



# Leading the Mobile Transformation

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Chief Technology Officer, MEA, Distinguished  
Systems Architect

Cisco Expo, Nairobi, Kenya, June 2011

# Leading the Mobile Transformation

Shifting Environment

New Business Architecture

Mobility Solutions

Mobile Internet Services

Cisco - IP and Mobility Expert

# Mobile Internet is Changing our View

## Handsets

Powerful New Devices with Compelling UIs (iPhone, Omnia, G1, N97, ...)



## Broadband

High Speed Networks Based on HSPA, EV-DO, and WiMAX Are Now Available in Many Geographies



## Pricing

Flat Rate Data Plans Accelerating Consumption Operators Offering Personalized Services



## Applications

Apps Moving from Wired World; Emerging LBS Services; Handset Vendor and Operator App Ecosystems



66 Fold Increase in Data Traffic by 2013-14

# Mobile Communications: Shifting Environment

Business

Operator Competitors  
Voice Revenues  
Walled Garden  
B2C Model

OTT Competitors  
Multimedia Revenues  
Hosted, OTT, App Store  
B2B2C Model



Traditional Expertise

End User Experience

Mobility / IP Expertise

Entertainment

Information

Collaboration

Technical

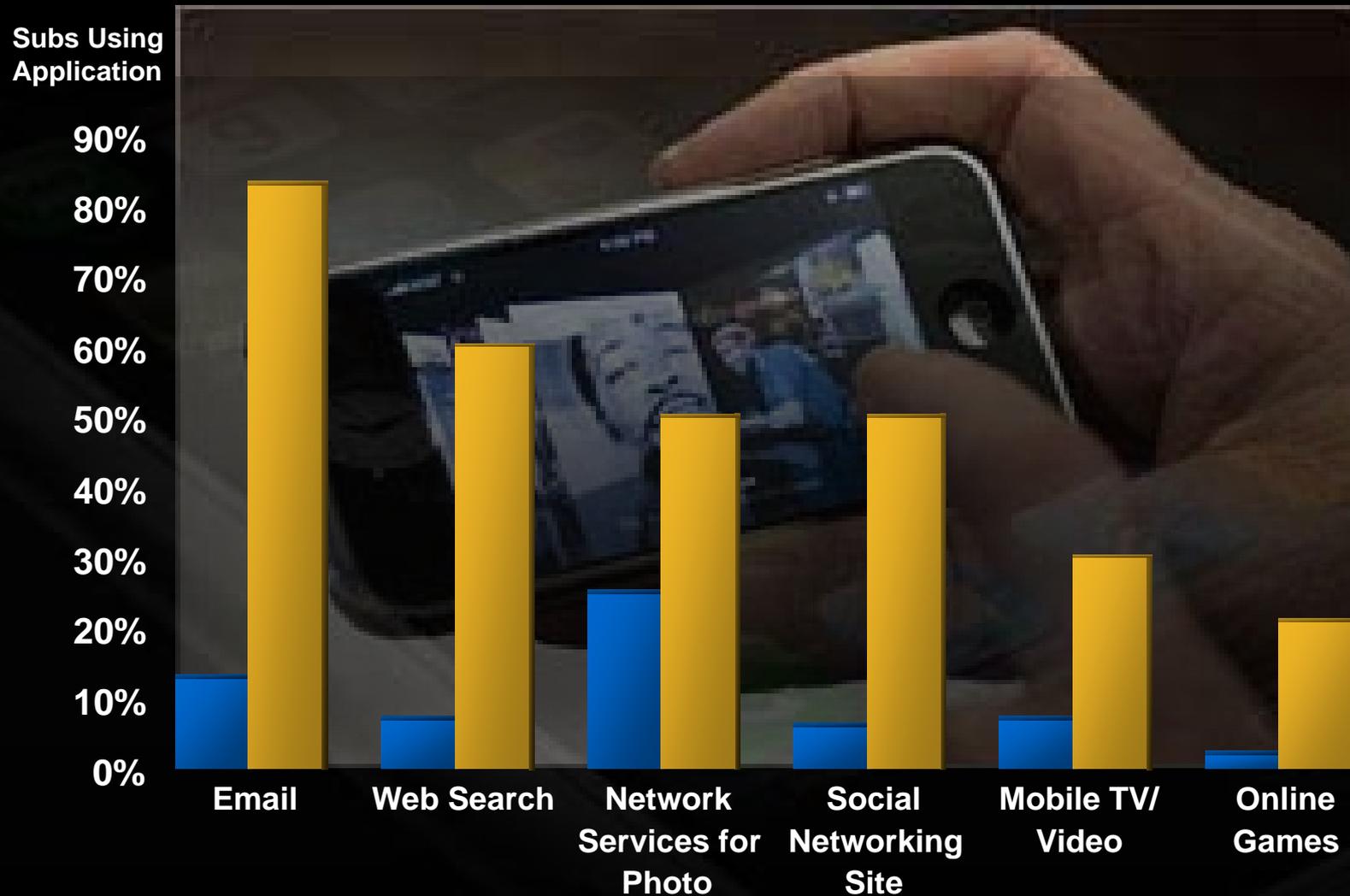
2G, 3G ...  
Circuit  
Network Services  
Access Focus

3G, 4G, WiFi, Femto  
IP  
Cloud Services  
Services Focus

IP

# Transformative Effect of the iPhone

## Precedent for Nextgen Smartphone User Behavior



Source: M:Metrics

■ Other Phones

■ iPhone

# High-End Devices Drive Traffic Growth



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X 450



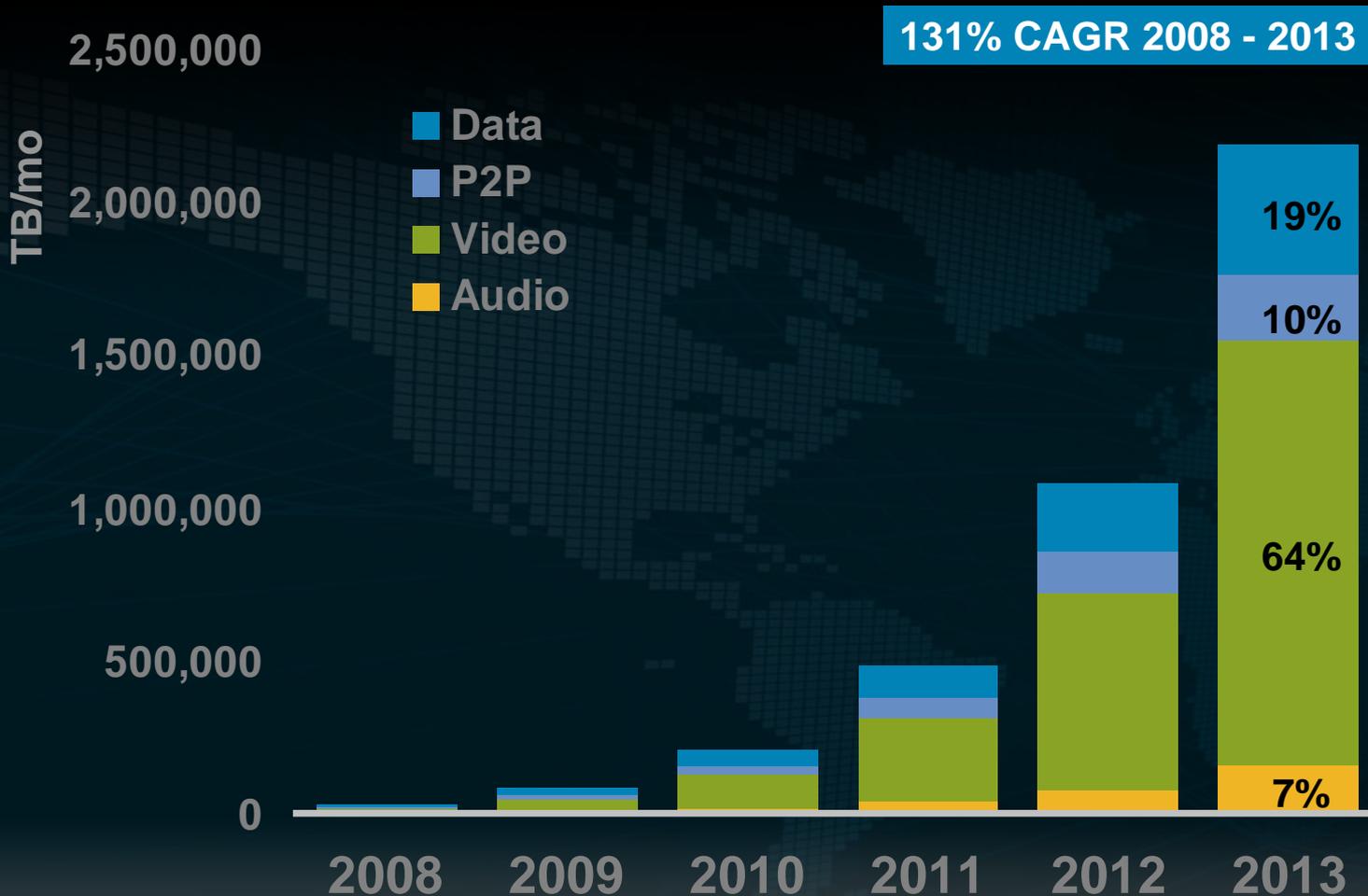
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X 1,200

