | MULTISERVICE IP / MPLS CORE |
|---|---|---|---|
| **HOME NETWORKING** Link-sys | UBR Cisco 10000 — Cable/DSL | Cisco 12000 | |
| **SMALL/MEDIUM BUSINESS** Hosted / Managed ISR/ IPT | MGX 8800 AS5XXX — FR / ATM / Media Gateway | | |
| **ENTERPRISE/ BRANCH** Cisco ISR | Catalyst & 7600 — Metro Ethernet | Cisco 10000 | Cisco CRS-1 |
| **HOT SPOT** Aironet | IP RAN / STP — Wireless | Cisco 7x00 | |
| **MOBILE** | Transport — ONS 153xx MSPP — TDM / Ethernet | ONS-15454 MSTP / MSPP | Cisco ONS 15600 MSPP |

**IP Technology Innovation:** ASIC, IOX, MPLS, ISR, CRS-1,Carrier Ethernet, IPoDWDM

**Systematical Baseline Feature:** QoS, Security, IPv6, Multicast, HA, Virtualization, OAM

**20 year IP expertise & #1 in:** Routing, Switching, IP telephony, MetroE, Cable, WiFi, Security, home networking

# Consumer and Business Applications:
## Any Service, Any Device, Anywhere

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Consumer | SOHO | Enterprise | Wholesale

