CISCO

CISCO INNOVATE
Strategic Business Technology Forum

Shape Your Business For the Future:

Powering Transformation With Cisco

Mobile Broadband Monetization and Optimization

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12 June 2012

Agenda

Market Overview

Solution and Benefits

Monetization

Optimization

Market Overview

Mobile Internet Market by 2016

1,800% Increase in Mobile Data Traffic from 2011–2016

More Mobile Connections
- > 10B devices

Enhanced Computing
- Powerful, high-bandwidth devices
- Mobile outgrows fixed

Rich Media Apps & Content
- Video grows to 70.5% of mobile data
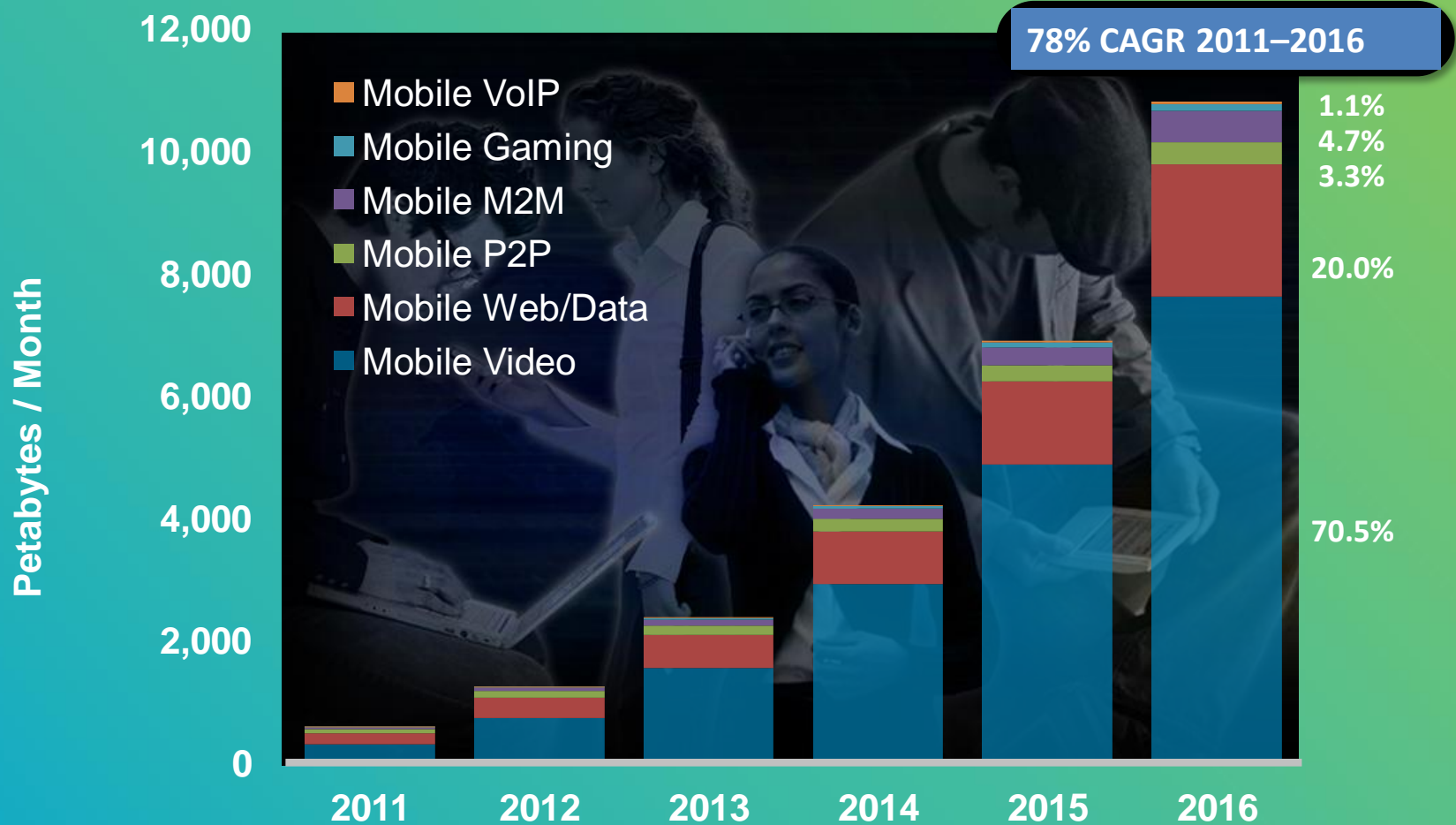
You Tube

Google

Faster Mobile Data
- >9-fold speed increase

Global Mobile Data Traffic Growth / Applications

Global mobile data traffic will increase 18X (10.8 EB/month) from 2011 to 2016

78% CAGR 2011–2016

Legend:
- Mobile VoIP
- Mobile Gaming
- Mobile M2M
- Mobile P2P
- Mobile Web/Data
- Mobile Video

Y-axis: Petabytes / Month — 0, 2,000, 4,000, 6,000, 8,000, 10,000, 12,000

X-axis: 2011, 2012, 2013, 2014, 2015, 2016

2016 percentages: 1.1%, 4.7%, 3.3%, 20.0%, 70.5%

VoIP traffic forecast to be 0.3% of all mobile data traffic in 2016

By 2016, global mobile data traffic will reach an annual run rate of 130 exabytes per year.

130 exabytes is equal to:

- 130X more than all IP traffic generated in 2000
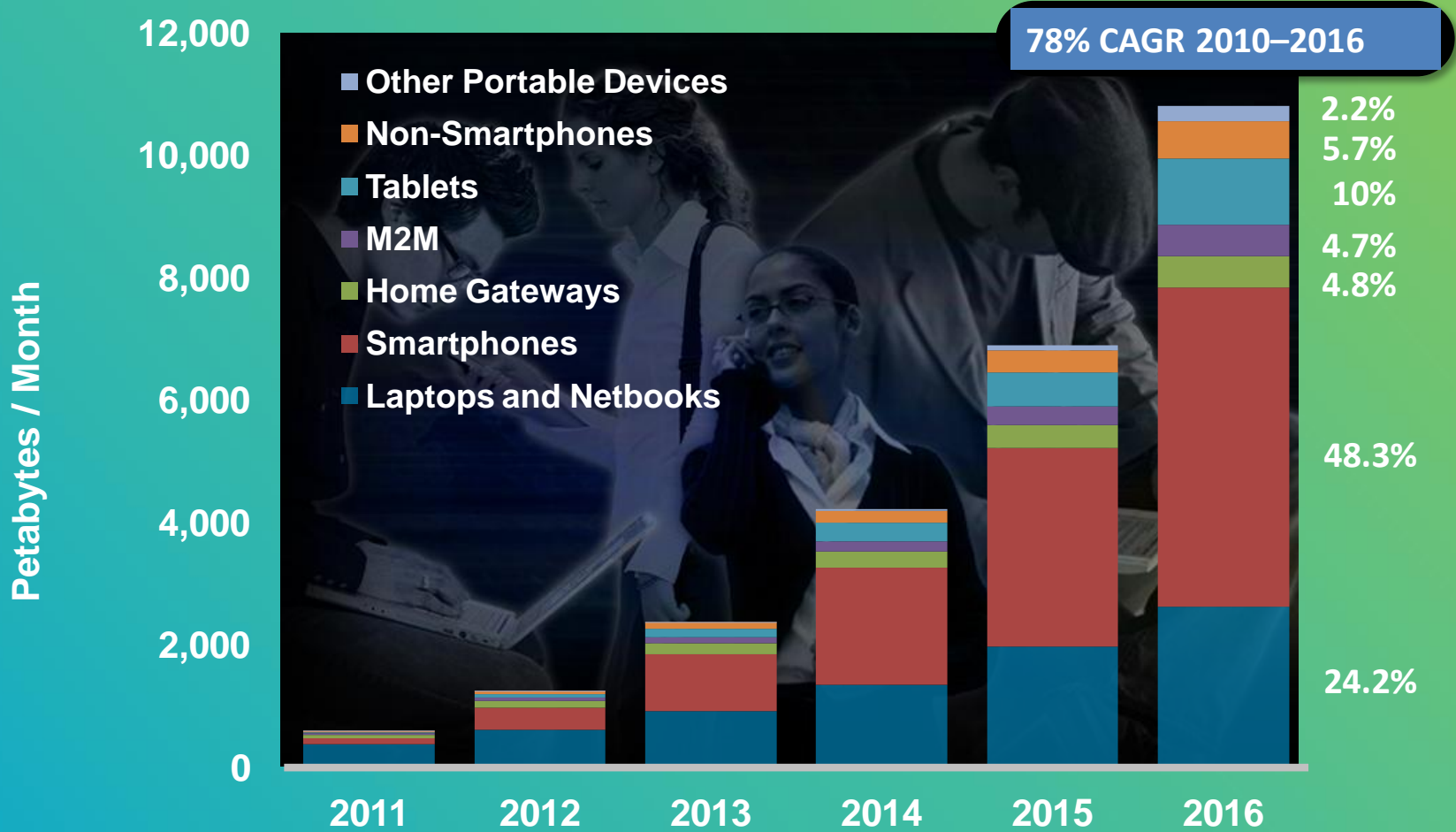- 33 billion DVDs
- 929 quadrillion SMS text messages