# Global Mobile Data Traffic Growth

Video will account for 64% of mobile traffic by 2013



# Users Demanding More...

Consumers want more personalized experiences



## Consumer experiences:

- More visual
- More social
- More personal

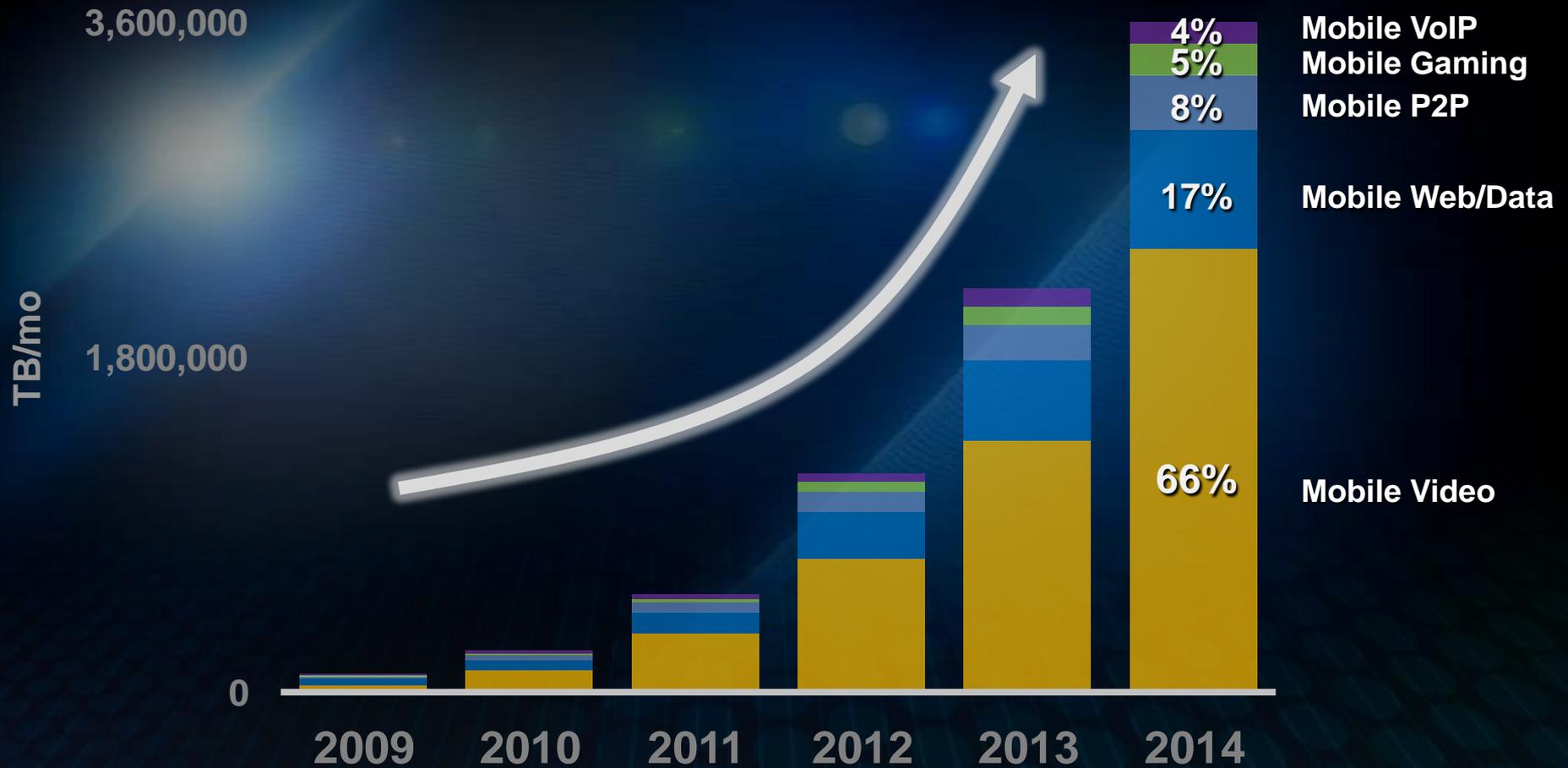
Business users demand greater productivity experiences



## Business experiences:

- More collaboration
- Better returns
- Improved mobility/portability

# ...Driving More and More Traffic



Source: Cisco Visual Networking Index (VNI) Global Mobile Data Forecast, 2009–2014

