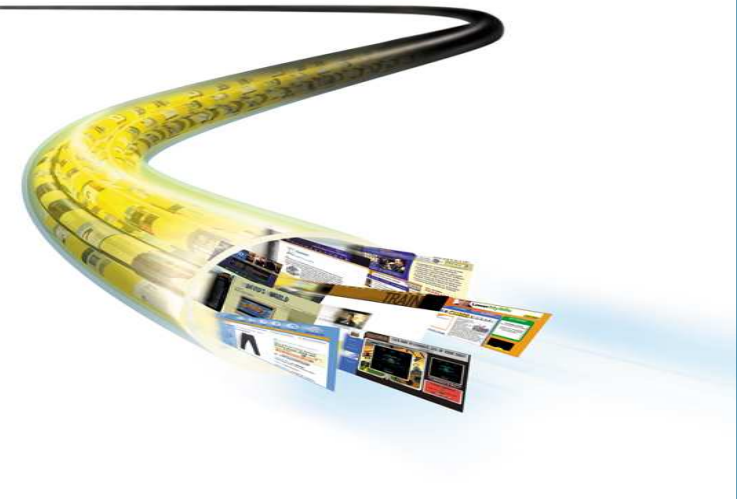




Cisco AR Speaker Series: Cisco Visual Networking Index Forecast, 2007-2012



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July 2008

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Cisco Visual Networking Index (VNI) – Forecast

Measuring IP Traffic Growth from 2007 to 2012

- In 2007, visual networking ushered in the exabyte era...
- In 2008, visual networking is ringing in the zettabyte era...



What is the Cisco Visual Networking Index (VNI)?

Visual Networking is the combination of video and social networking/collaboration (Web 2.0) technologies.

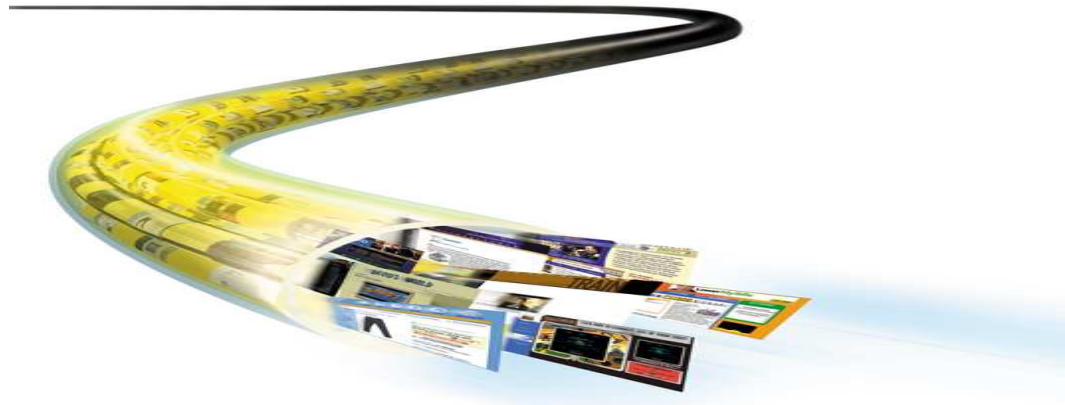


The Cisco Visual Networking Index is an initiative to track and forecast the suite of visual networking applications.

The Zettabyte Scale



Key Cisco VNI Forecast Insights



- 1. Video is the key driver of IP traffic growth**
- 2. High-definition and on-demand content are driving video traffic today**
- 3. Collaboration and mobility will drive video traffic tomorrow**
- 4. Video traffic will cause shifts/changes in network topologies**
- 5. The sheer volume of video content may cause traffic “surprises”**

Key Cisco VNI Forecast Predictions

Total IP Traffic 44 exabytes per month in 2012, 46% CAGR

- Annual global IP Traffic will reach half a zettabyte in four years

Total Internet 27 exabytes per month in 2012, 41% CAGR

- In 2012, the Internet will be 75 times larger than it was in 2002
- The sum of video will be close to 90% of consumer Internet in 2012

Internet video 10 exabytes per month in 2012, 65% CAGR

- In 2010 Internet video will surpass P2P in volume.
- Online video will account for nearly 50% all consumer Internet by 2012.
- In 2012, Internet video will be nearly 400X the U.S. backbone in 2000.