In 2010, global mobile data traffic nearly tripled (2.6X growth) for the third year in a row, despite a slow economic recovery, increased traffic offload, and the advent of tiered pricing.

Global Mobile Data Traffic Growth / Devices

Smartphone dominate through 2016; tablets drive 10% of traffic by 2016

78% CAGR 2010–2016

Petabytes / Month

- Other Portable Devices
- Non-Smartphones
- Tablets
- M2M
- Home Gateways
- Smartphones
- Laptops and Netbooks

12,000
10,000
8,000
6,000
4,000
2,000
0

2011   2012   2013   2014   2015   2016

2.2%
5.7%
10%
4.7%
4.8%
48.3%
24.2%

Other Portable Devices forecast to be 2.2% of all mobile data traffic in 2016

Mobile network speeds to increase >9-fold by 2016.
The average mobile connection speed (315 kbps in 2011) will grow at a 56% CAGR, exceeding 2.9 Mbps in 2016.

	2010	2011	2012	2013	2014	2015	2016	CAGR 2011–2016
Global								
Global speed: All handsets	189	315	504	792	1,236	1,908	2,873	56%
Global speed: Smartphones	968	1,344	1,829	2,425	3,166	4,102	5,244	31%
By Region								
Asia Pacific	219	337	497	732	1,101	1,697	2,608	51%
Latin America	50	125	227	396	673	1,082	1,627	67%
North America	596	1,138	1,712	2,485	3,531	4,923	6,785	43%
Western Europe	431	667	1,196	1,967	2,960	4,163	5,549	53%
Central and Eastern Europe	126	205	396	739	1,316	2,228	3,476	76%
Middle East and Africa	52	89	206	434	850	1,555	2,618	97%

Source: Cisco Global Internet Speed Test (GIST) results and other independent speed test findings

Mobile Operator's Three-Fold Challenge

Data Traffic (Cost)

Coming Profitability Gap

ARPU per Bit
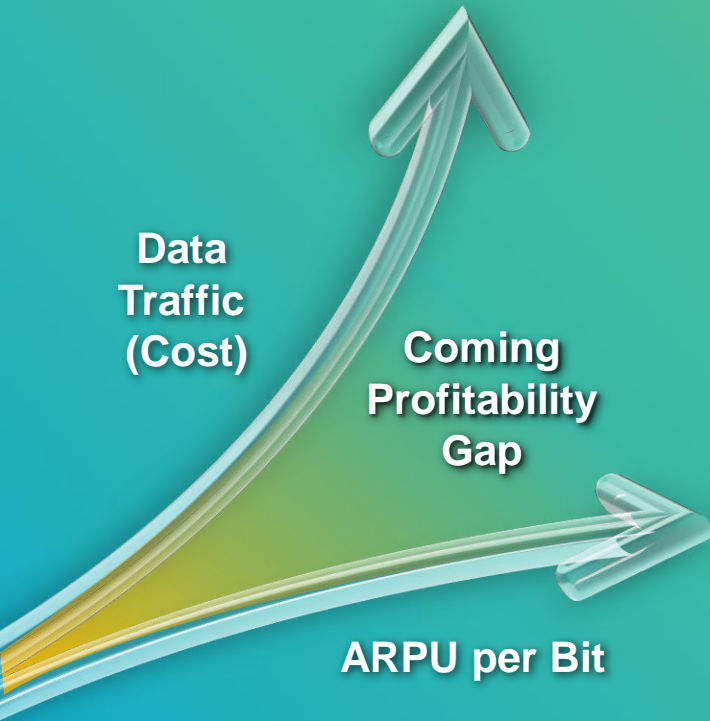
Increase Revenue

Enable Premium Services

Create new business models

MONETIZE

Reduce Costs

Manage "over the top" video
Maximize spectrum and radio assets

OPTIMIZE

Improve Customer Experience

Competitive Quality of Experience

Popular Services and Features

VIDEO EXPERIENCE

Service Provider Advantage Network Intelligence

MONETIZE **OPTIMIZE** **VIDEO EXPERIENCE**

Device Awareness
- Adaptation
- Translation
- Battery life

Mobility Control
- Application-based mobility control

Access Technology Awareness
- Access-based on applications
- Access based on roaming partner

Shape the Subscriber Experience

Location Awareness
- Roaming
- Presence
- Reachability

Session-State Awareness
- Service manipulation
- Service control and time of day

Usage Visibility
- QoS management
- Innovative service offerings

Cisco M.O.VE
Monetization, Optimization and Videoscape Experience

Mobile Videoscape Experience
Across Devices, Networks and Content

CISCO

M.O.VE

Monetization
- Premium offerings
- Backend partnerships
- Differentiated video services

Optimization
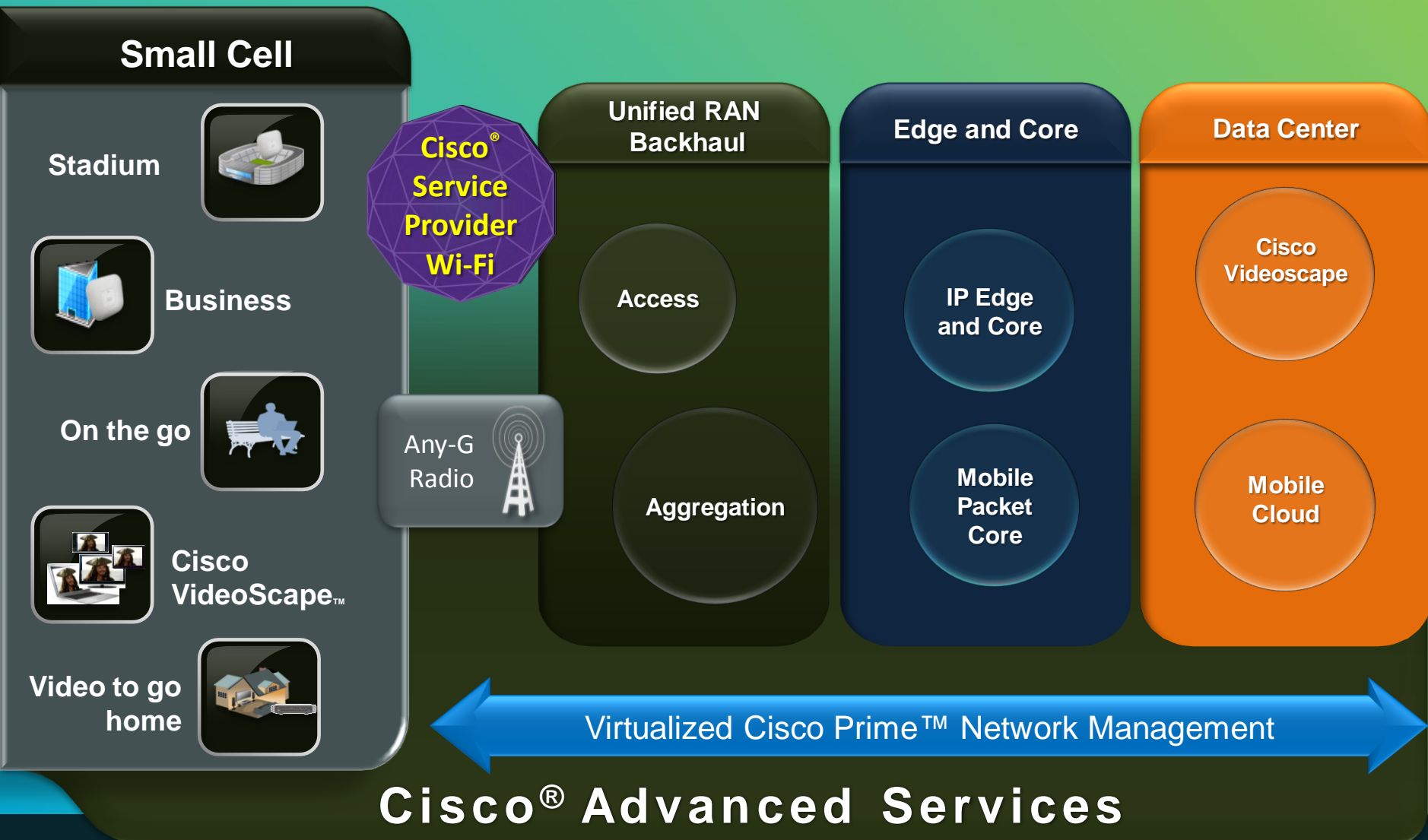- Optimal data transport
- Network awareness
- Subscriber intelligence