# Challenge of Shifting Environment



# Mobility Requires Ubiquitous Access



2G, 3G, 4G

WiFi Wireless LAN and Service Mesh

Femto Cell

Ethernet LAN

Cable/DSL



Office

Home

Coffee Shop

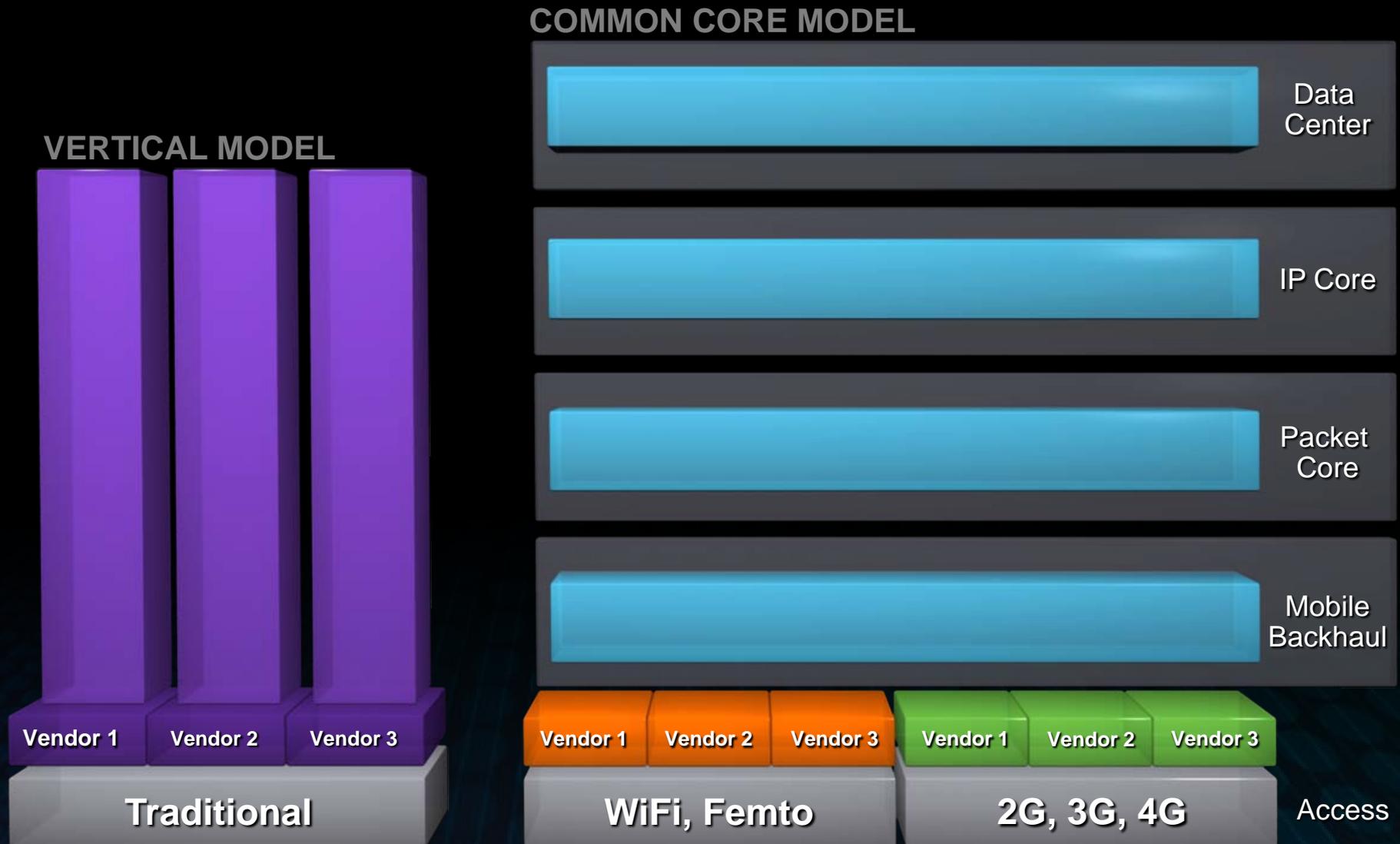
Outdoor

On the Go

**Radio-independent Partnering to Provide "Any G" coverage**

# Ubiquitous Access Architecture Models

## Common Core for Seamless Experience



# Cisco IP NGmN: Intelligent Performance

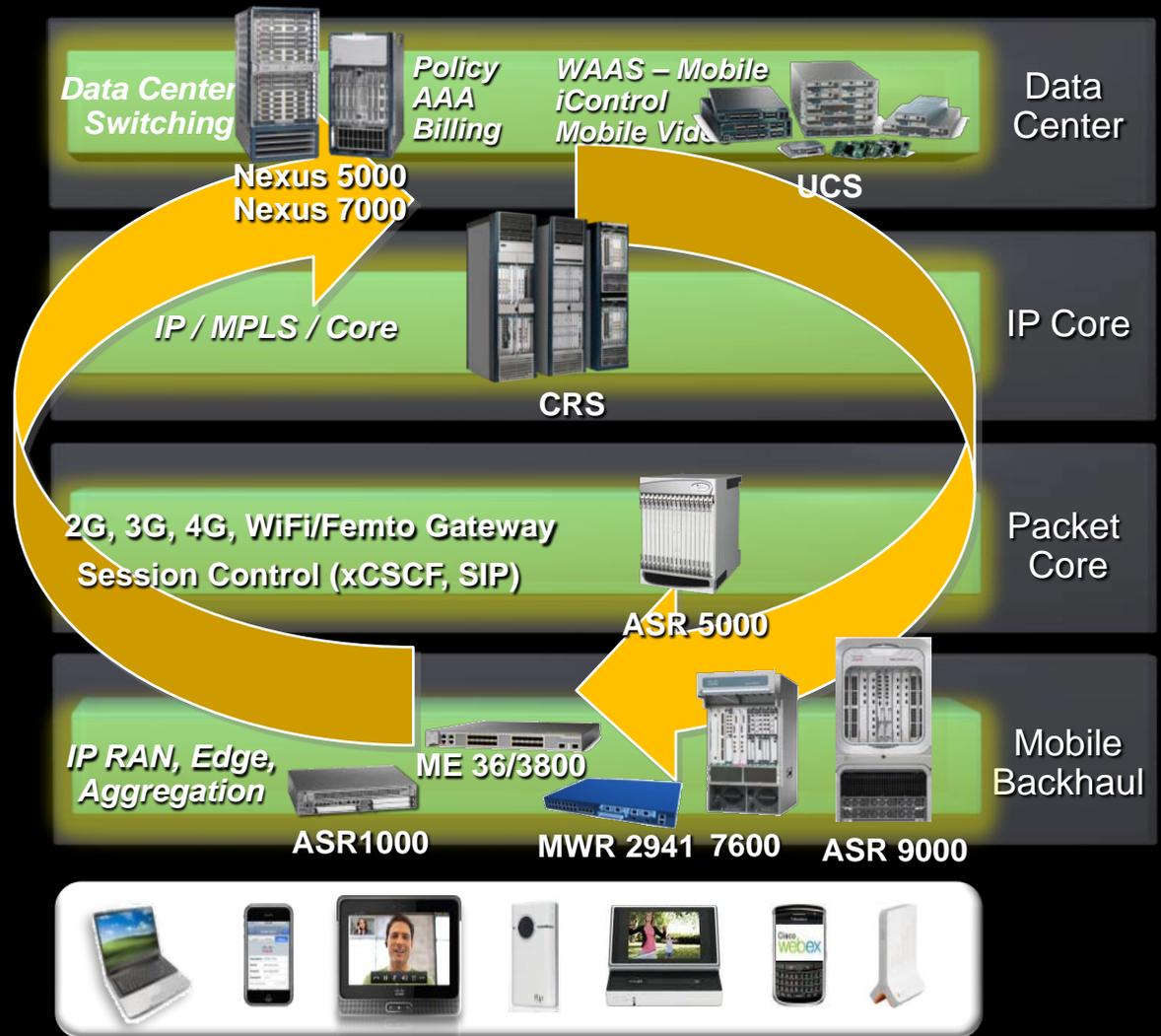
## One Network, Any G, Any Screen

Comprehensive

Flexible

Powerful Performance

Highly Intelligent



# Monetization

- On-Net Social Web
- User Generated Video

- Rich Communications Suite
- Operator SaaS

Traffic

Emulate

Collaborate

- Premium Mobile Video
- Mobile TV

- Mobile Cloud Partnerships
- Toll-Free Mobile Broadband

Protect

Revenue

- Tiered Pricing
- Family Data Plan
- Turbo Boost

- Parental & Corporate Controls
- Work/Play Plans
- Freemium

# Optimization

Traffic 

- PCC Functions Integration
- 3G, 4G Integration

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

- Fair Usage
- Resource Management

- Network Offload
- WiFi, Femto Offload

**Lower backhaul costs**

**Increase network capacity**

**Enhance customer experience**

**Increase network efficiency**

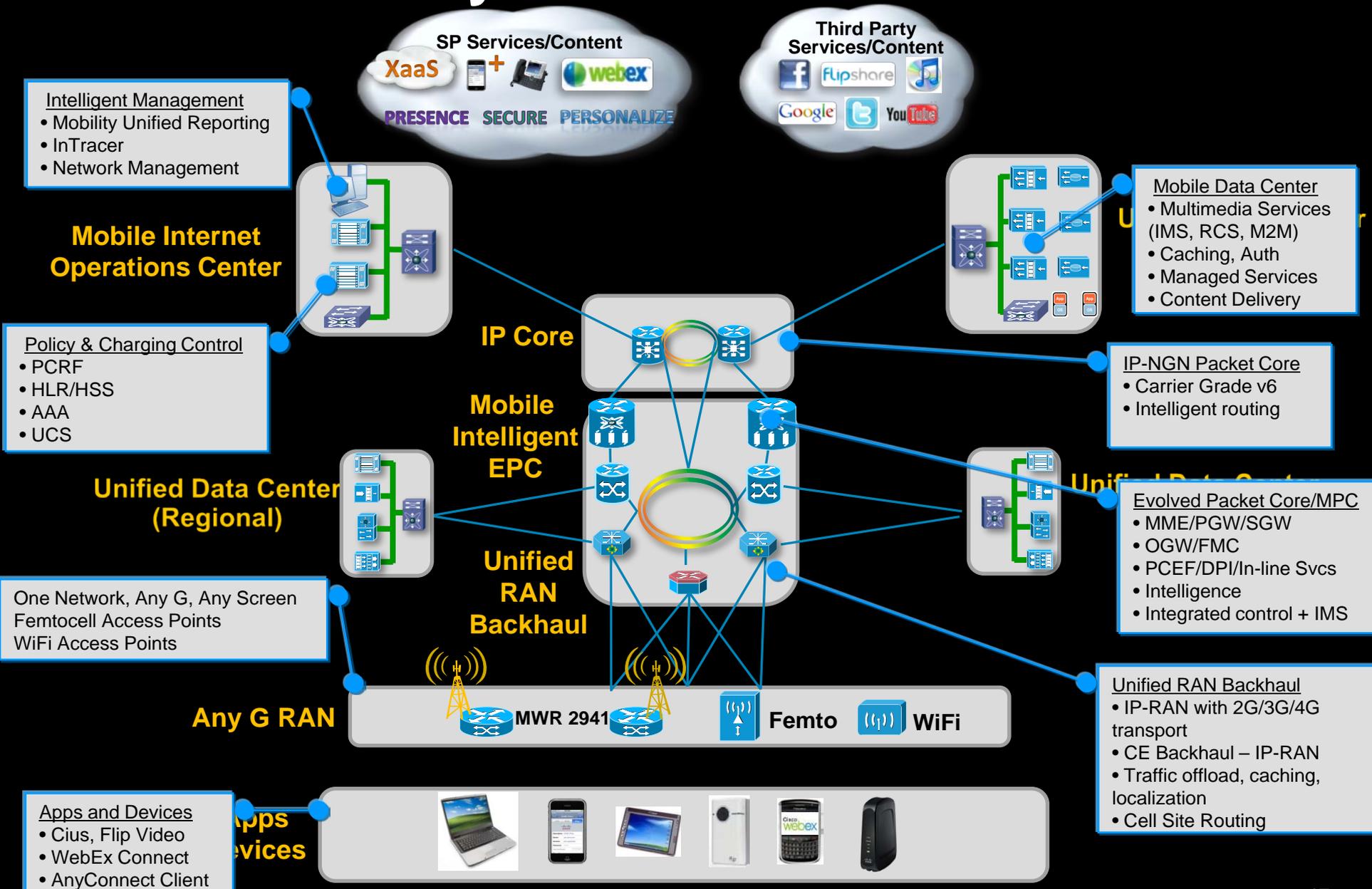
**Potentials savings of 10-50%\***

\*specific services, based on several network variables

# Cisco Mobility Solutions



# Cisco Mobility Products and Solutions



# Cisco Unified RAN Backhaul

Any Radio, Any Media, for Many Generations



Cell Router



Aggregation



Mobile Edge



IP Core

**Flexible, future-proof scalability**

Any Radio, Any Media, Multi-G (2=>3=>4G)