Mobile 1.2 exabytes per month in 2012, 116% CAGR

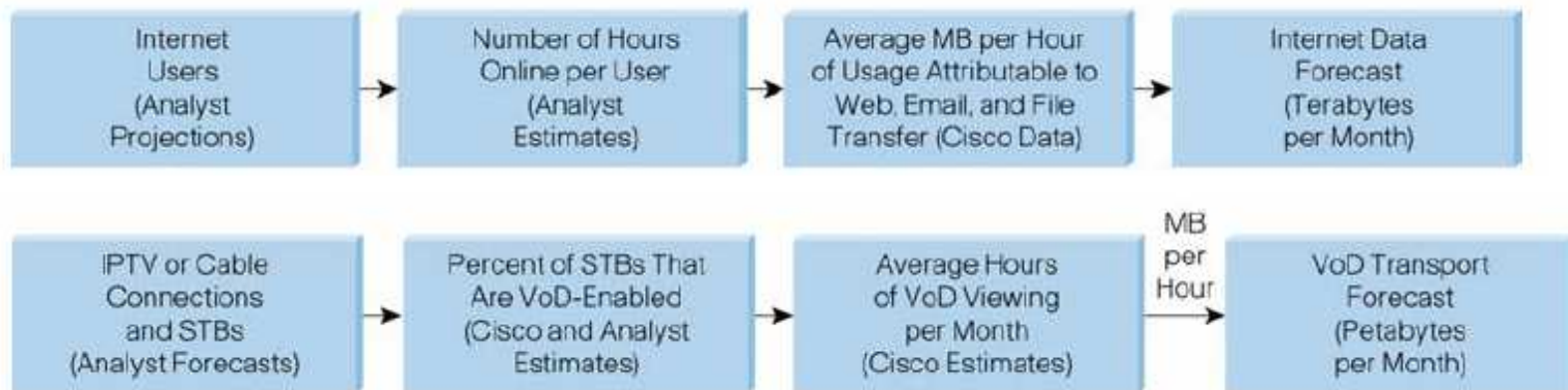
- Mobile data traffic will more than double every year through 2012.
- Mobile data traffic in 2012 will be twenty times what it is today.

Cisco VNI Forecast Methodology – 2007-2012

The forecast relies on analyst projections for Internet users, broadband connections, video subscribers, mobile connections, and Internet application adoption.

Cisco also collects traffic data directly from a number of our service provider customers, and this data is used to validate and adjust the usage assumptions underlying the forecast model.

Examples of the VNI Forecast methodology:



Global IP Traffic Growth

IP traffic will increase 6X from 2007 to 2012

In 2012, half a zettabyte will cross the global network

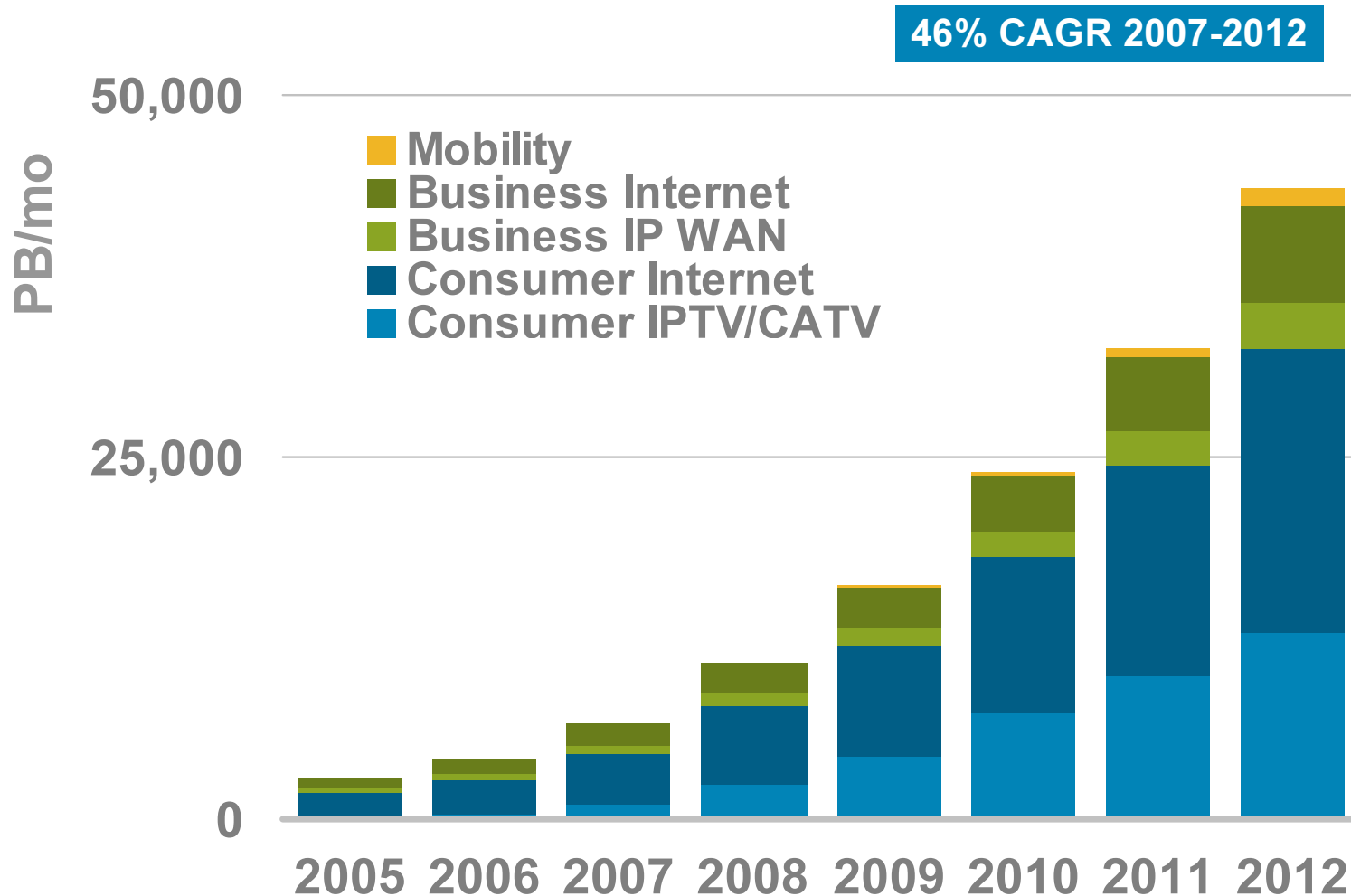


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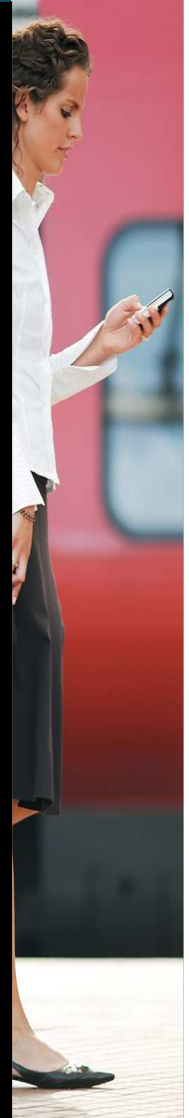
Traffic Per Household