Comprehensive, Integrated, Intelligent

Solution and Benefits

Common Core For All Services

Small Cell

Stadium

Business

On the go

Cisco VideoScape™

Video to go home

Cisco® Service Provider Wi-Fi

Any-G Radio

Unified RAN Backhaul

Access

Aggregation

Edge and Core

IP Edge and Core

Mobile Packet Core

Data Center

Cisco Videoscape

Mobile Cloud

Virtualized Cisco Prime™ Network Management

Cisco® Advanced Services

Tested by EANTC 2010

Mobile Packet Core
One Network, Any G, Any Screen

WiFi, Femto

2.5G, 3G

4G

ASR 5000/ASR5500

World's #1 UMTS and CDMA Operators

Powerful Performance

Highly Intelligent

Reliable

Flexible

Single Platform for all Control and Bearer Plane Functions

ASR 5000 Virtualized Architecture
Software Decoupled from Hardware

Software Functions

Star OS

In-Line Services

GGSN

SCM

SGSN

SGW

MME

SeGW

HA

PDSN

ASN GW

PGW

Hardware Platforms

ASR5K Multimedia Core Platforms

ASR 5000

Performance & Scalability

- Platform decision based on performance not function
- StarOS distributed architecture – single software image
- Processes distributed across the entire system
- Resources automatically adapted to meet needs
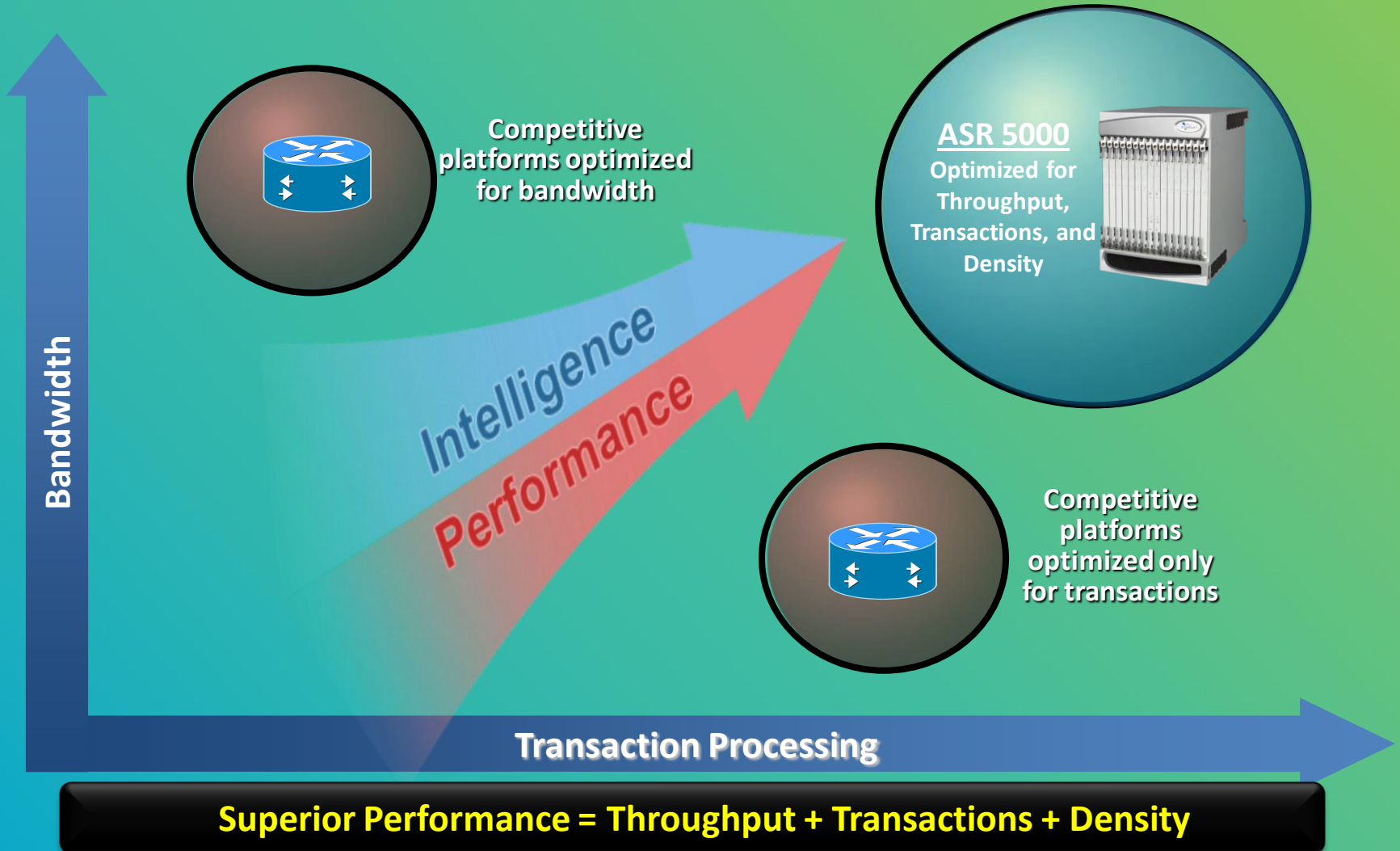
Cisco ASR 5000 In-line Services