**Voice  Video  Data**

At Work, at Home, on the Road

**Unified SERVICE Platform**

CISCO SYSTEMS — **IP DNA**

LINKSYS® A Division of Cisco Systems, Inc. — **Home Networking DNA**

dynamicsoft. The Power to Communicate. The Freedom to Innovate.™ — **IMS DNA**

Scientific Atlanta A CISCO COMPANY — **Video DNA**

# Video is Key for NGN application Delivery

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High Definition

Video Phone / Video Conferencing

Video Streaming

Video on Demand / TV on Demand / nPVR

Gaming / Interactive TV

Video to Other Devices

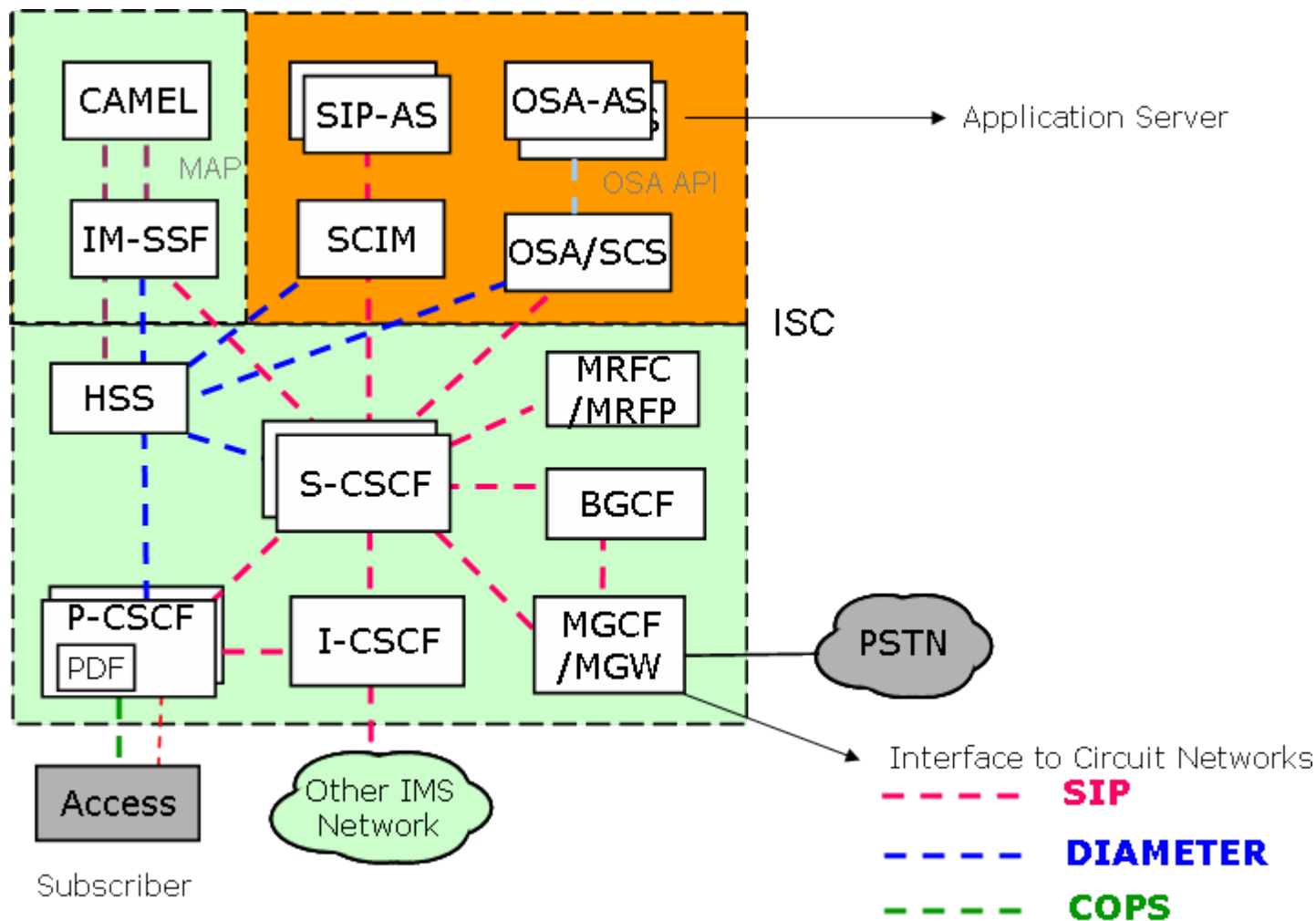Managed Video Applications

Video Communications

"Over the Top" Video

Easiest

Most Difficult

# IMS Service Framework
## Vertical Approach

Interrogating-CSCF
Serving-CSCF
Proxy - CSCF
Home Subscriber Service (HSS)