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Business IP Traffic

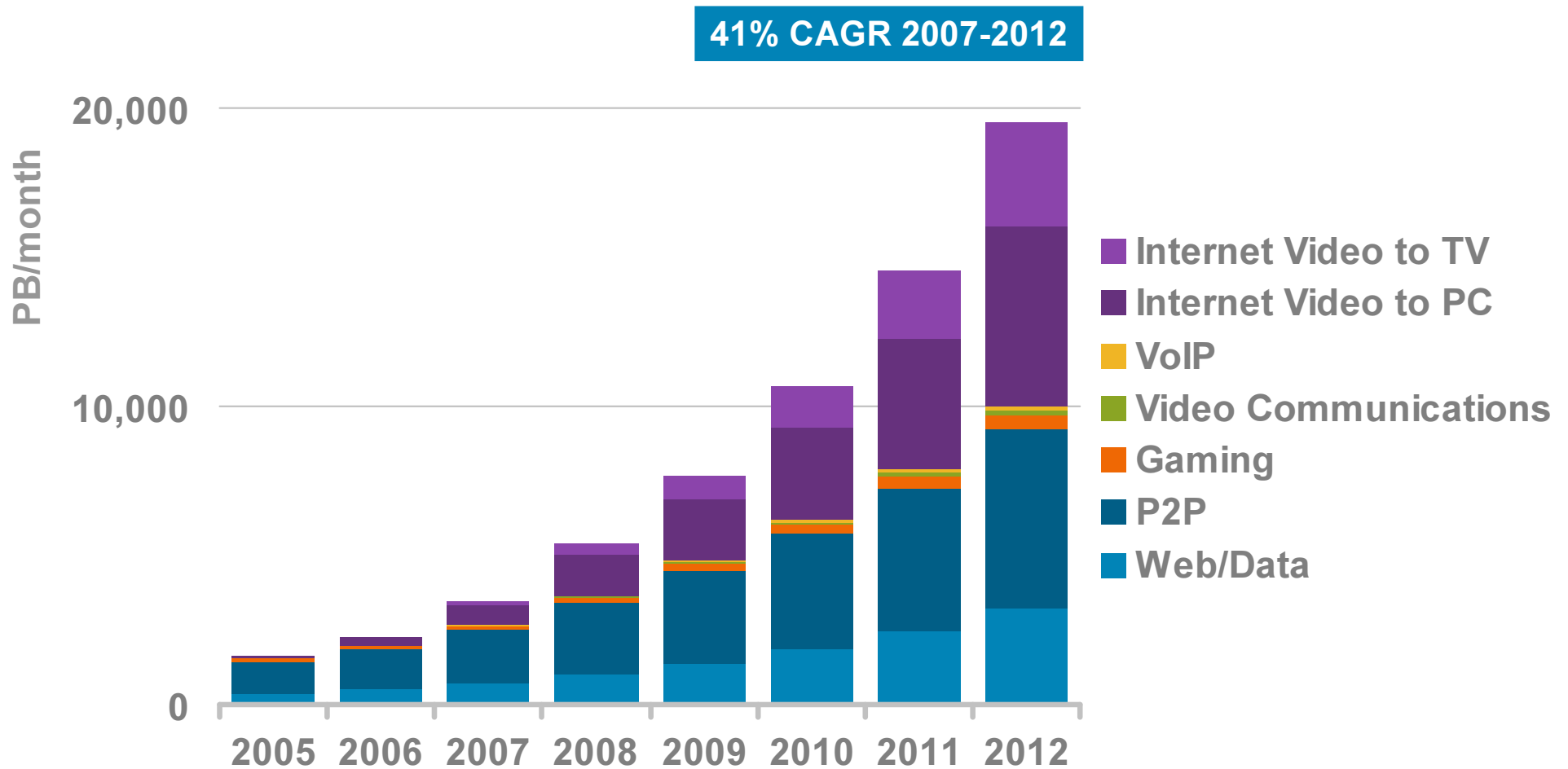
Mobile Data Traffic

Current Consumer Traffic Trends



Global Consumer Internet Traffic Mix