Integrated Intelligence

Traditional Multi-chassis Solution

Load Balancers

Legacy Mobile Gateway

Deep Packet Inspection, Enhanced Charging

Policy Control

P2P Detection

Cisco ASR 5000 Solution

Intelligent In-Line Services

IP Network

- ✓ Enhanced Charging
- ✓ Content Filtering
- ✓ Intelligent Traffic Control
- ✓ Application Detection and Optimization
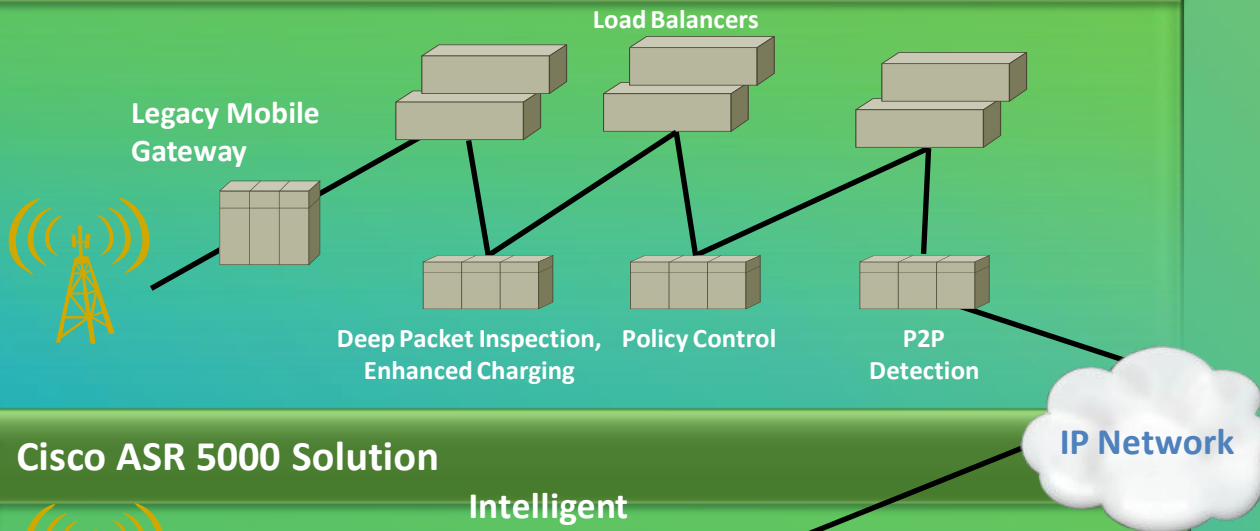
- ✓ Header Enrichment
- ✓ Subscriber Firewall/NAT
- ✓ Mobility Unified Reporting
- ✓ Traffic Optimization

Monetize

Optimize

Secure

Offer new services, shape subscriber experience, ensure efficient with a faster TTM and lower TCO

Cisco Policy and Charging Control (PCC)

## Enabling a Smarter Pipe for Mobile Monetization

Mobility Unified Reporting

CISCO DEVELOPER Solution

Cisco ASR 5000 CSCF

SSC

MAP/Diameter

HSS/ AAA

Radius/ Diameter

OCS OFCS

Ga / Gy

Rx

IMS

Internet

Corporate

Cisco ASR 5000 SGSN / MME / SGW

Cisco ASR 5000 **IPCF** GGSN / PCEF / PGW / In-Line Services

PPT
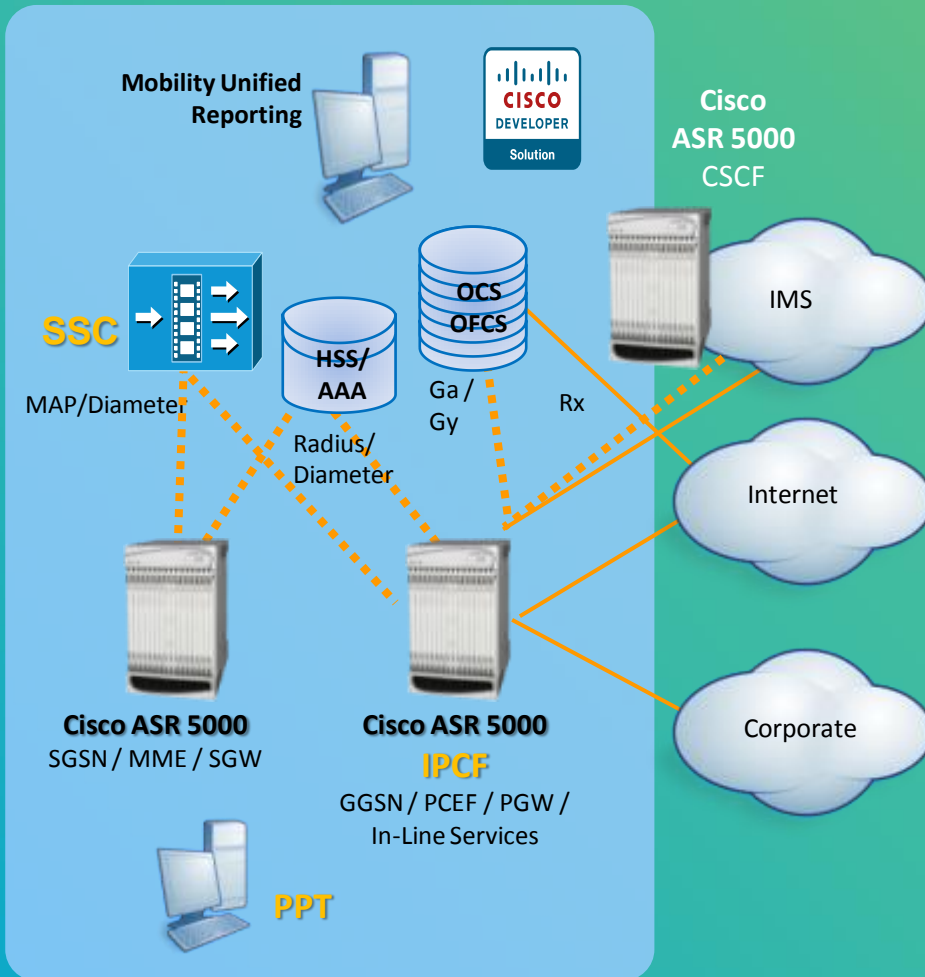
- Subscriber spending controls
- Service provider protection
- Subscriber interaction
- Service based controls
- Bandwidth, QoS
- TOD services, automated controls