OSA Open Services Architecture

# Sprint PCS Launches Ready Link$^{SM}$
## -- Push To Talk

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o Based on Dynamicsoft's IMS platform
o Runs on PCS Vision IP data network
o PTT service identified from beginning
o Commercial on 11/03 with 100% availability
o Over 1M subscribers 4/05
o ARPU +$10 per month

*"Sprint is one of the first to deploy services based on an IMS service structure. Our push-to-talk service follows an IMS service structure."*

Oliver Valente, CTO & SVP, Network, Sprint

Similar service by using Vertical approach for
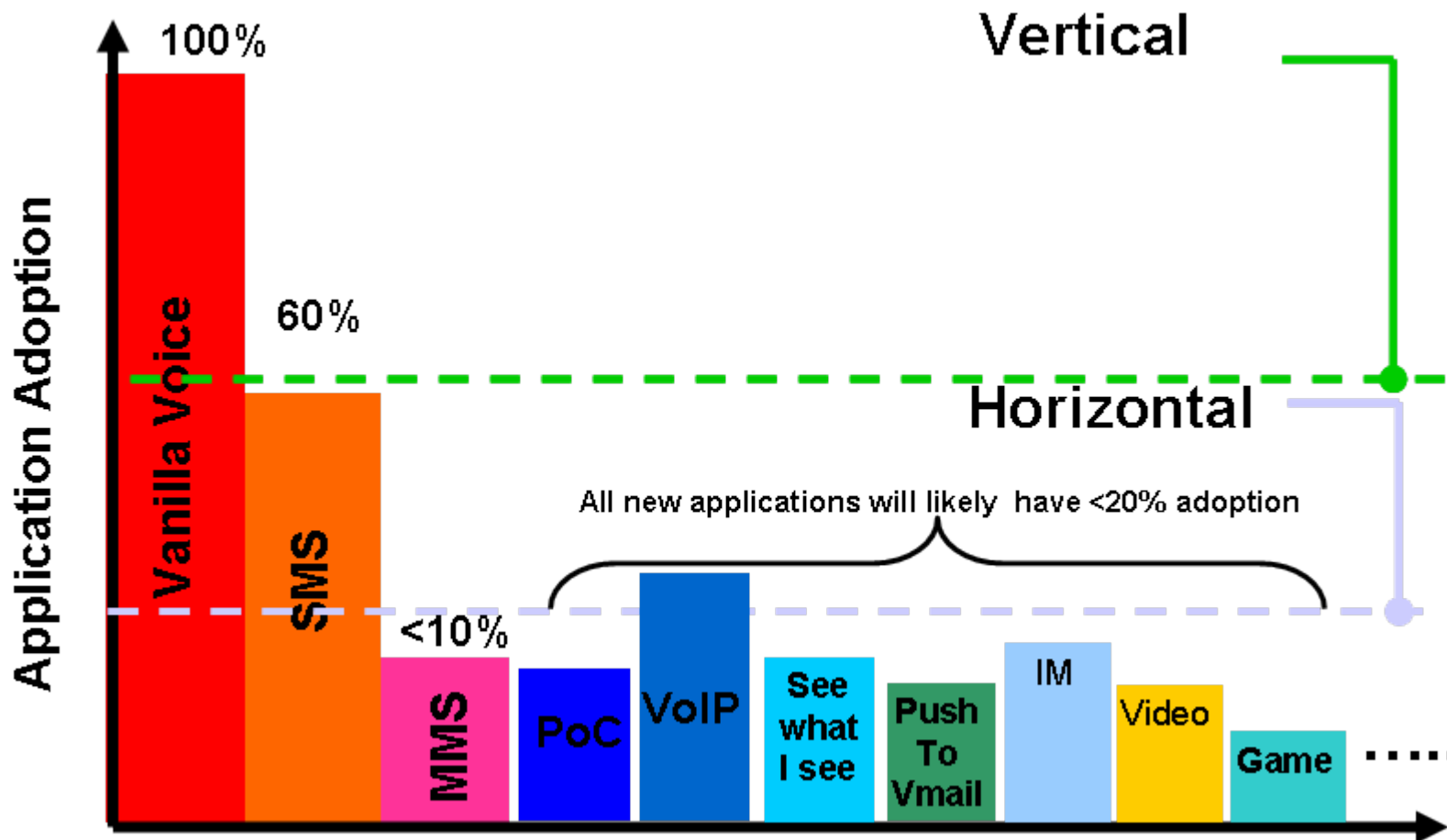
# IMS Vertical and Horizontal Approaches

Vertical Solution Takes time
Hard to identify new killer application
How to max the reuse & ROI ?
How to Avoid Silo "IMS" solution?