Video will be nearly 50% of traffic by 2012



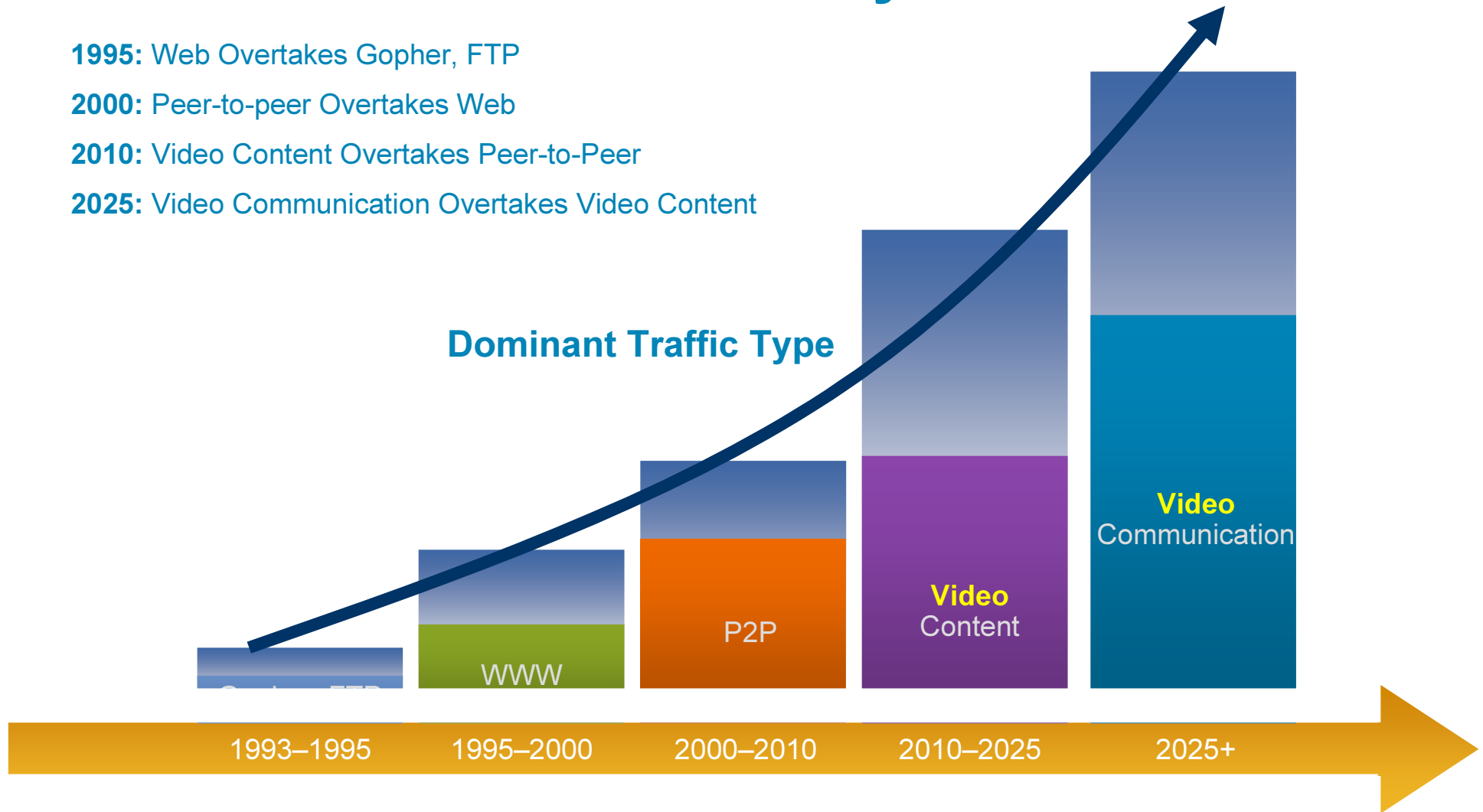
Video to Overtake P2P by 2010

1995: Web Overtakes Gopher, FTP

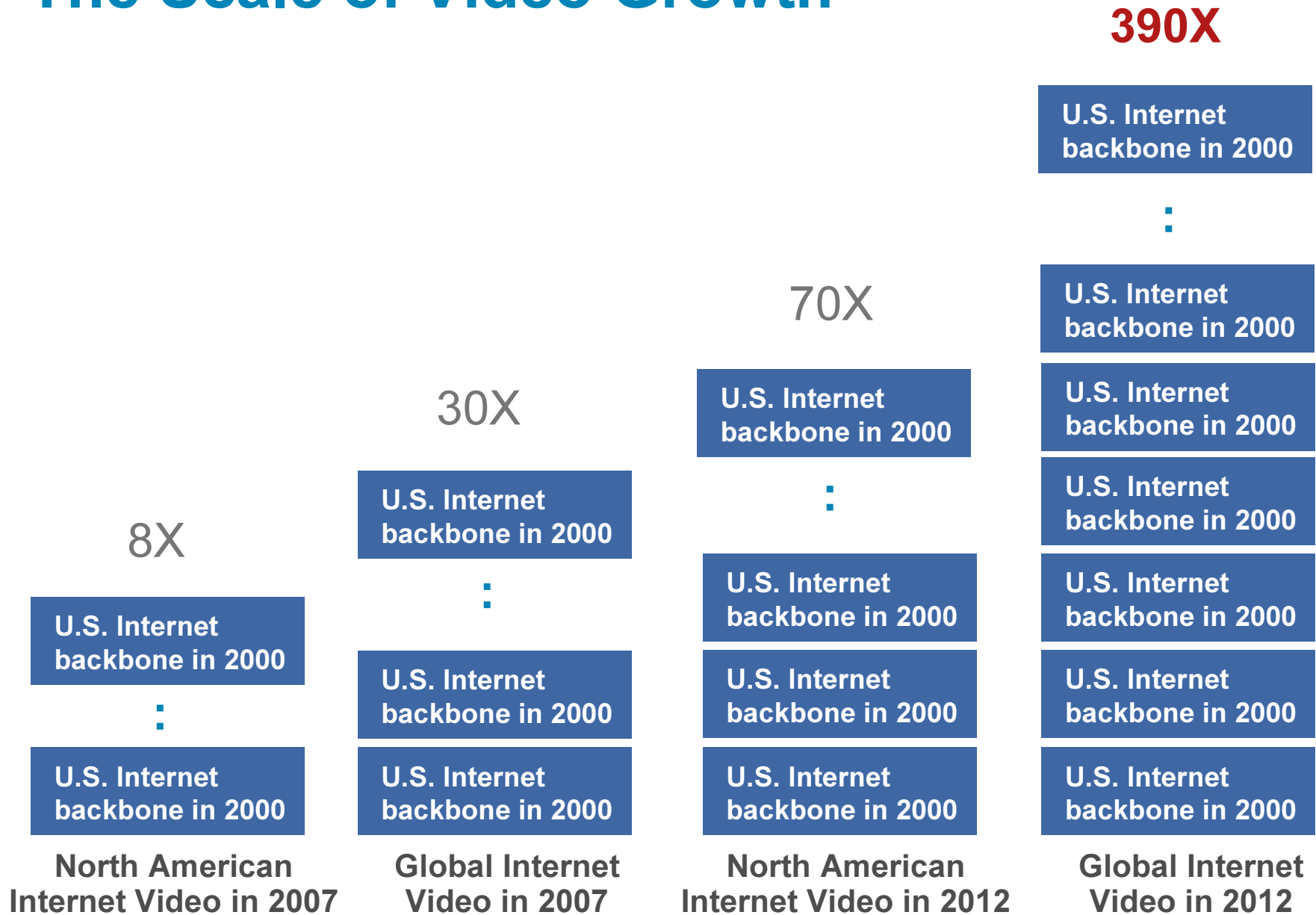