**Proven performance and reliability**

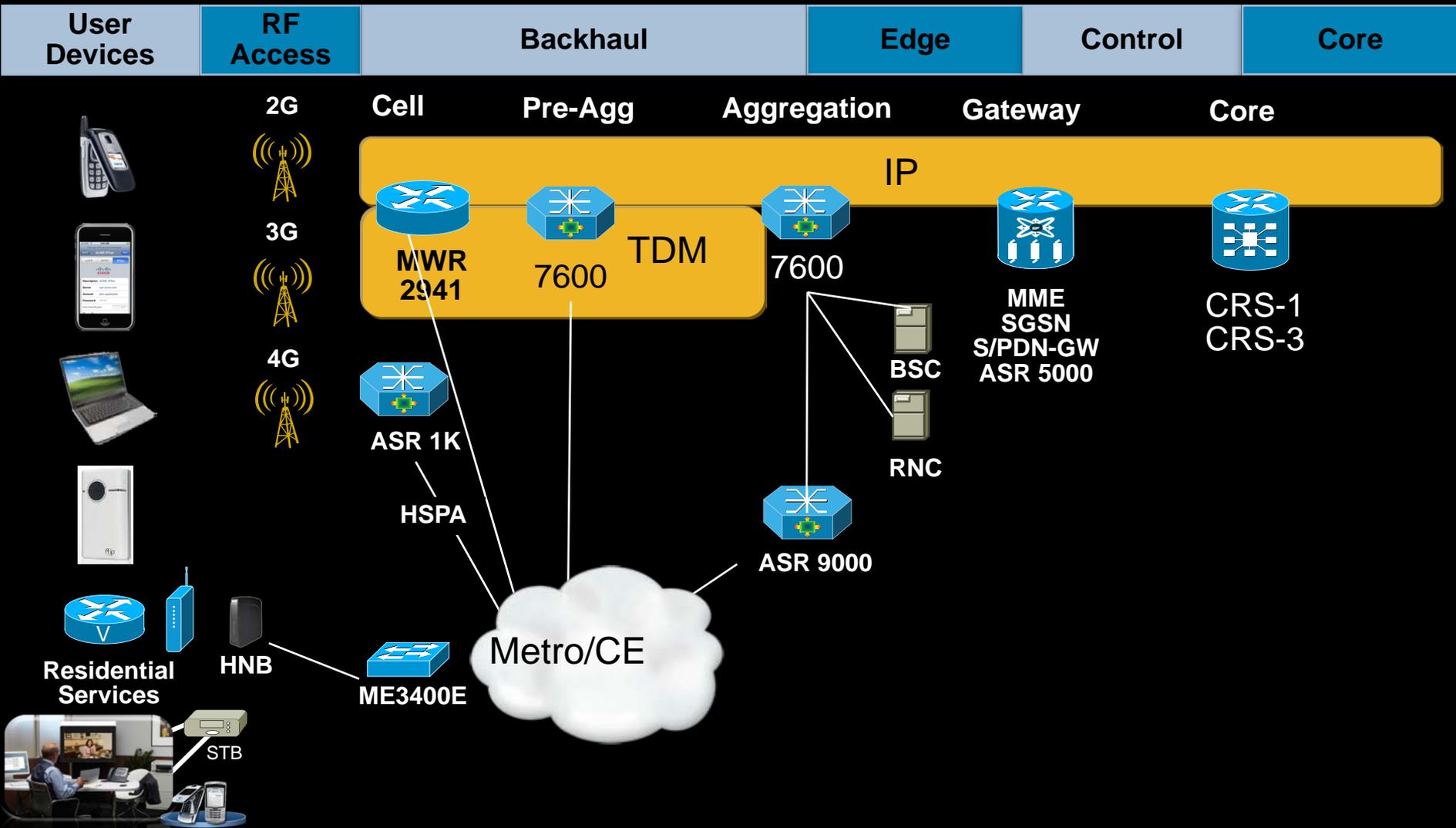
Superior Voice Quality, End-to-End QoS

**Operational excellence**

Unified Mgmt, Lower OpEx, Solid SLAs

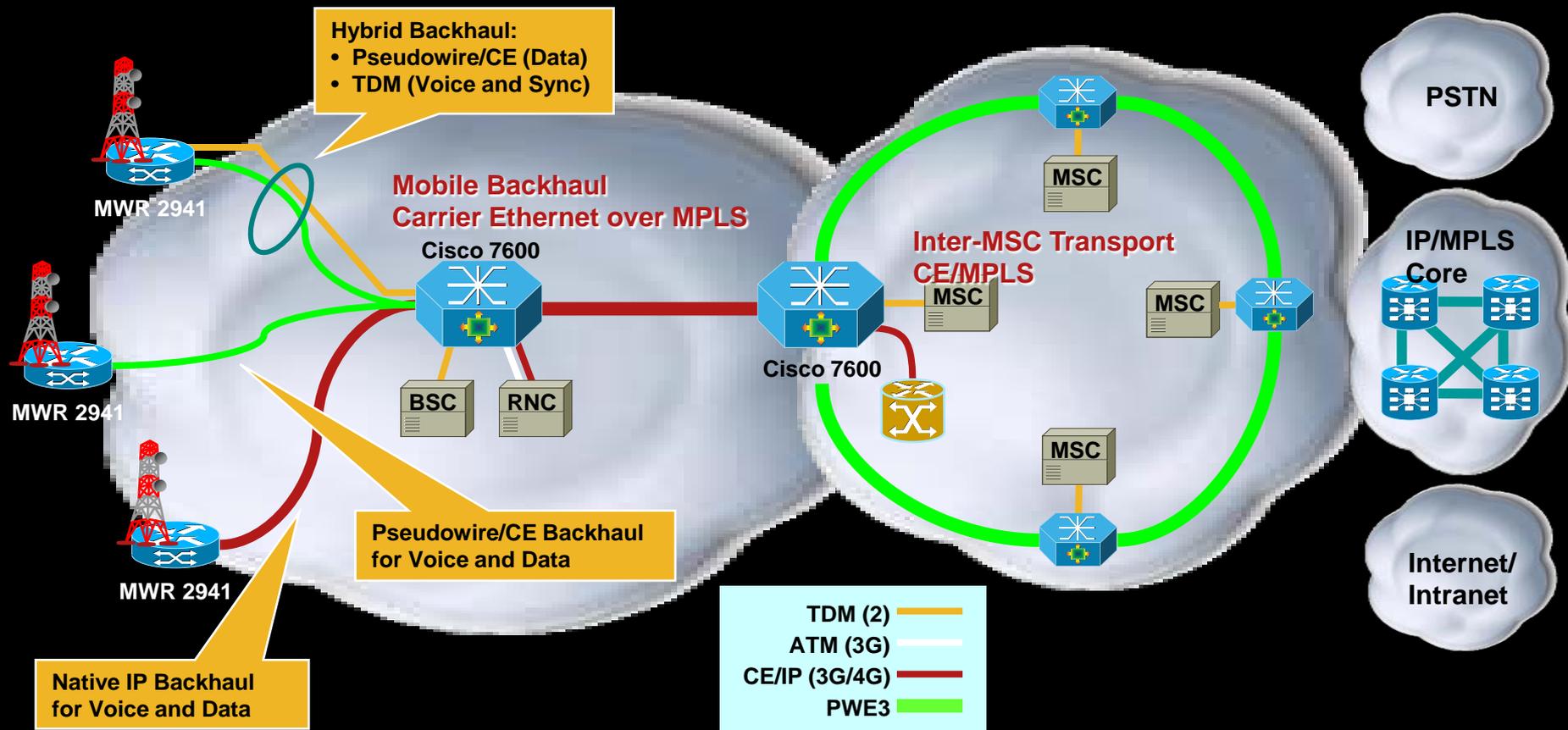
# Cisco Unified RAN Backhaul

## Unifies TDM and IP Backhaul for Many Generations



# Cisco's Mobile Transport over Packet

## Graceful Migration to the All-IP Network

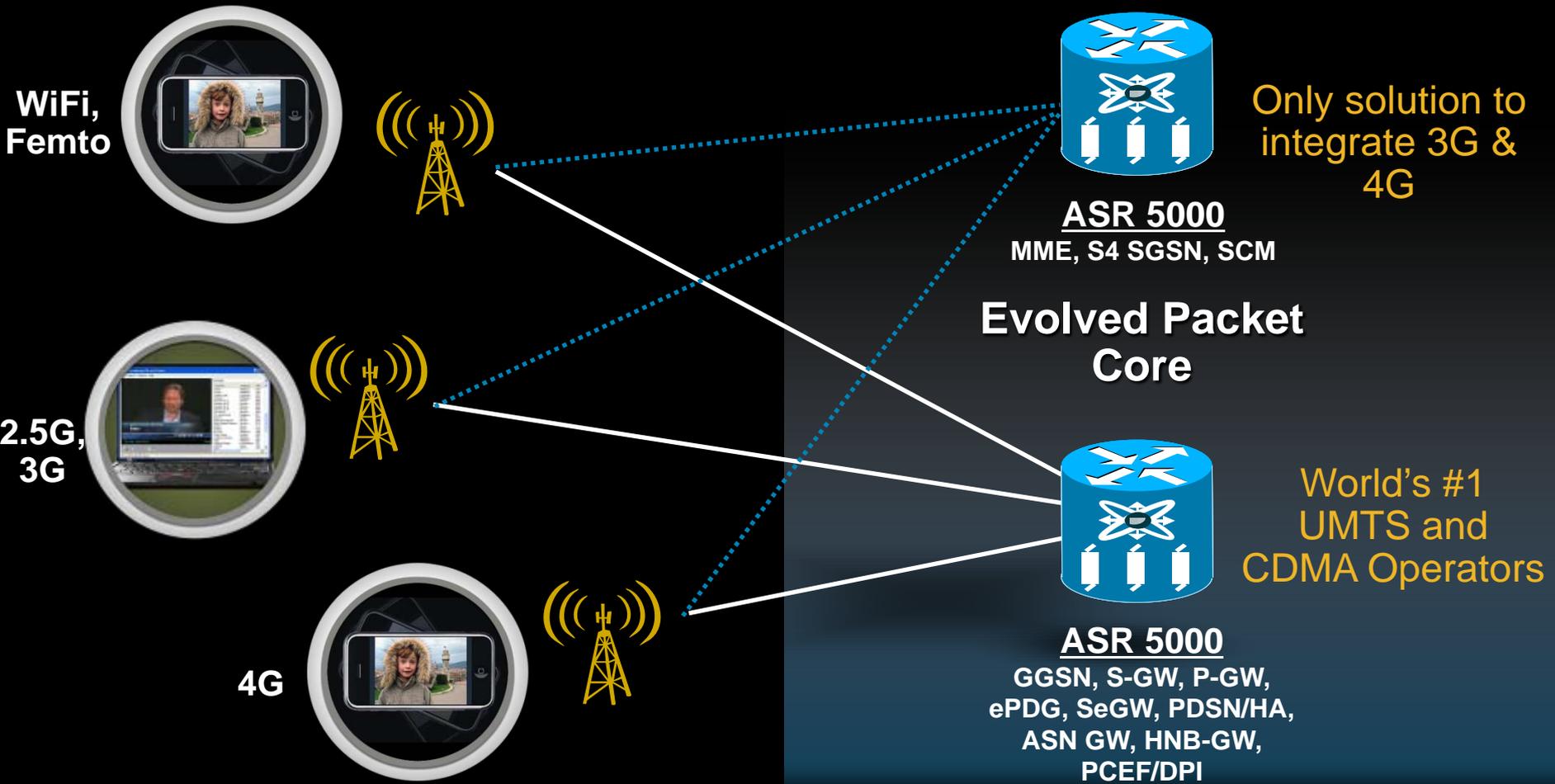


- Carrier Ethernet (CE) for converged Fixed and Mobile transport for greatest cost efficiencies over Copper, Fiber, or Microwave
- Pseudowire support for legacy traffic (TDM and ATM)
- Cisco offers the most extensive CE portfolio