New to **SP** planning & network dept
Need strong business motivation
Right partnership & market dynamics
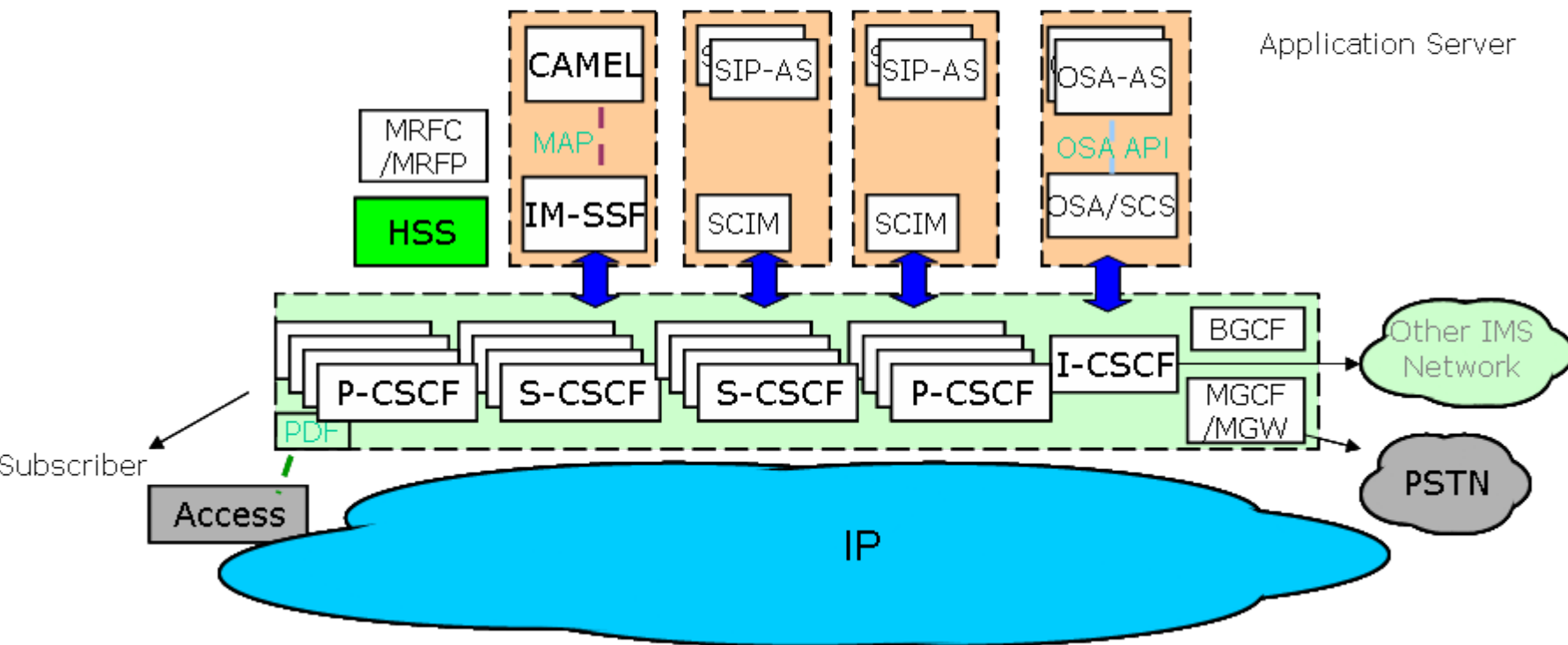
# Service Exchange – Requires Support
## Both IMS & Non-IMS for Businesses & Consumers