Operational savings of 35%-40% versus competitive offerings

Mobility Unified Reporting

Analysis for Network Optimization, Targeting New Services
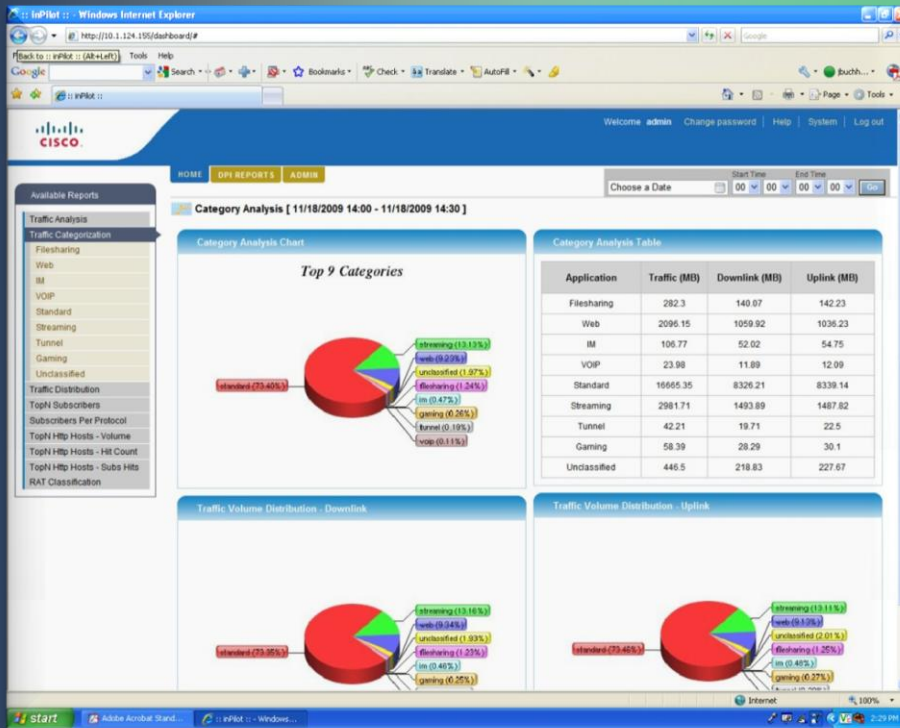
Cisco® ASR 5000
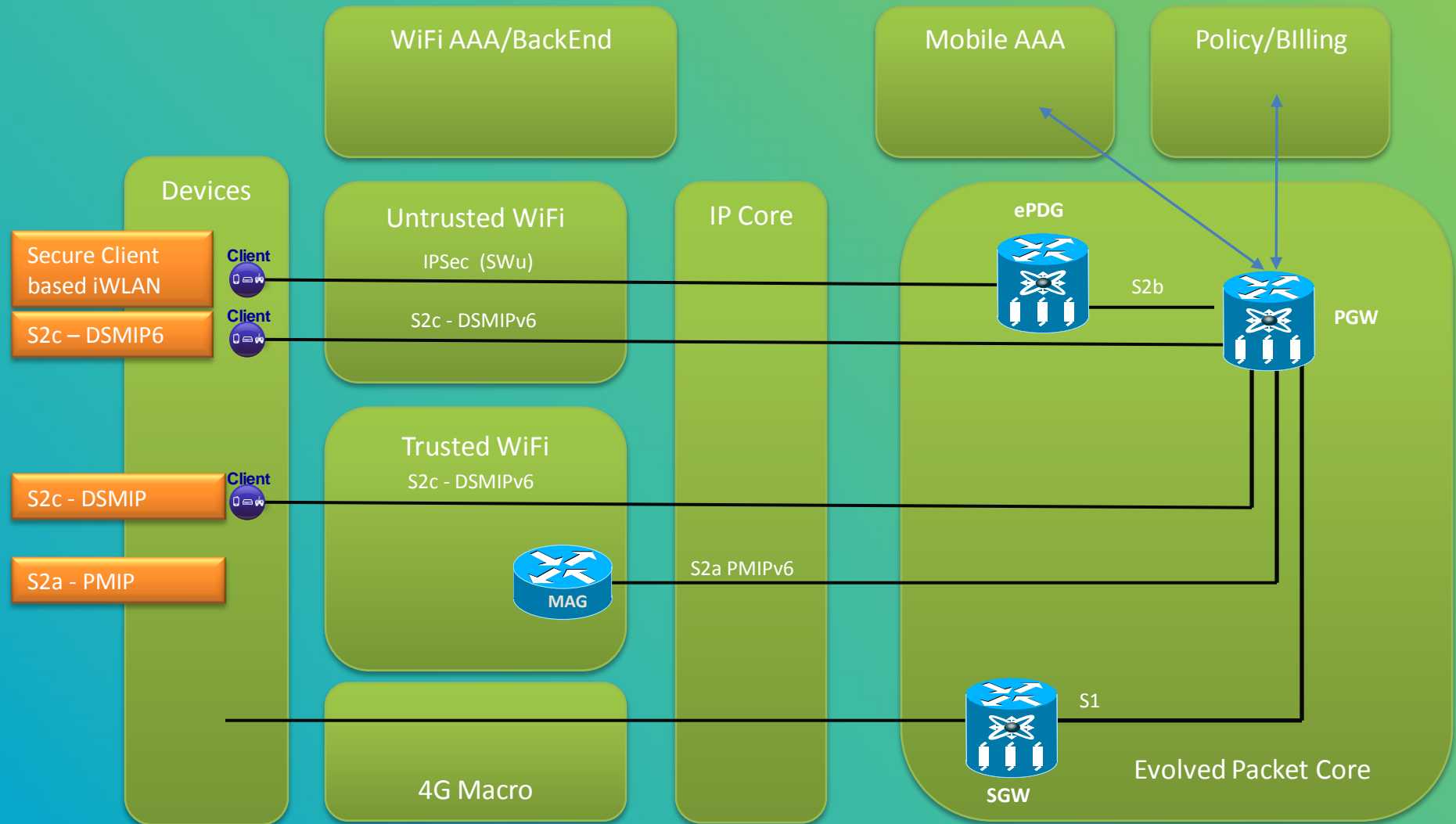
Optimize Network Performance