Cisco received 1<sup>st</sup> "MPLS in Mobile Backhaul Certification"<sup>20</sup>

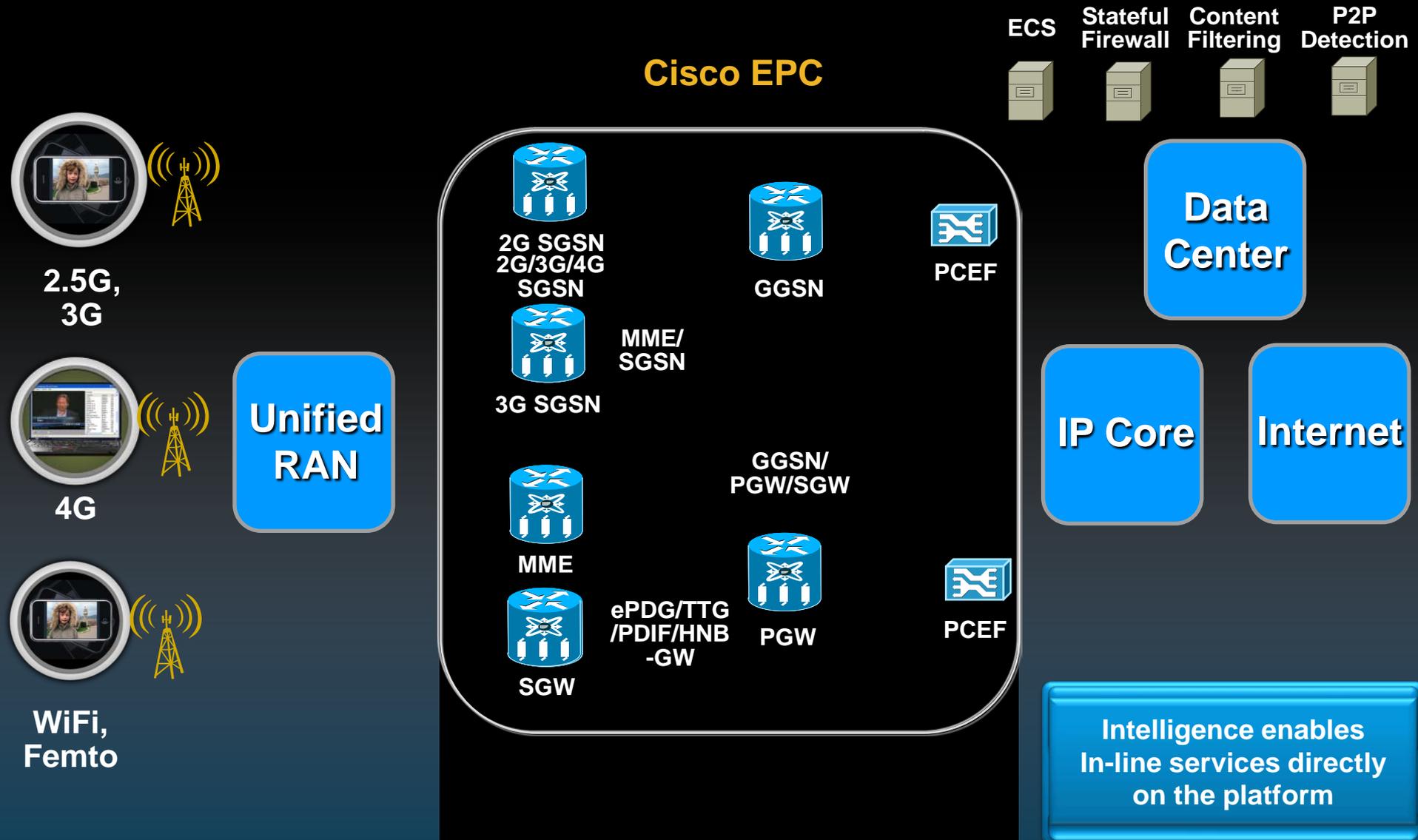
# Cisco Evolved Packet Core: Common Core Across All Access Technologies



Ultra-high Performance, Intelligence, Flexibility, Reliability, and Seamless Evolution to LTE/4G

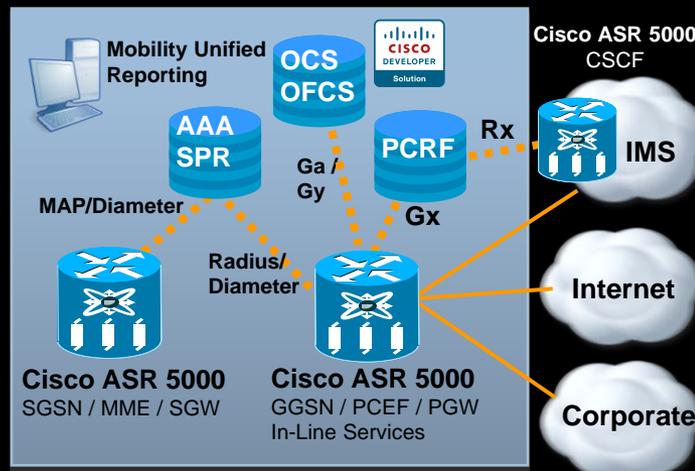
# Cisco EPC Solution

## Common Core Across All Access Technologies



# Cisco Policy and Charging Control (PCC)

## Enabling a Smarter Pipe for Mobile Monetization



### Why Policy & Charging Control?

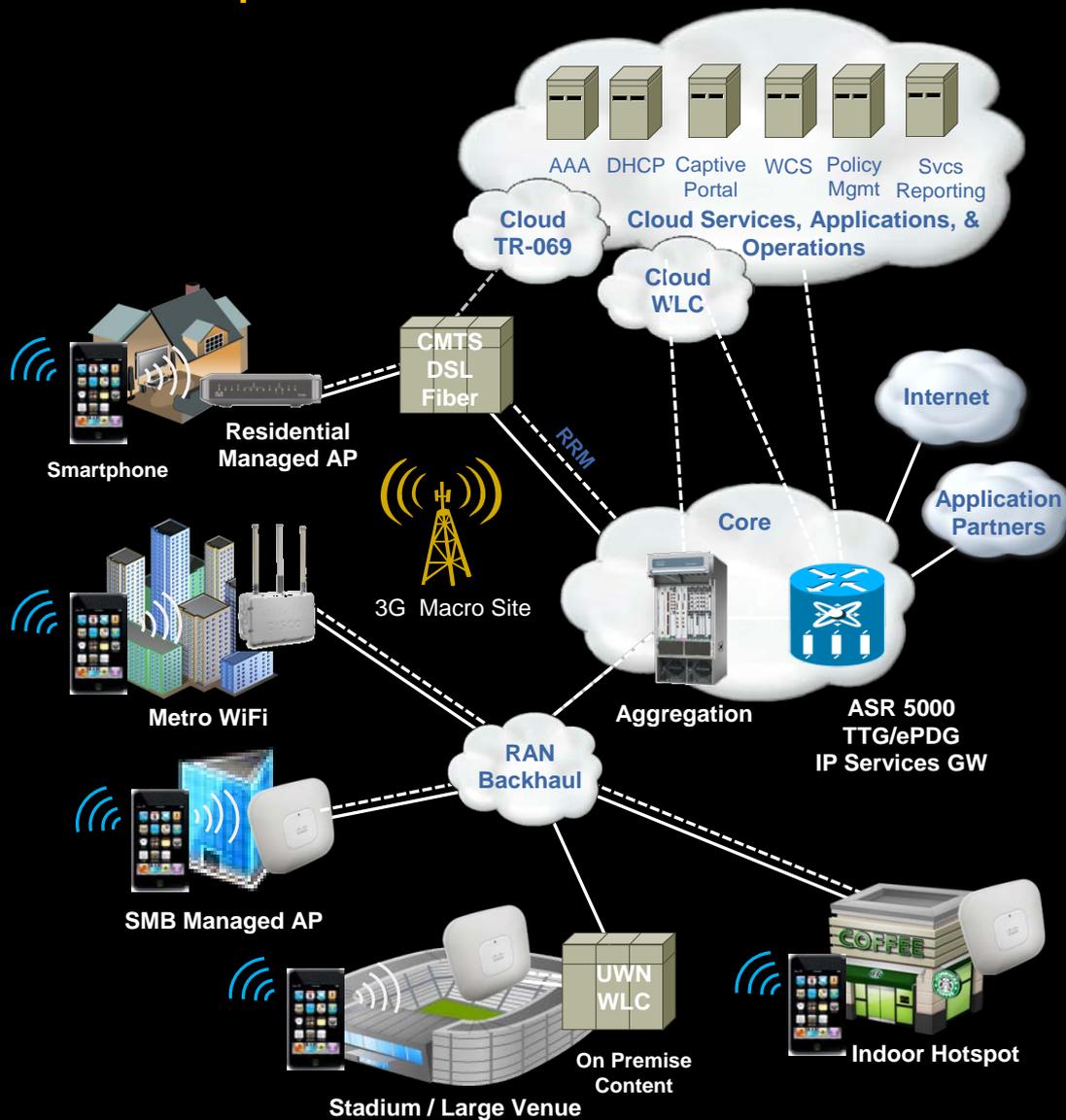
- Increase customer base and revenues with personalized services
- Transition to a 2-sided, B2B2C business model
- Increase service adoption with dynamic, flexible charging models
- Address network resource allocation and management