**CISCO SYSTEMS**

## IMS
### Applications

Push to Talk/VoIP

Dual Mode Telephony

Click to Dial

Buddy List

Presence-Based Video
Conferencing

Location based Info services

Internet Application

## Non-IMS
### Applications

IPTV

Video on Demand

Interactive Gaming

P2P Services

Managed VPN

Managed Security

Videoconferencing

Streaming Audio/Video

Internet/Email

Skype/VoIP

SMS/MMS

# Service Exchange Framework Approach
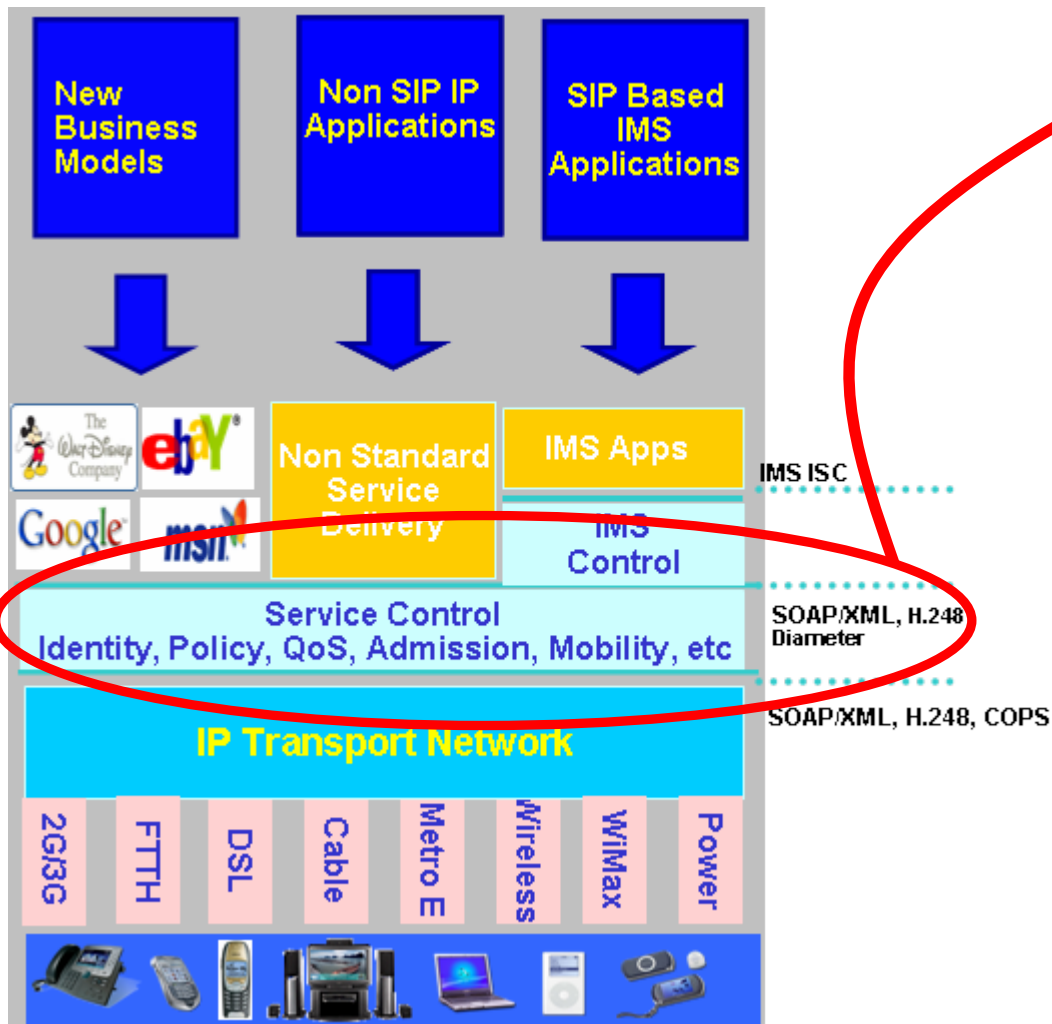


## Cisco SEF

o  Cisco Unique Service aware Session Control Layer

o  Manage "Unsupported" applications, Non Standard and IMS applications

o  IMS compliant architecture and interfaces

# Applications Traffic Mix
## Extends Beyond SIP Applications, Coexistence Needed

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Bandwidth %

Service Revenue Potential

Baseline Customer Expectation, Control, Efficiency Issues

SIP

**Multimedia** — **Messaging— IM, SMS, MMS** .... **Game** **Video/IPTV** **Business IP VPN** **Web—P2P, HTML**

**IMS** — **Non-IMS**

Portal — Service Control Engine — Broadband Policy Manager — Billing — Identity — Subscriber Database — Policy Definition