2000: Peer-to-peer Overtakes Web

2010: Video Content Overtakes Peer-to-Peer

2025: Video Communication Overtakes Video Content

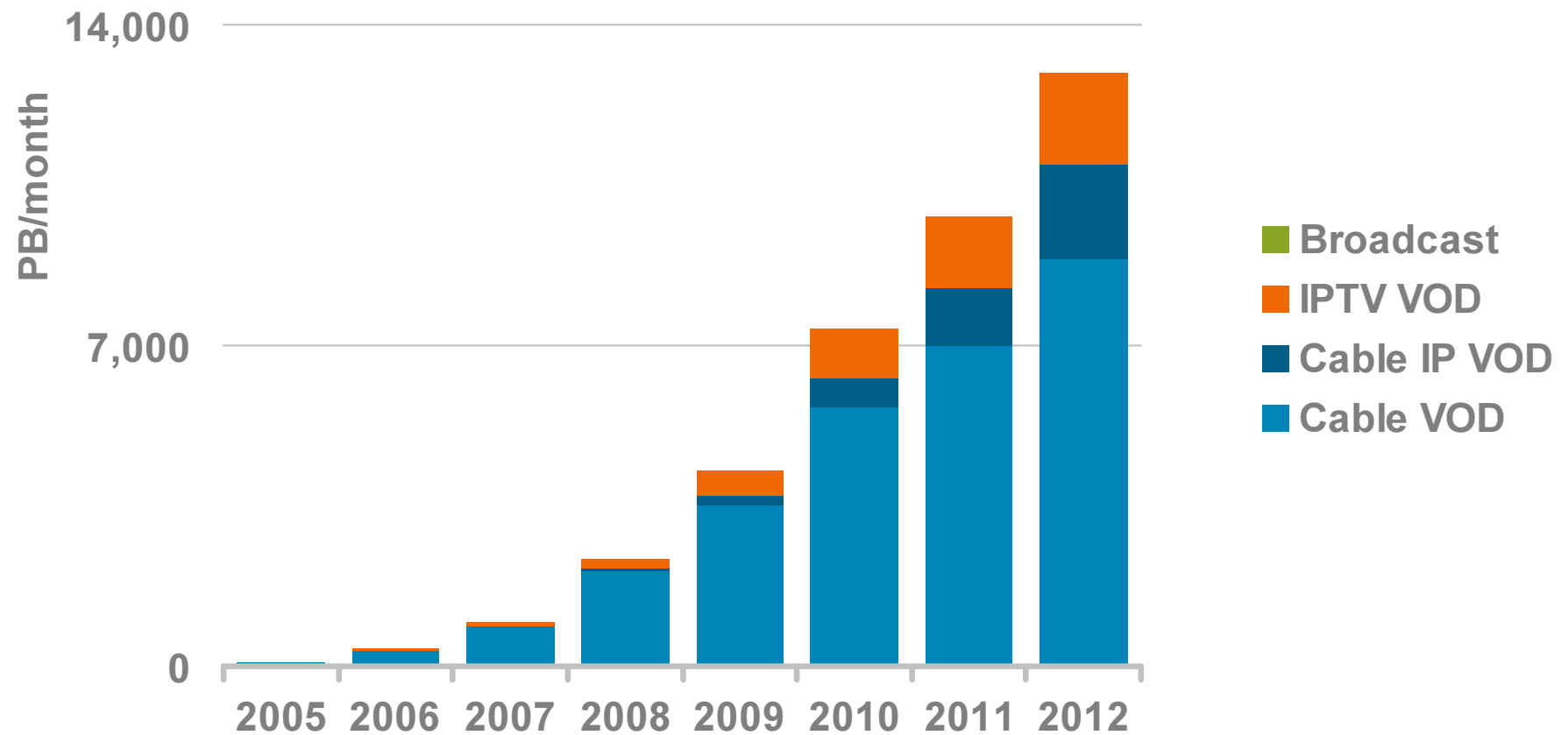


The Scale of Video Growth