Cisco Solution Overview: [Cisco Policy and Charging Control](#)

Operational Savings of 35%-40% versus Competitive Offerings

# SP WiFi Network

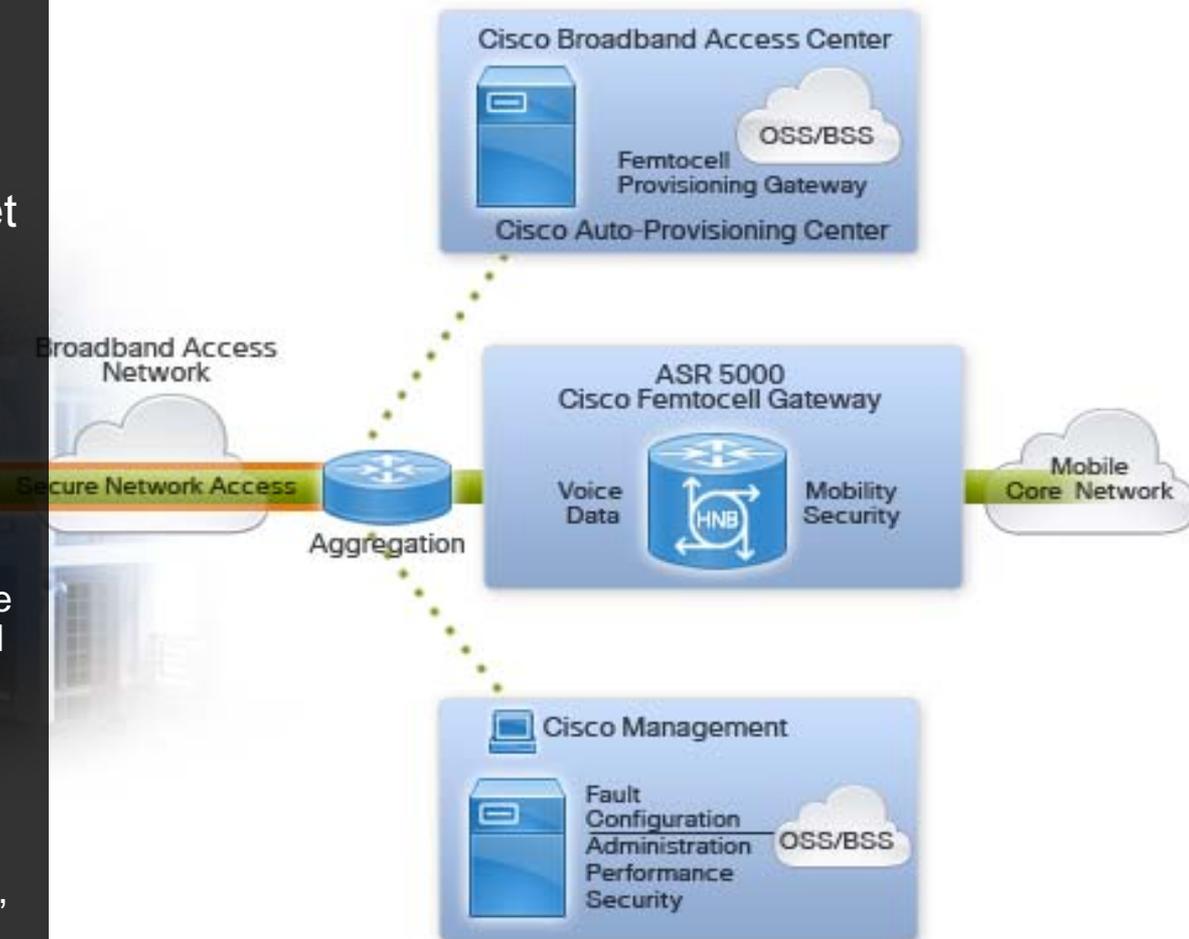
## Complements 3G Network



- Seamless Mobility/Roaming
  - Controller-based for mobile access to real time services
  - Client-based for IP flow mobility between licensed/unlicensed (clientless roadmap)
  - Authentication-based for seamless roaming between operators
- Integrated Wireless Management
  - Self Provisioning
  - Self Configuring
  - Self Organizing
- Robust Security at Each Step
  - EAP encrypted backhaul links
  - Honey Pot AP detection/ blacklisting
  - Encrypted control traffic
  - Integrated Wireless IDS and Attack correlation software
  - Mobile IPSec VPNs
- Data Offload
  - Reduces RAN congestion
  - Improves indoor coverage
  - Lowers network TCO

# Cisco Femtocell Solution

- World Class Zero Touch Provisioning
  - True plug'n'play customer experience
  - Dramatic OpEx reduction
  - The key to scaling service
- Industry-Leading Mobile Packet Core Intelligence
  - Performance optimized for throughput, transactions, and density
- State of the Art Femtocell AP
  - Superior indoor signal strength and coverage
  - High data speeds for an enhanced multimedia experience
  - Self-optimization tied to backend network intelligence
- Largest Femtocell Deployment
  - Large North American carrier
  - Vast experience with integration into carrier network for location verification, billing, management, regulatory compliance



Contact [femto-sales-inquiries@cisco.com](mailto:femto-sales-inquiries@cisco.com) if your customer is interested in Femto

# Cloud and Mobile Services

## Cloud Computing

- On-demand resources (infra / apps)
- Consumption across public / private networks
- Requirements on cost efficiency, performance, security, availability



**Control Delivery from  
Cloud DC  
to End-Points**



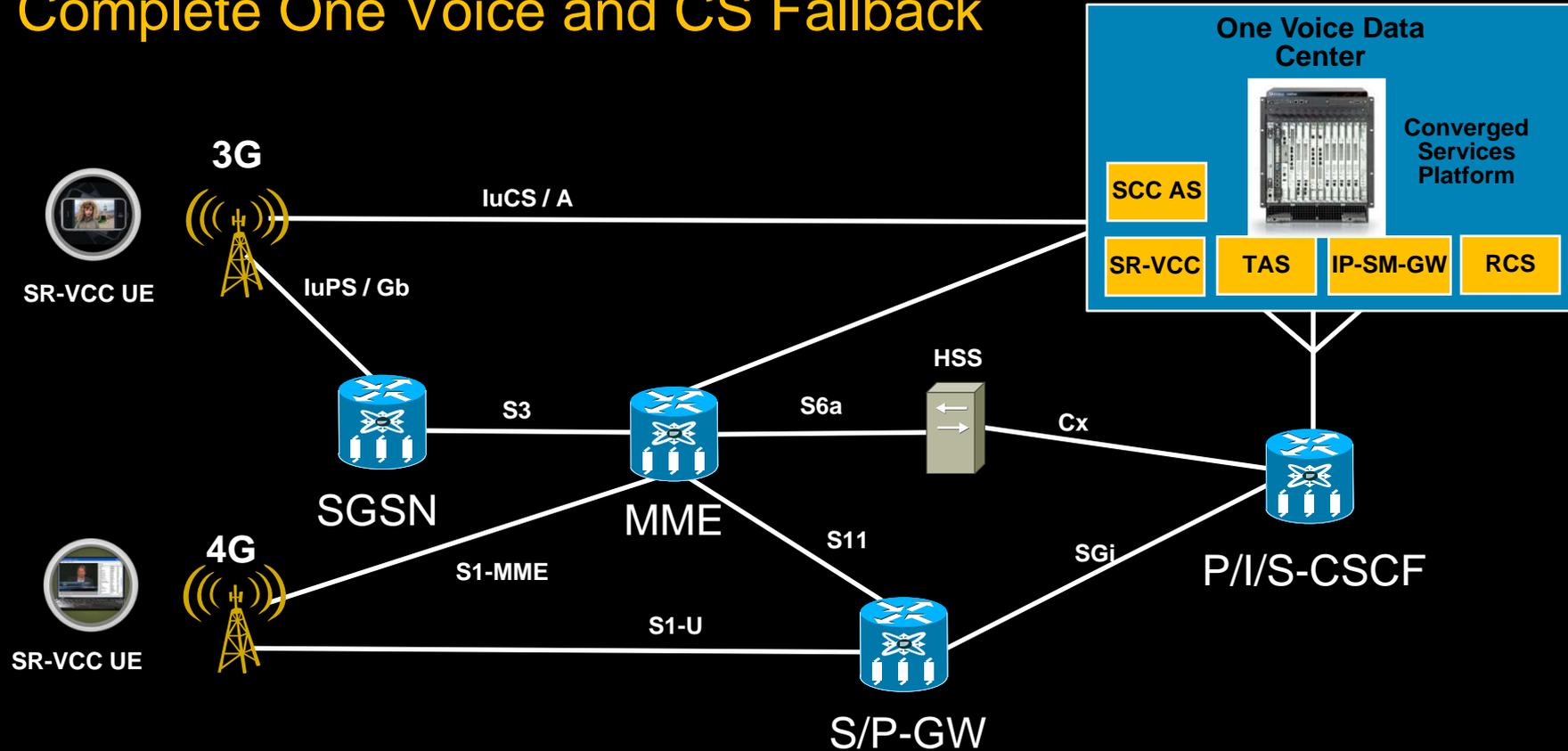
## Anywhere Delivery

- Mobilization of Enterprise Applications
- Unified Communications
- Requirements on usability, ubiquity, security, performance