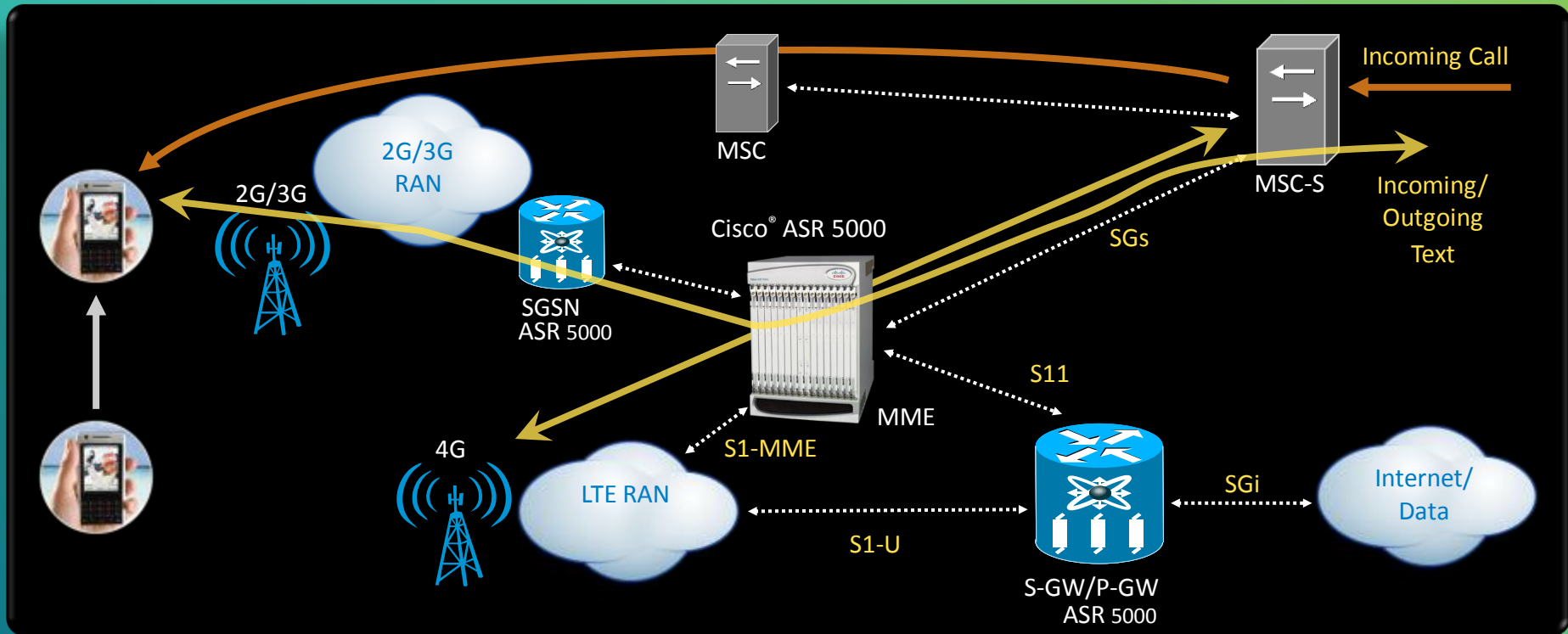**Target New Services**

Plan Infrastructure Investments

WiFi to 3G/4G Packet Core Integration

Cisco V²oLTE
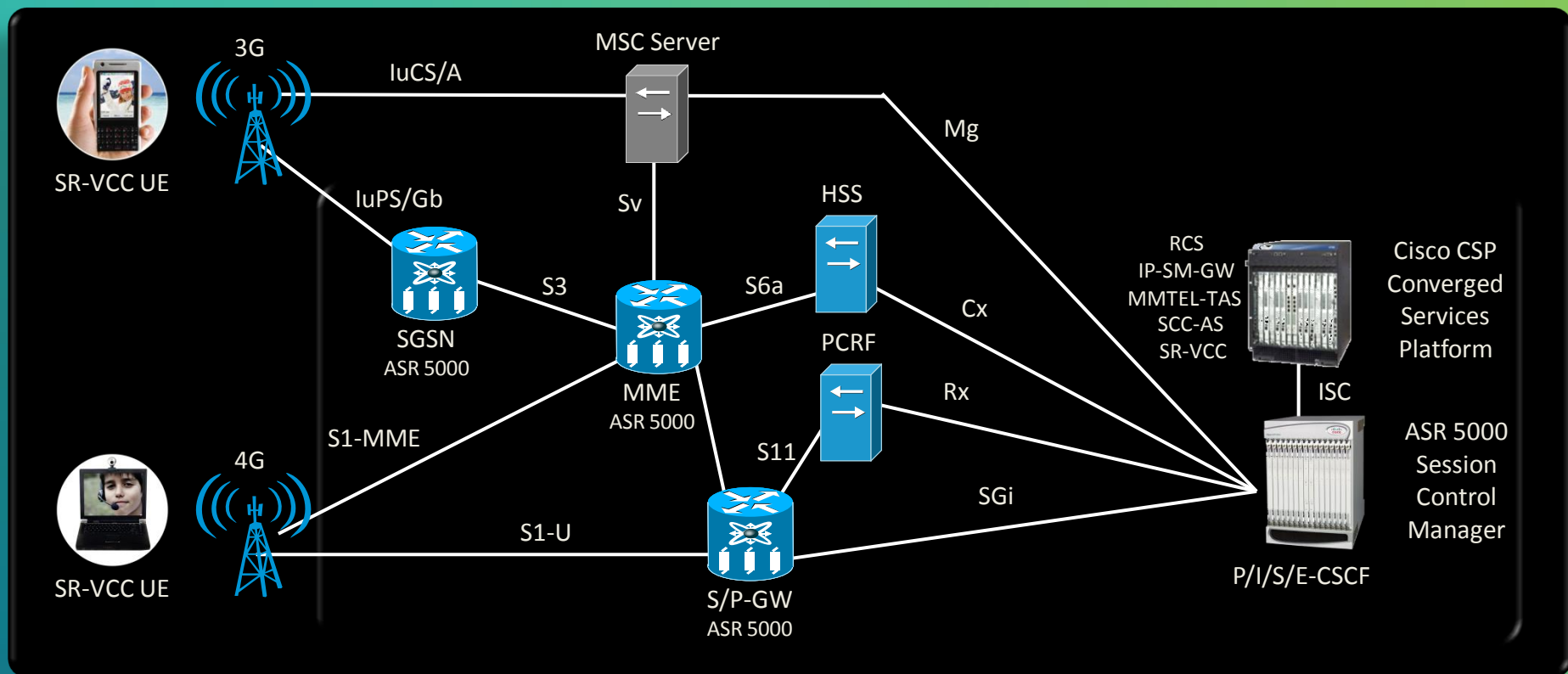
Circuit Switched Fallback and SMS Over LTE (SGs Interface)

ASR 5000 MME supports both the SGs interface for CSFB and SMS

- 3GPP compliant
- SMS works with CSFB without actually falling back
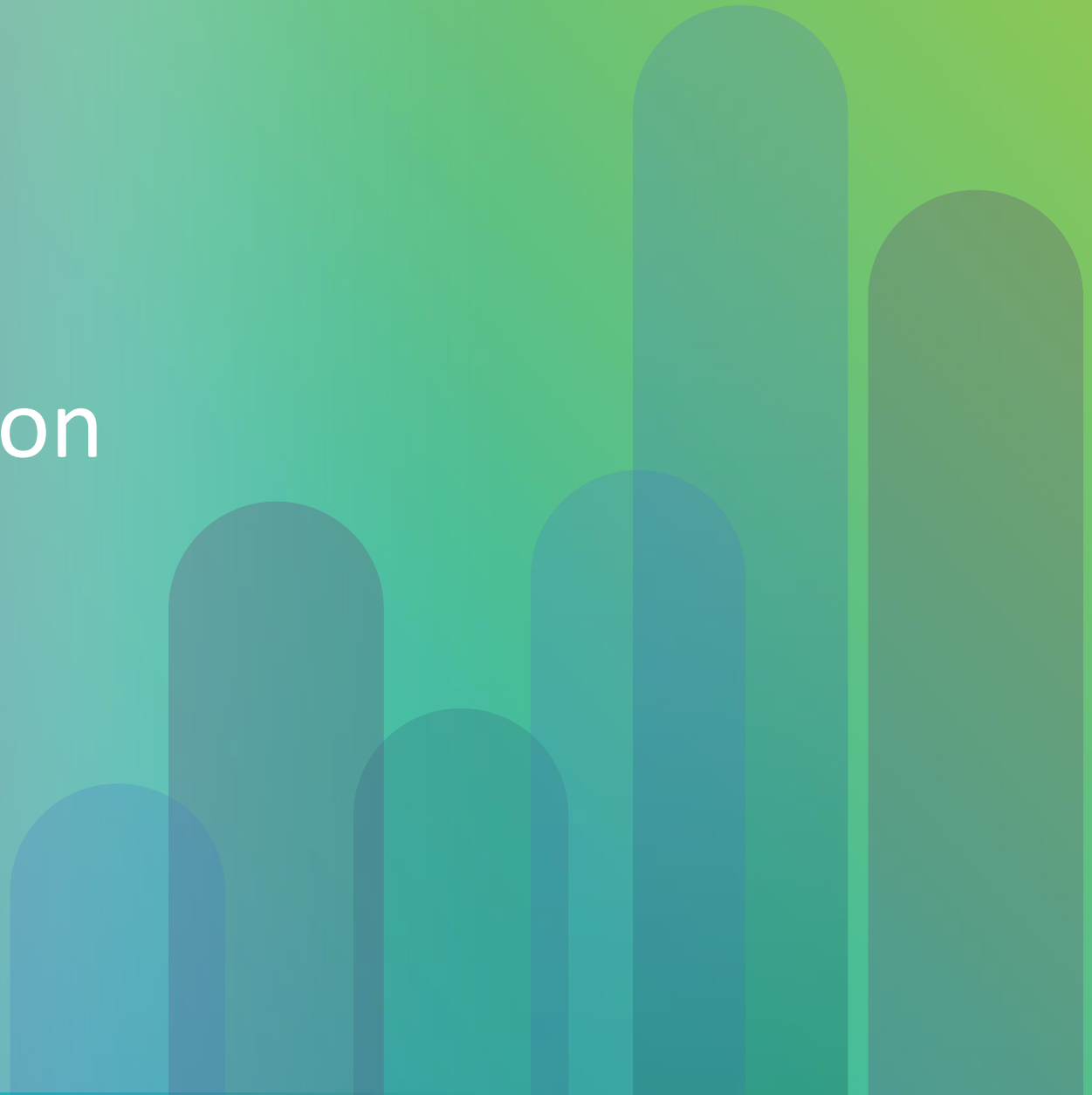- CSFB forces the handover to 2G/3G circuit switched network to set up the call

Monetization

Monetizing the M.O.VE Experience

Government

Broadcasters

Advertisers

Content Aggregators

Application Developers

Utilities

B2B2C
Business to Business to Consumer

Service Providers

2-sided value – 2-side business model

Freemium
Increase Customer Stickiness and Upselling

What's the Opportunity?

- Offer access to popular applications (e.g., Facebook) for free for a trial period

How Will This Impact My Business?

- Unlimited access to popular services increases stickiness of service bundles and/or success of new device launch

- New service revenues gained from up-selling after user is "hooked" by free trial

Why Cisco?

- Integrated Charging, Application Detection & Control, Traffic Optimization, and Policy Enforcement lowers OpEx and accelerates Time-to-Market

"Toll-Free" Mobile Broadband
Monetize Traffic Over Flat Rate Plans

What's the Opportunity?

- Application Service Providers (ASPs), businesses, etc. promote usage of applications and rich media web portals by paying for connectivity – "Toll Free" to subscriber

How Will This Impact My Business?

- Generate and monetize additional traffic over flat rate plans

Why Cisco?

- Integrated Charging, Application Detection & Control, Traffic Optimization, and Policy Enforcement lowers OpEx and accelerates Time- to-Market

- Increased 3rd party partnership opportunities

I want to check my Financial Advisor's mobile web portal to access videos, webinars, financial planning tools, etc.