Registration

**Policy / Service Layer**
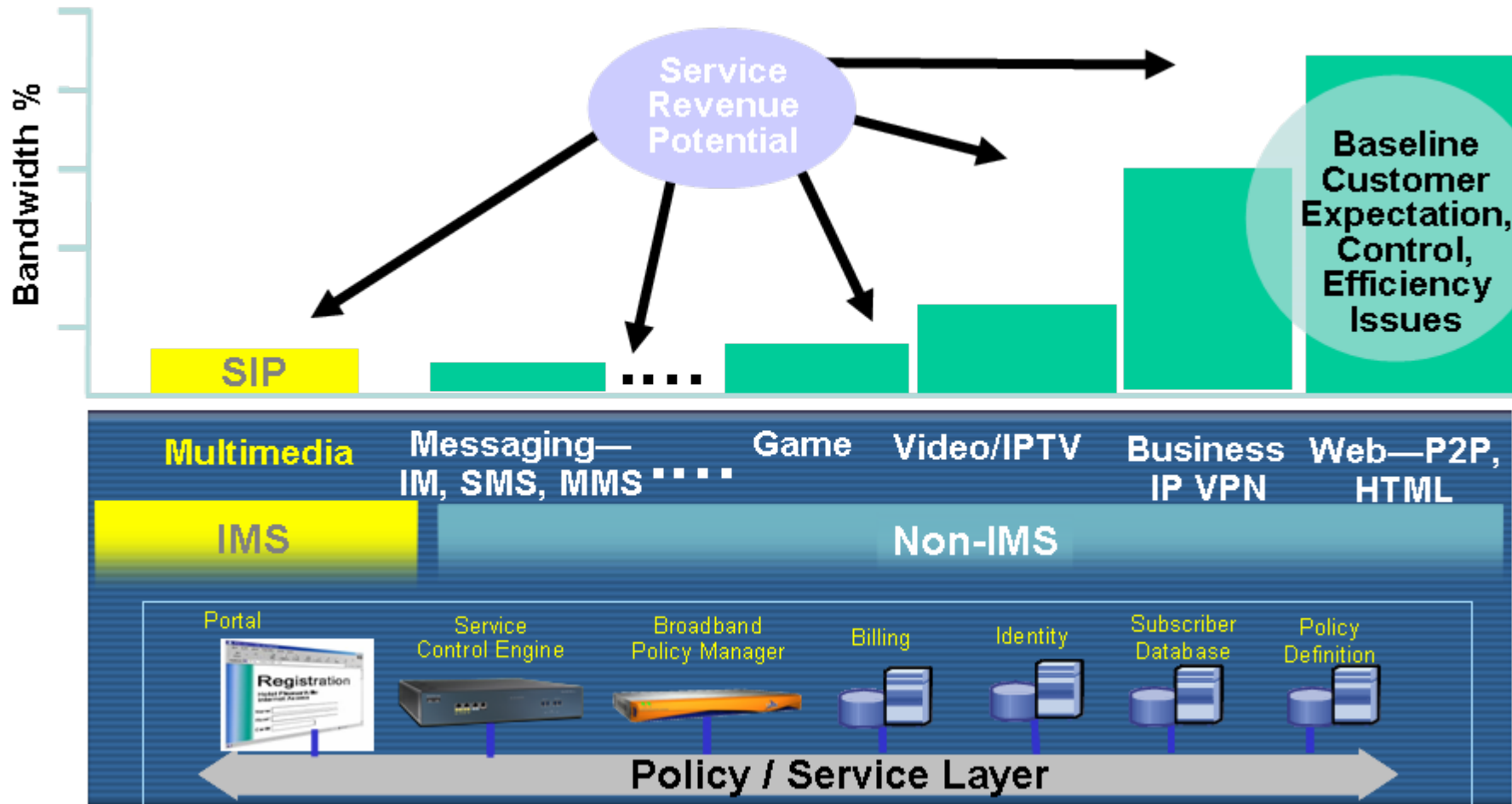
## Service Exchange Framework

# Cisco Service Control Engine
## – Total Visibility & Control
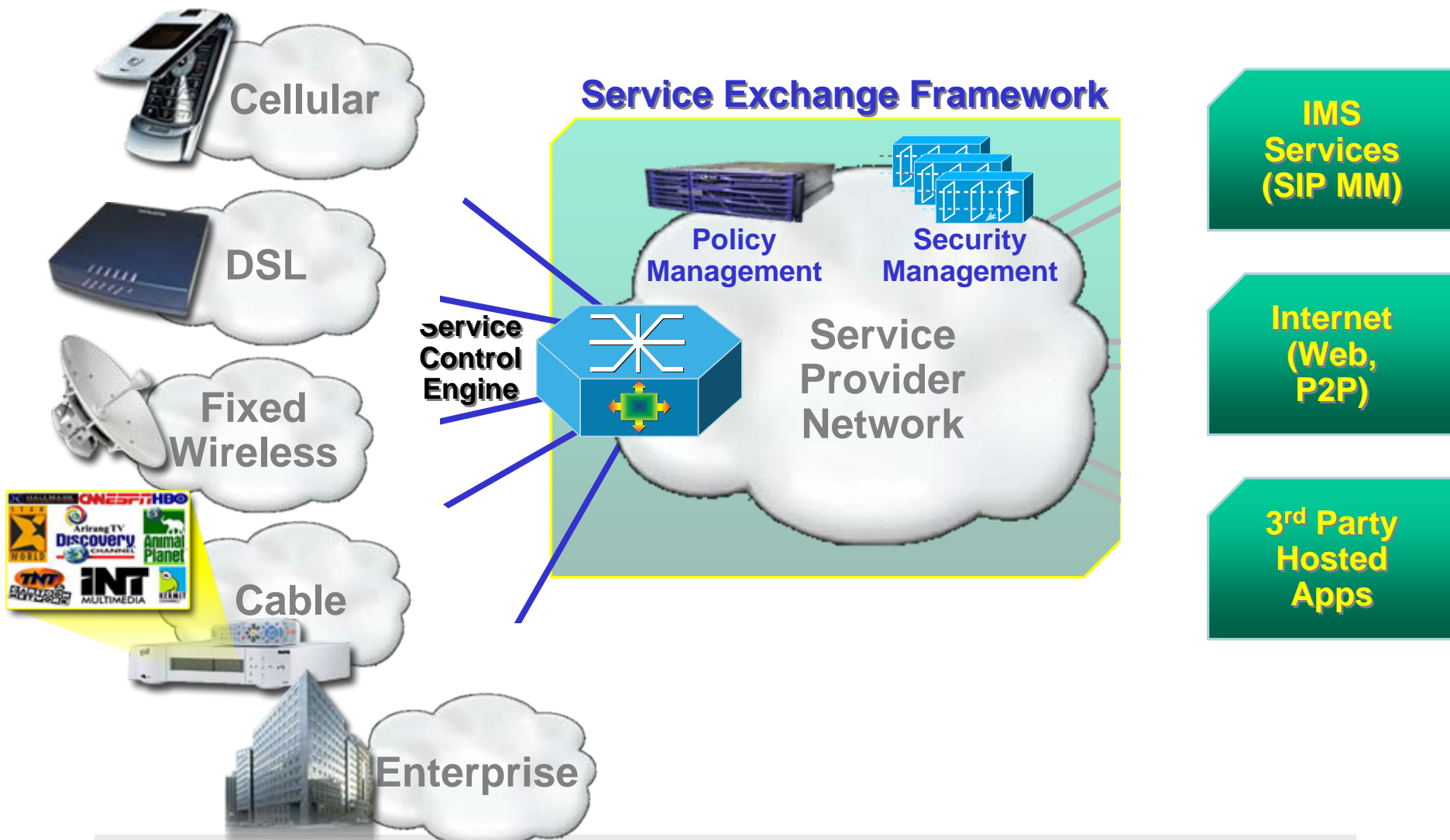
**ITU-T**

**CISCO SYSTEMS**

Cellular

DSL

Fixed Wireless

Cable

Enterprise

**Service Exchange Framework**

Policy Management

Security Management

**Service Control Engine**

Service Provider Network

**IMS Services (SIP MM)**

**Internet (Web, P2P)**

**3rd Party Hosted Apps**

# Selective Network Integration of Service Intelligence
## Maximizing Scale and Efficiency

**CISCO SYSTEMS**

## Service Exchange

| MRPF | S-CSCF | HSS/HLR | MGCF | Policy Mgn | Mobile Mgn |

PDF  I-CSCF  ID Mgn  Content Filtering

PEF  DPI

PDSN  GGSN  P-CSCF  Video CAC  IP2IP GW  SBC  DDOS Protection

## Network Convergence

ISR  7600  1000  XR 1200  CRS-1

# Selective Network Integration of Service Intelligence
## Maximizing Scale and Efficiency

**CISCO SYSTEMS**

**Service Exchange**

| MRPF | S-CSCF | HSS/HLR | MGCF | Policy Mgn | Mobile Mgn |
|------|--------|---------|------|------------|------------|
|      | PDF    | I-CSCF  |      | ID Mgn     |            |