Markets are growing quickly. Everything is impacted:  
User experiences, business models, architectures, products, technologies

# Cisco Voice over LTE

## Complete One Voice and CS Fallback



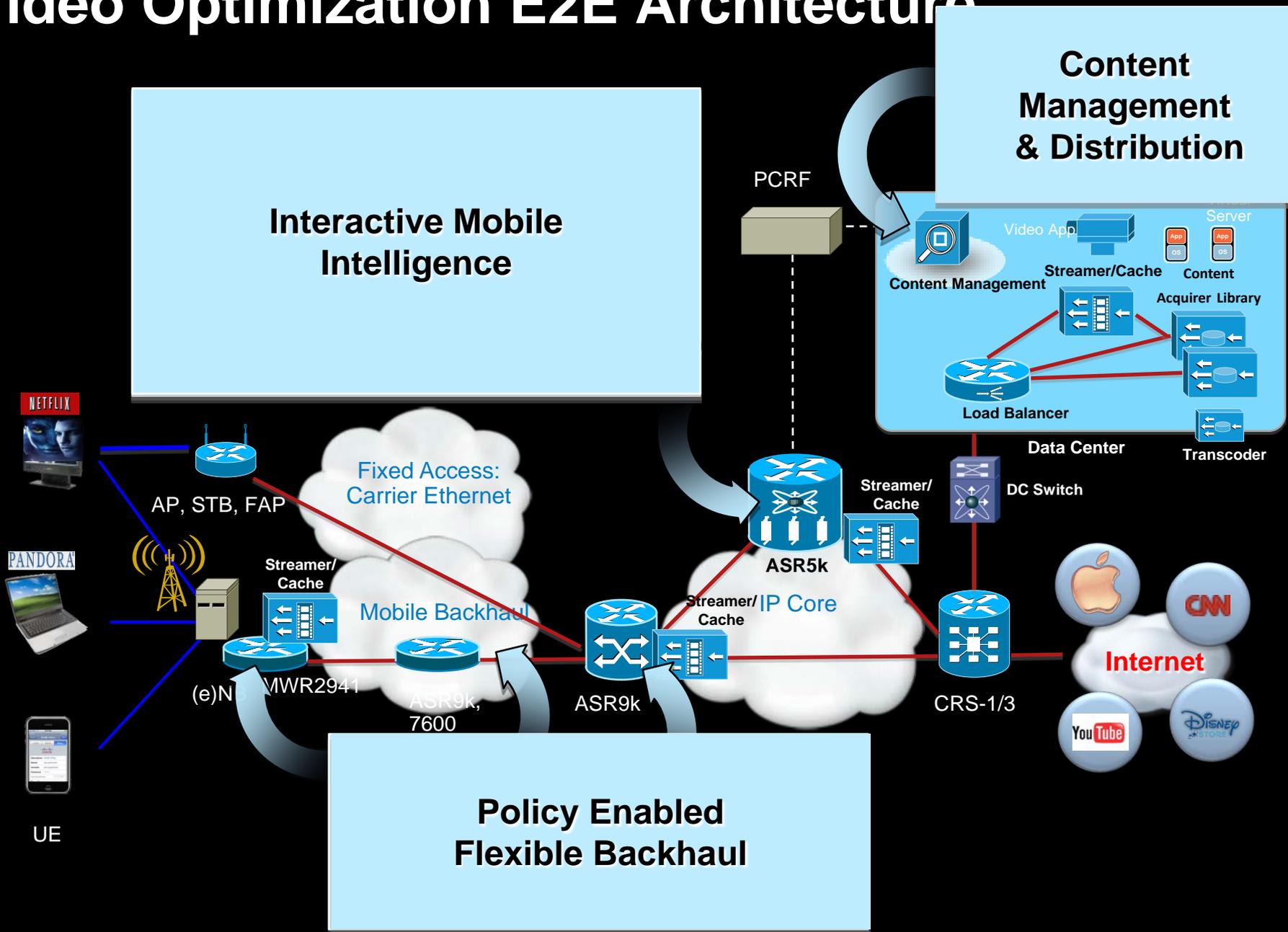
Integrated IMS  
& LTE Functions

Seamless  
IMS to CS Mobility

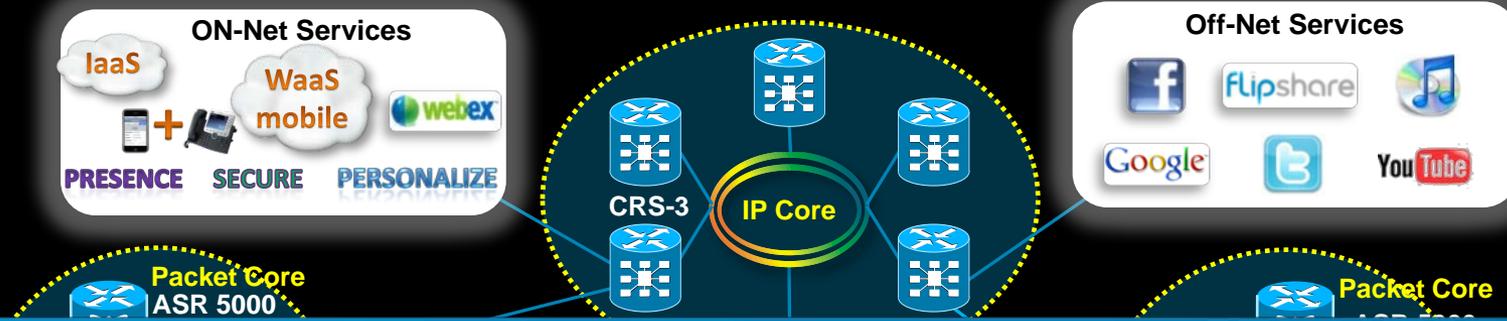
Cost Optimized  
Performance

Support for  
Messaging, Presence,  
RCS

# Video Optimization E2E Architecture



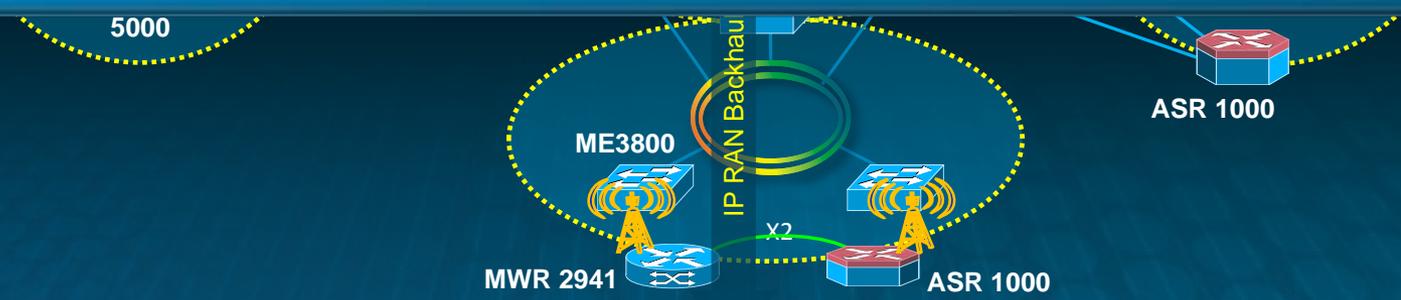
# Mobile Mega Test



**“By far the largest and most in-depth public, independent, third-party test of mobile infrastructure vendor performance ever.”**



Carsten Rossenhövel  
Managing Director, EANTC



- Conducted by independent testing lab EANTC, coordinated by Light Reading
- More than \$60 million of Cisco equipment
- More than 50 dedicated employees
- ASR 5000 maintained a total of 1 million attached subscribers

# Mobile Internet Services Examples



# Tiered Mobile Broadband Services

## Greater Market Penetration for Operator Mobile Broadband

**Internet and Mobile Broadband**

Mobile broadband with the web'n'walk data card  
[Find out more >](#)

Surf the internet on your phone  
Mobile broadband on your laptop

**Option 1 web'n'walk Plus**  
Web browsing, access emails, download files, audio/ video streams (excludes Voice over IP) with a 3GB fair use policy  
Ideal if you are a frequent mobile broadband user i.e. more than 5 times a month.

**Option 2 web'n'walk Max**  
Web browsing, access emails, download files, audio/ video streams, includes Voice over IP with a 10GB fair use policy.  
Perfect for frequent users who also use internet calling services like **Skype** and **JaJah.com**.