Day/Session Pass for Inbound Roamers
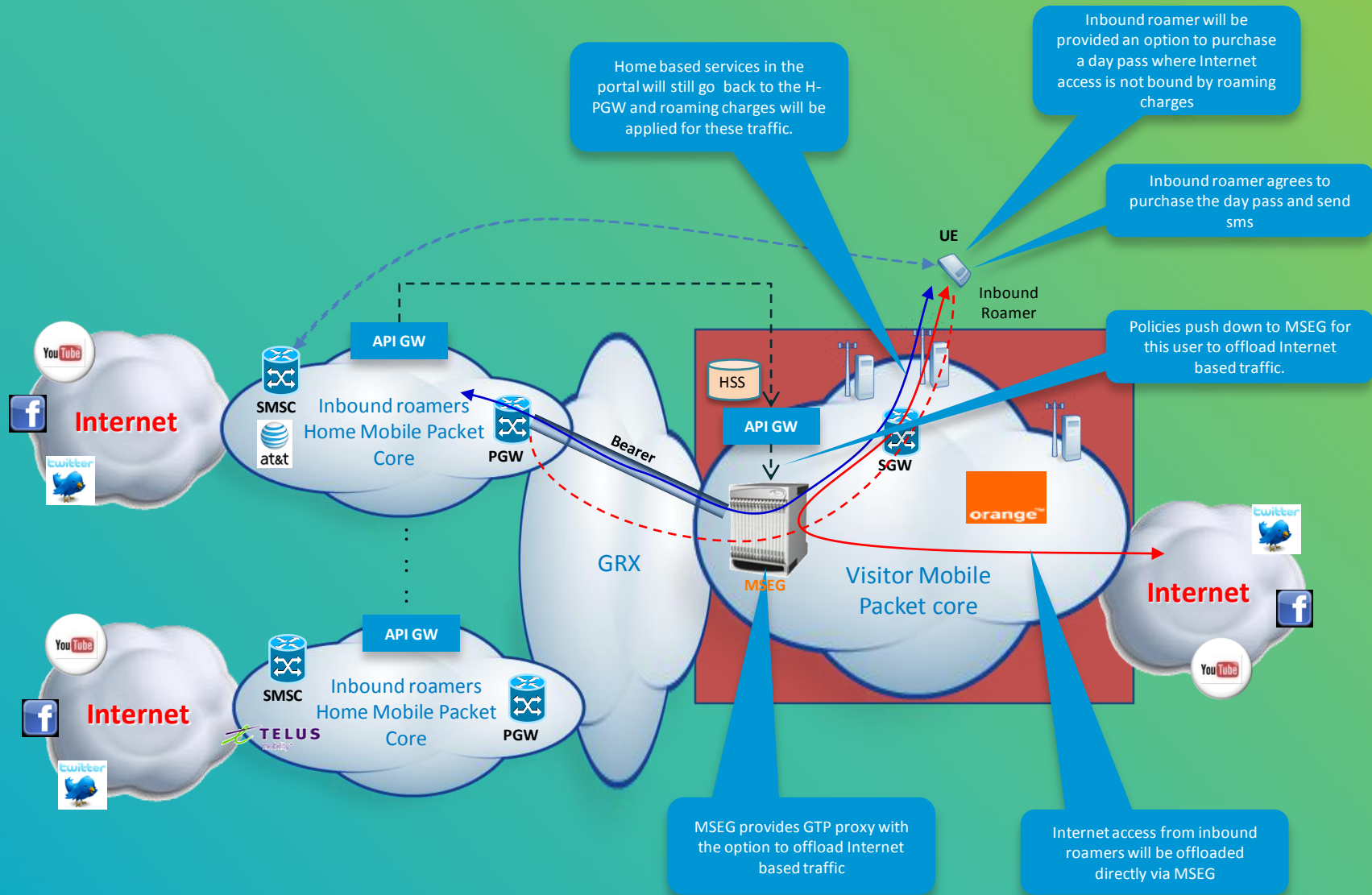
Cisco M2M Solution for Operators

Increase Operator Value-Add with M2M-Tuned Network

Transportation and Shipping

Auto Care/ Telematics

Utility & Power

Healthcare Providers

Security Services

Cisco Mobile Internet

- ❖ High Activation Rates
- ❖ Diagnostics and Troubleshooting
- ❖ Stateful Geo-Redundancy for Recovery
- ❖ Network-Initiated PDP for "Wake up"
- ❖ Gateway Virtualization for QoS
- ❖ IPv6 Transition

"M2M-Tuned" Mobile Operator Network

Optimization

Optimization

Traffic

- Function Integration
- 3G, 4G Integration

Lower radio costs

Increase network capacity

- Traffic (TCP, HTTP) Optimization
- Transcoding/Transrating
- Bandwidth Shaping

Enhance customer experience

Increase network efficiency

- Fair Usage
- Resource Management

Reduced latency

- Network Offload
- Wi-Fi, femtocell Offload

*Potentials savings of 10% to 30%**

*specific services, based on several network variables

Function Integration

Video / Data

Policy

Offload

Functional Integration Benefits
Example: Integrated Policy Enforcement

- Interactive web-based TCO/ROI tool
- Available for operator data inputs and assumptions
- Outputs customized White Paper with results

TCO for integrated architecture has 30-40% less OpEx than for a multi-chassis architecture

Traffic Packet Optimization
TCP, HTTP, Video Pacing

Video / Data

Potential reduction of up to 15% in video traffic

Video Pacing

45%

Potential reduction of 30-50% in non-compressed text pages

HTTP

Data and Video Tsunami

Downlink data reduction potentially up to 25%

TCP

ASR5k
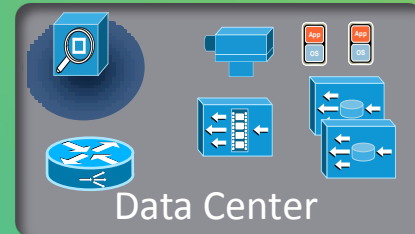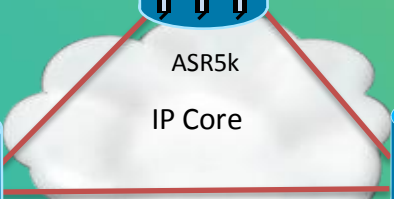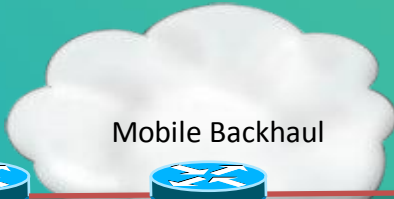
Data Center