**Network Convergence**

PEF

DPI

Content Filtering

PDSN  GGSN  P-CSCF  Video CAC  IP2IP GW  SBC  DDOS Protection

ISR

7600

1000

XR 1200

CRS-1
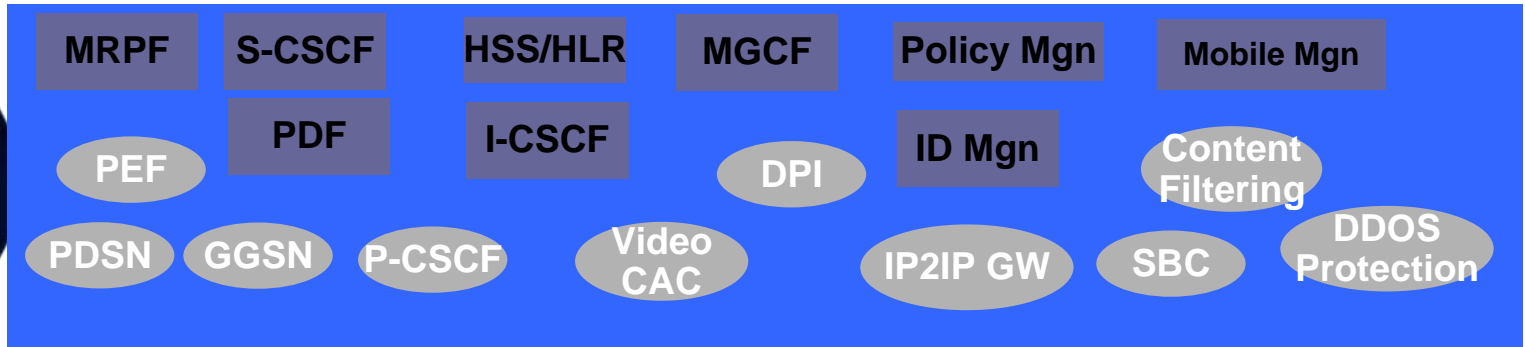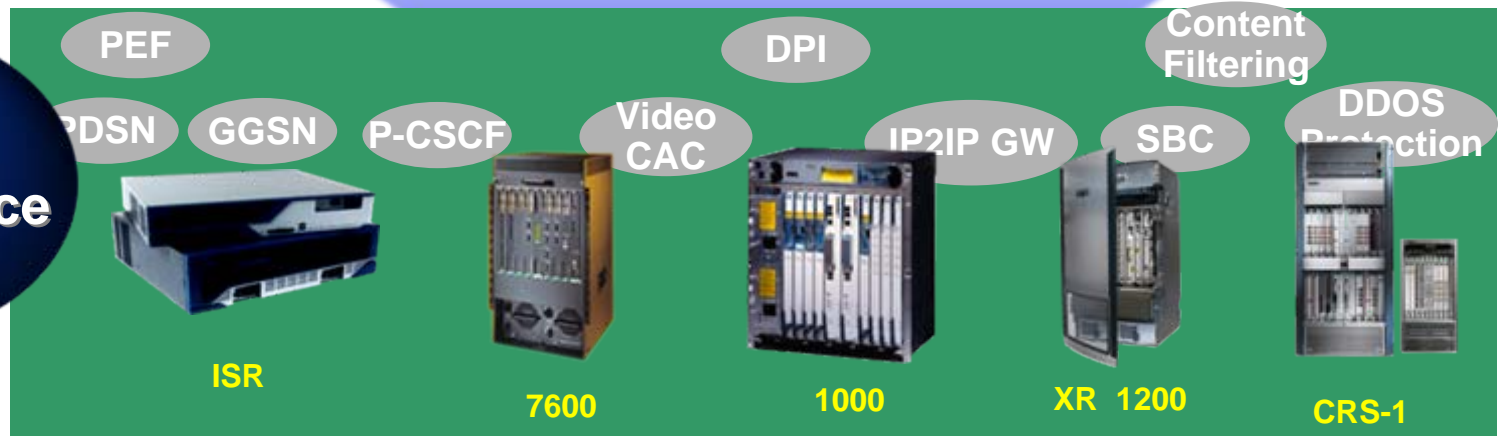
# Industry's First Carrier Router with Integrated Session Border Control

o **Multiservice scale**
   - No need to create overlay network;
   - Eliminate additional appliances
   - Easier operations/lower costs
   - Native IOS XR Implementation

o **Flexible and open architecture**
   - SP-SP Peering and SP-Access deployments
   - Integrated or distributed signaling deployment

o **Continuous system operation**
   - "Always on" IOS XR with stateful redundancy

o **Secure virtualization**
   - Secure physical or logical isolation of services

**Investment Protection
for deployed
Cisco 12000**

**Supports BOTH
IMS and Non-IMS
Applications**

# Cisco Service Exchange Framework
## Case Studies – More Service

## Personalization via Self Selection



o Simplifies the end user experience

o Personalize per user including self subscription and account refresh— e.g., new consumer service activation