- ✓ Tiered mobile data service plans
- ✓ Policies with **Download Limit** and **Protocol Blocking**
- ✓ Subscriber aware enforcement of Fair Use Policies per service level limits

See:  
[http://www.cisco.com/en/US/solutions/ns341/ns525/ns537/ns548/mobile\\_web.html](http://www.cisco.com/en/US/solutions/ns341/ns525/ns537/ns548/mobile_web.html)

### Business Opportunity / Challenge

- Successful adoption of flat-fee 3G data services driving high bandwidth usage, but operator revenues not keeping pace with infrastructure expansion costs

### Cisco Solution

- Cisco solutions for mobile content classification and charging, DPI, and dynamic policy management enable mobile operators offer subscriber-aware access to and allocation of network resources, services and content
- Cisco Advanced Services for full project planning and systems integration with single point of accountability

### Benefits for Consumers

- Subscribers choose the service plan they need to access mobile web and favorite internet applications
- Ensures fair usage for all users

### Benefits for Operators

- Monetize yet control impact of Peer-to-peer and Over-the-Top (OTT) application traffic
- Creates new service revenues through further user market segmentation with policy-based usage tiers

# Mobile Child Safety

## Protect Children Using Mobile Data Services

Subscriber Web Portal

**Content Management**

**Content Categories**

- Illegal
- Adult
- Inappropriate
- Undesired

Internet Categories

**Privacy Protection**

- Identity
- Contacts
- Financial
- Phishing

**Text**

Offensive / Inappropriate Content

**Virus**

Trojans  
Masquerades

**Spam**

Bullying / Harassment  
Undesired content  
Spoofing

**Phishing**

Fraud  
Baiting

**Message Access Management**

**Whitelist**

**Blacklist**

### Business Opportunity / Challenge

- Operators need to protect children using mobile services for customer retention and legal reasons

### Cisco Solution

- Cisco Mobile Content Filtering & Control
- Cisco partners include AdaptiveMobile for Content Filtering application
- Cisco Advanced Services for full project planning and systems integration with single point of accountability

### Benefits for Consumers

- Allows parents to prevent children from accessing inappropriate web sites; blocks inappropriate or unsolicited messages by SMS and images by MMS

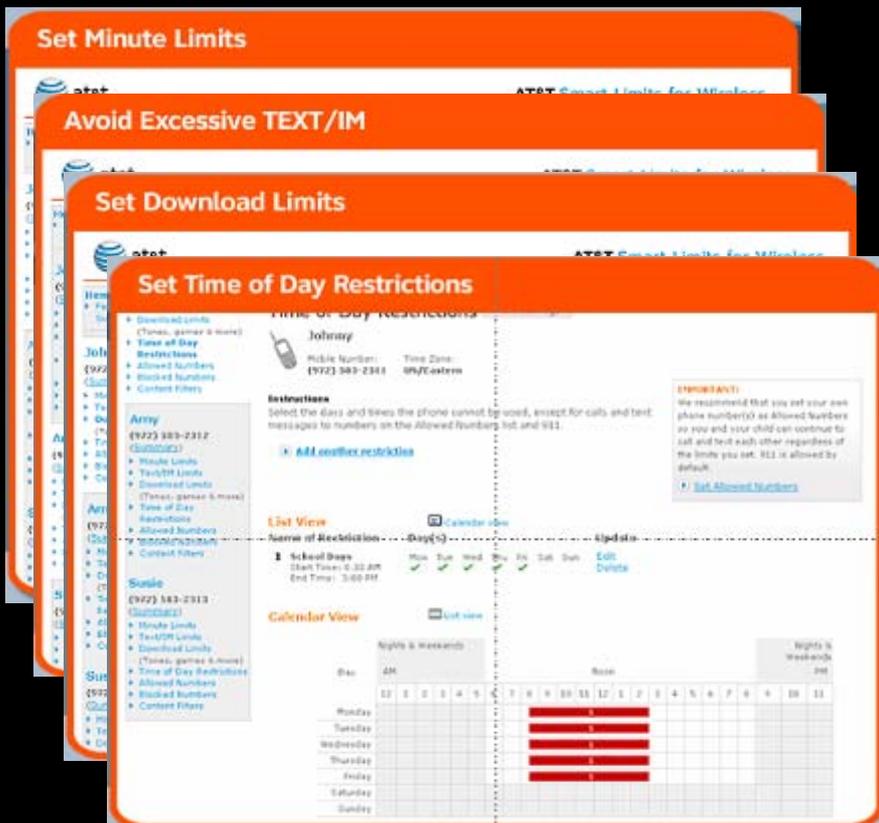
### Benefits for Operators

- Builds brand differentiation and increases customer retention
- Creates new service revenues through premium control service options
- Helps meet regulatory and social requirements

See: [http://www.cisco.com/en/US/solutions/ns341/ns525/ns537/ns548/mobile\\_childsafety.html](http://www.cisco.com/en/US/solutions/ns341/ns525/ns537/ns548/mobile_childsafety.html)

# Mobile Spending Limits

## Reduce Churn with Self-Managed Mobile Services



### Business Opportunity / Challenge

- Operators need to reduce churn by providing capabilities to subscribers who want to set time and spending limits on usage of mobile services

### Cisco Solution

- Cisco Mobile Content Charging solution enables mobile operators to protect revenues via real-time enforcement of credit limits
- Cisco partners include Openet, Kabira... for Billing and Mediation application

### Benefits for Consumers

- Gives subscribers (and parents of minors) self-care portal to view and set thresholds on time, amount, cost of mobile voice / data / messaging services used

### Benefits for Operators

- Builds brand differentiation and increases customer loyalty
- Creates new service revenues through premium control service options

See: [http://www.cisco.com/en/US/solutions/ns341/ns525/ns537/ns548/mobile\\_spending\\_limits.html](http://www.cisco.com/en/US/solutions/ns341/ns525/ns537/ns548/mobile_spending_limits.html)

# Personalized Mobile Services

## Maximize Revenues by Meeting Varying Subscriber Needs

### Usage Bundles

Basic.....	\$14.99
<i>10 GB/month; * \$2.50/additional GB</i>	
Advanced.....	\$24.99
<i>25 GB/month; \$2.00/additional GB</i>	
Power.....	\$54.99
<i>50 GB/month; \$1.00/additional GB</i>	
Pay As You Go.....	\$3.99
<i>\$3.00/GB</i>	



\* On-net / preferred partner site usage not counted in allowance

### Service Bundles

Basic Bundle.....	\$24.99
<i>Email + 30 min HTML browsing</i>	
Advanced Bundle.....	\$34.99
<i>Basic Bundle + VoIP</i>	
Power Bundle.....	\$44.99
<i>Advanced Bundle + P2P</i>	

### Add-On Options

Bandwidth Boost.....	\$4.99
Service Pass (Per hour) .....	\$1.99
Movie Package 10GB movie downloads	\$9.99
Gamer Package 100 mins at named sites	\$12.99
Music Package 50 downloads at named sites	\$ 3.99

### Business Opportunity / Challenge

- All-you-can eat mobile data plans not effectively monetizing true segmentation of user base
- Operators need to unlock the potential to preferentially partner with application providers

### Cisco Solution

- Cisco mobile content classification & charging, content filtering, DPI, and dynamic policy control
- Cisco Advanced Services for full project planning and systems integration with single PoC

### Benefits for Consumers

- Subscribers choose and pay for the services they want, and can flexibly add or drop service options

### Benefits for Operators

- Maximize Revenue potential of network assets by offering service plans to meet individual needs of subscribers:

- Usage-based plans (volume, power user, metered)
- Service-based plans (by application, content, service)
- Time-based plans (e.g., service passes)

*...while managing network resources to ensure fair use for all subscribers*

# Mobile Web Advertising

## New Revenues for Operators in Online Advertising Ecosystem



### Business Opportunity / Challenge

- Advertisers facing allocation gap – % of internet ads disproportionately low to amount of time users spend online vs. advertising on TV & newspapers
- Advertising Networks don't enable advertisers to reach a demographically targeted audience
- Ad targeting can be *uniquely* enhanced by operator's knowledge of location, demographics, device type

### Cisco Solution

- Cisco AdControl solution; Cisco 7600 / SAMI
- Cisco partner Feeva for tag encryption application, demographic database, revenue reconciliation

### Benefits for Consumers

- Make existing online advertising more relevant, with no handling of Personally Identifiable Information

### Benefits for Operators

- Gain share of Advertising revenues on their networks, leveraging existing network assets
- Monetize new partnerships with Advertising ecosystem (i.e., advertising networks, advertisers)
- Network-centric solution reaches target audiences across access network and end user device types
- Protect subscriber privacy and preserve trust

# Expanding Managed Services with SMBs

## Cisco 3G Wireless WAN Solutions

- Reliable, resilient WAN backup for
  - Network outages
  - Disaster recovery
- Rapid deployment
  - Instant branch connectivity for temporary or new sites
  - Temporary connectivity for nomadic sites
- Portable deployments
  - Kiosks, construction trailers, and mobile banks
- “Primary data” connection
  - Store-in-store, smaller retail stores, ATM connectivity, gas stations, and broadband access



### Linksys Wireless-G Router for Mobile Broadband

alternative



Shares a 3G Internet connection with Ethernet wired and Wireless-G clients



### Cisco 3G Wireless WAN HWIC



3G Internet connection integrated in Cisco ISR, with IP data, voice, video, mobility services



# To Summarize...

Trusted partner for the global Mobile Service Providers





W o r k i n g  T o g e t h e r