Mobile Backhaul

IP Core

UE

(e)NB   MWR2941

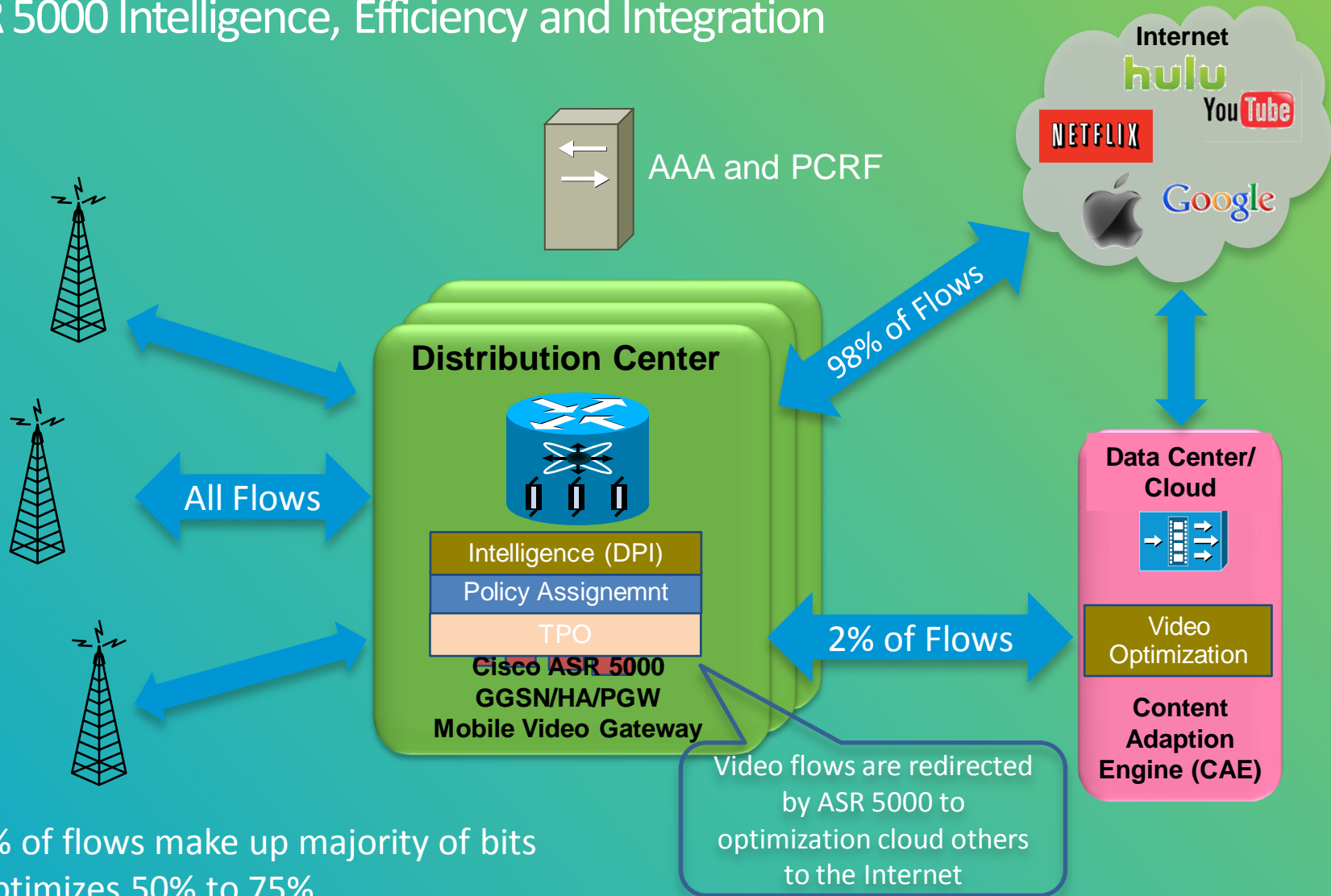7600
ASR9k

ASR9k

CRS-1

Internet

- Superior user experience
- Superior mobile bandwidth utilization
- Solutions for both data and video
- In-line capabilities reduce Opex and additional 30-40% over external solutions
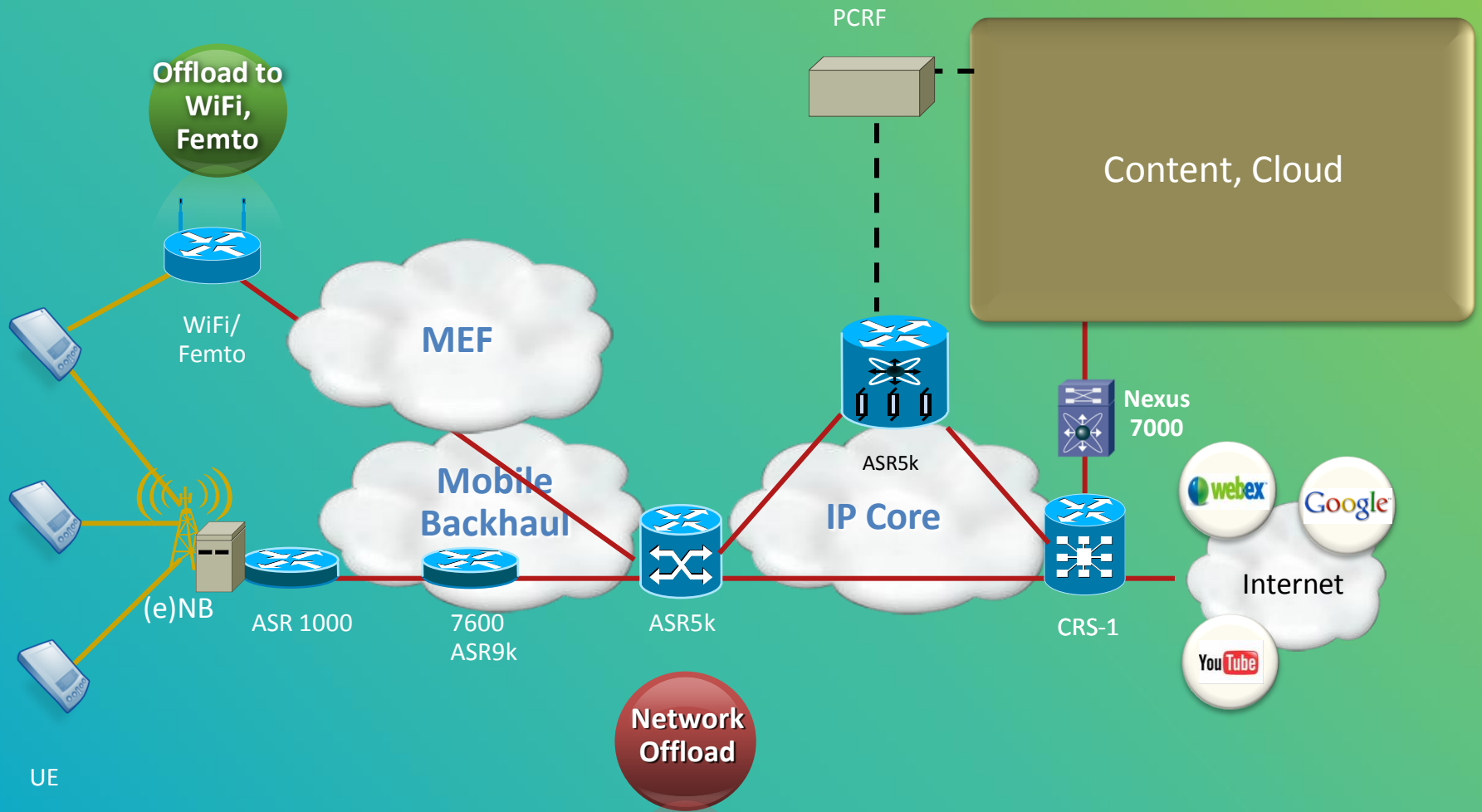
Cisco Mobile Videoscape Architecture
ASR 5000 Intelligence, Efficiency and Integration

Internet

AAA and PCRF

Distribution Center

98% of Flows

All Flows

Intelligence (DPI)

Policy Assignemnt

TPO

Cisco ASR 5000
GGSN/HA/PGW
Mobile Video Gateway

Data Center/
Cloud

2% of Flows

Video
Optimization

Content
Adaption
Engine (CAE)

Video flows are redirected
by ASR 5000 to
optimization cloud others
to the Internet

- 2% of flows make up majority of bits
- Optimizes 50% to 75%
- Centralized Cloud architecture provides scale speed of deployment and low TCO

Mobile Offload Solutions
Multiple Options

Offload to WiFi, Femto

PCRF

Content, Cloud

WiFi/Femto

MEF

Mobile Backhaul

(e)NB

ASR 1000

7600 ASR9k

ASR5k

IP Core

ASR5k

Nexus 7000

CRS-1

webex

Google

Internet

YouTube

UE

Network Offload

Network, WiFi, Femto Offload

Use Case – Fair Usage & Throttling

- Top User report
  - Top subscriber transferring 270GB in one month
  - Top 1000 contribute 40% to total traffic
  - Allows operator to fine tune Fair Usage limit to generate enough capacity reduction and minimize the number of subscribers affected

- Protocol by family
  - P2P was higher than expected (~25%)
  - Busy period much longer and later than anticipated
  - Able to refine throttling strategy to minimize impact to end users and preserve capacity for things that are critical to the operator
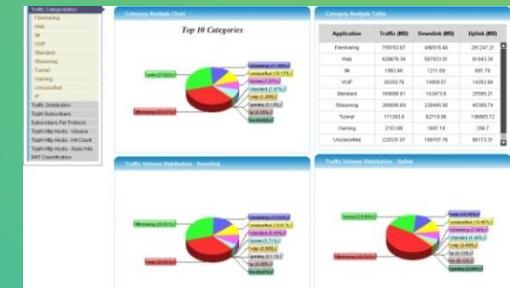
Throttling need to be used carefully to preserve the subscriber experience

Real Customer Experience – Tier 1 in EMEA (2 Months from Request to Deploy)
P2P traffic reduced from 25% down to 15% of the total traffic, no unexpected data traffic increase in the last 6 months
Real Customer Experience – different Tier 1 in EMEA
Reduced traffic by 30% on network

Cisco Mobile Internet Market Leadership

More Than 200 Operators in More Than 75 Countries

Thank you.