## Content Filtering
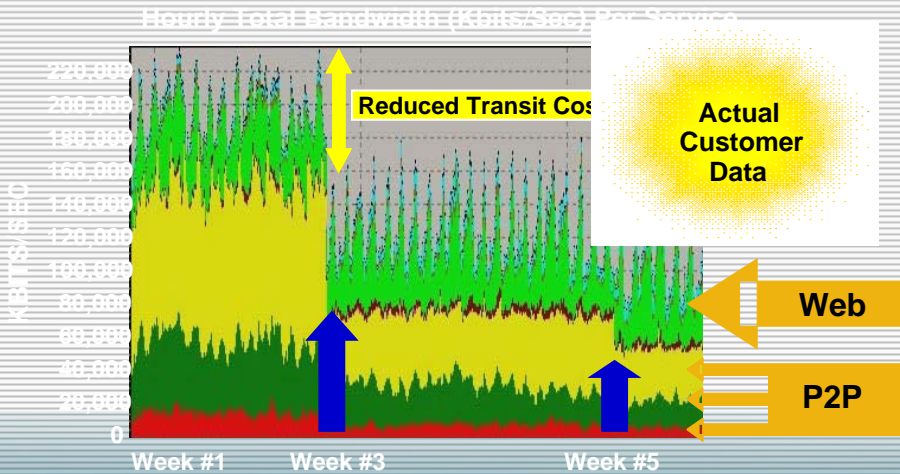


**Page Blocked! Forbidden Content Detected**

o Subscriber-managed parental control

o Basic web site blacklisting provided free of charge

o Comprehensive filtering and security for a small monthly subscription

## Service Prioritization via Deep Packet Inspection

## Efficient Management of Video Oversubscription

Reduced Transit Cos

**Actual Customer Data**

Web

P2P

Week #1    Week #3    Week #5

### Managing P2P Applications

- **Enable new business models between content and service providers**

  **Detect and manage affiliated applications and align QoS**

  **Co-branding and fee sharing**

### Video Call Admission Control

- **Preserves quality of experience**

- **Provides network-based graceful busy signal when demand exceeds capacity**

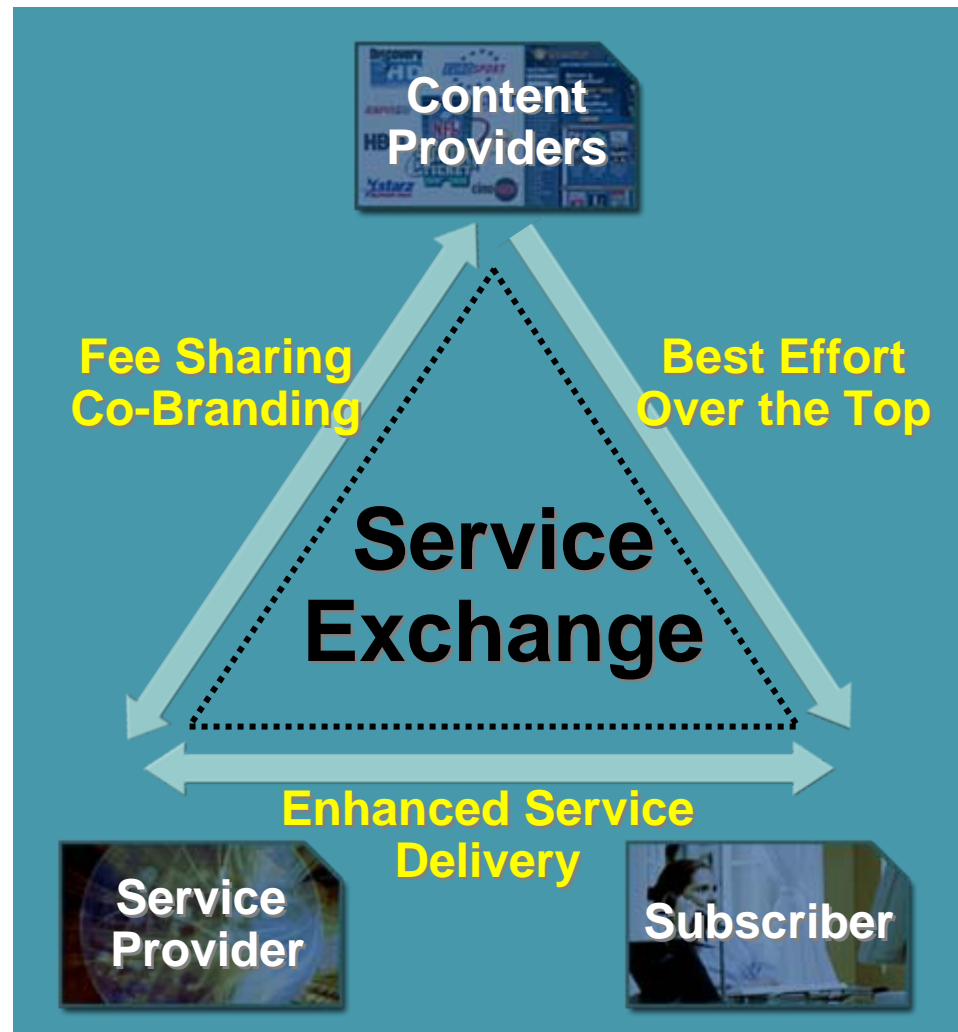- **In trials at major MSO, critical for IPTV**

Affiliated applications for co-branding and fee sharing

- Subscriber / application awareness
- Detect and manage affiliated applications and align QoS
- Co-branding and fee sharing
- Enhanced security services

**Content Providers**

**Fee Sharing Co-Branding**

**Best Effort Over the Top**

**Service Exchange**

**Enhanced Service Delivery**

**Service Provider**

**Subscriber**

# Cisco Service Exchange Success
## Across Segments, Across Continents

- Largest SIP expertise & digital video/IPTV network
- PTT / IMS CSCF – 6 SPs, 100% availability
- 60+ CMX for mobile SP customers
- 100+ SCE for wireline customers
- 450+ SP deploying 1100 Cisco PGW Softswitch.
- 50K+ broadband aggregation units deployed
- 2M+ Cisco BTS Softswitch Subscribers.
- 9M+ Cisco IP phone installed
- 10M+ video/IPTV subs over Cisco network
- 15M+ VoIP ports deployed globally
- 23M+ Digital STBs (4.4M DVR, 2.9M HD)
- 50M+ homes passed with over 240 video Head End deployed globally
- 1B+ VoD streams annually from a single MSO on Cisco networks

# Summary

IMS is a key component of NGN, but it may not be the complete NGN solution for all, Services-flexibility is key.

There are immediate NGN service revenues opportunities not supported by NGN specs yet.

Cisco IP NGN solution is powered by next generation IP technology.

Cisco SEF is uniquely positioned to help SP to navigate its IP NGN journey.

# Experiences, Poweredbycisco.