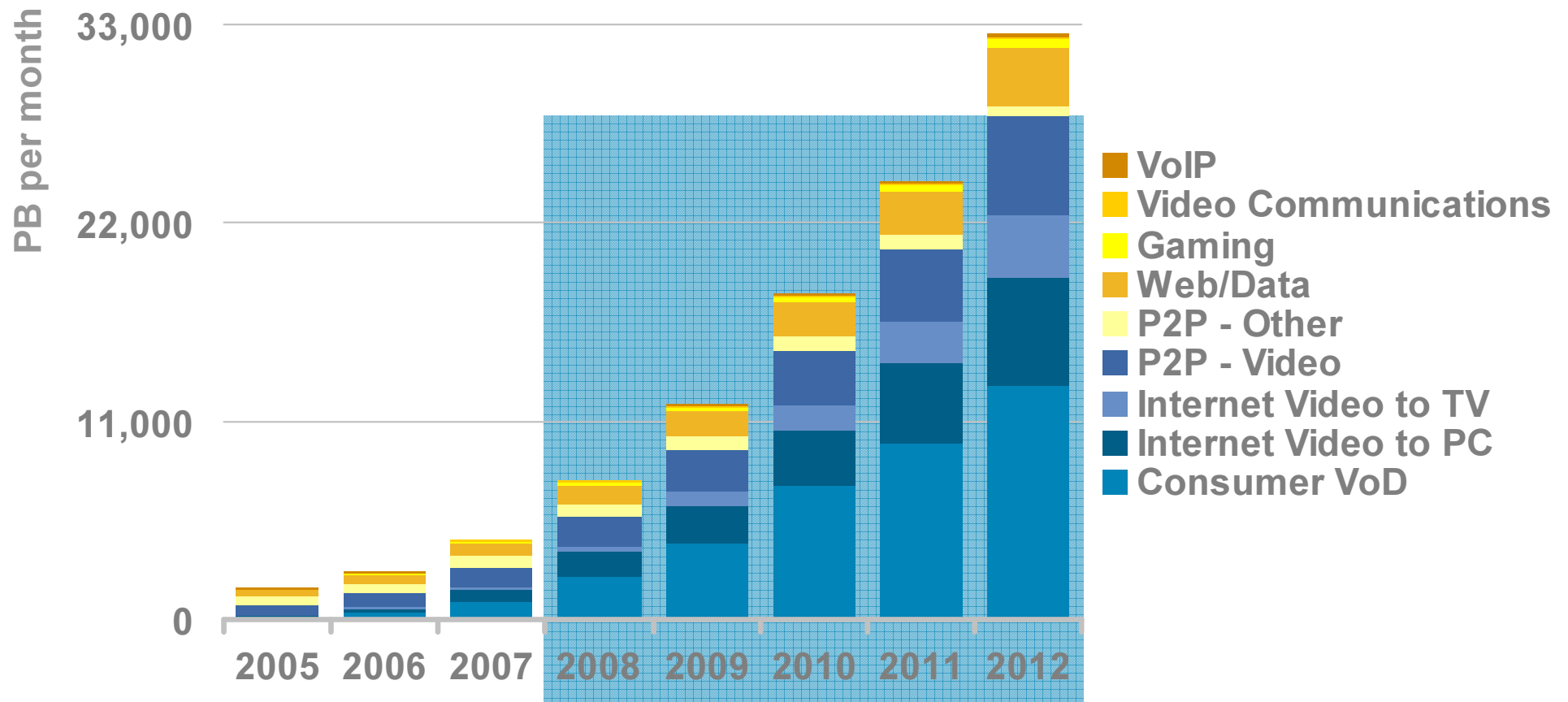


Global Consumer VOD Traffic Mix

Consumer VOD traffic grows at a 93% CAGR from 2007 to 2012



Without Video, Consumer IP Doubles by 2012 With Video, Consumer IP Quadruples by 2012



Video to reach 87% of Consumer IP in 2012

Core Grows Fivefold, Metro Sevenfold

Metro IP traffic grows by a factor of 7, Core by 5

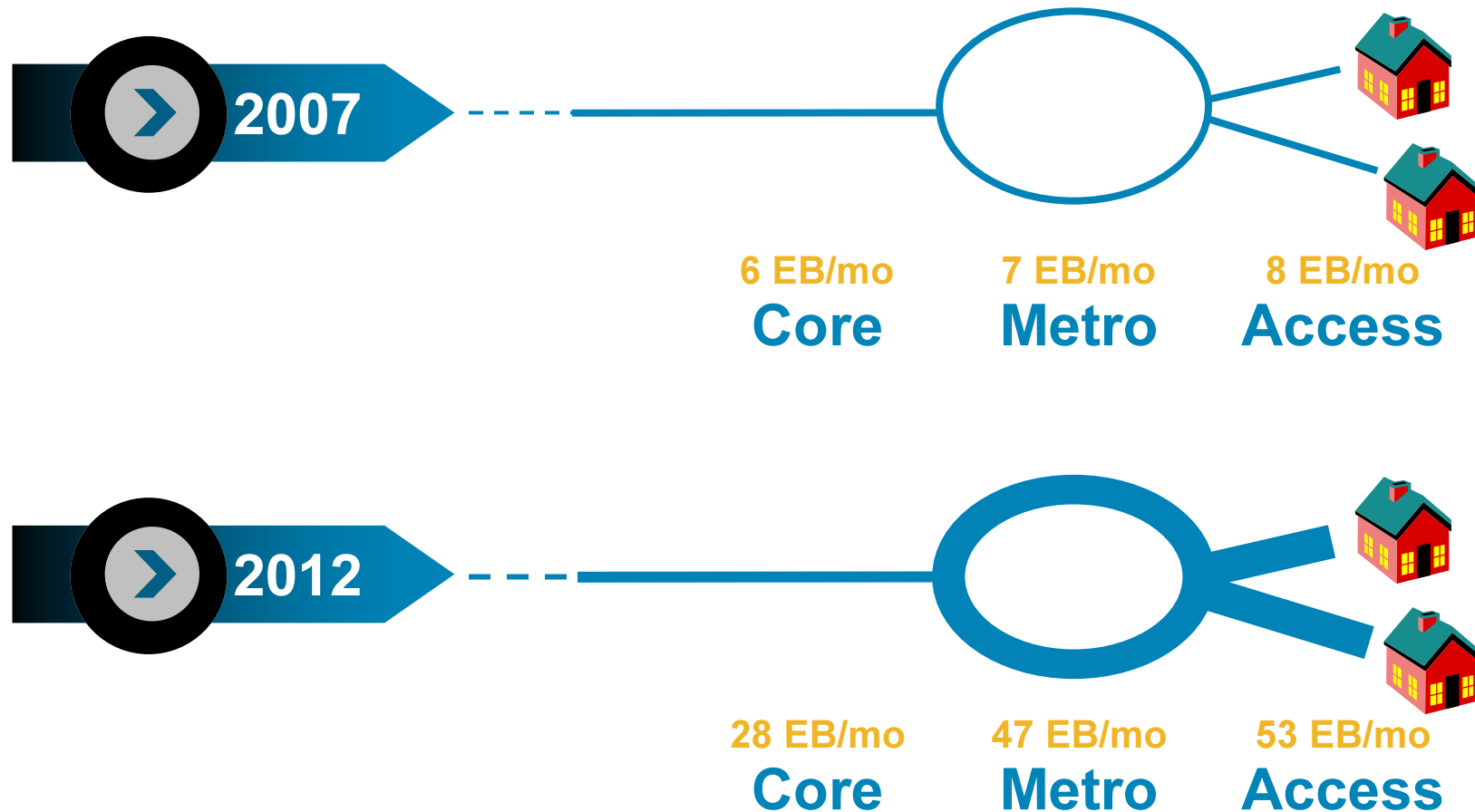


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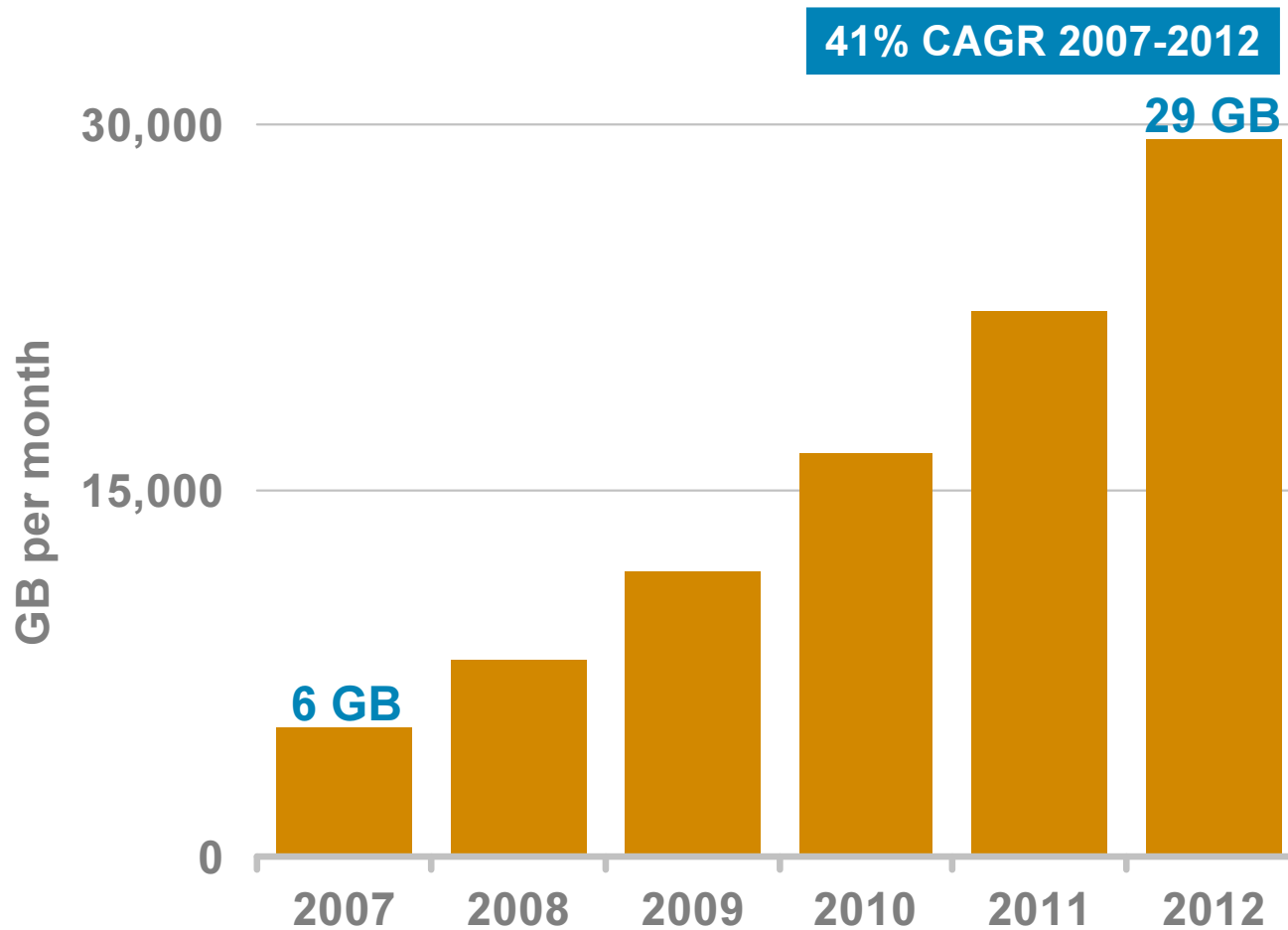
Mobile Data Traffic

Current Consumer Traffic Trends



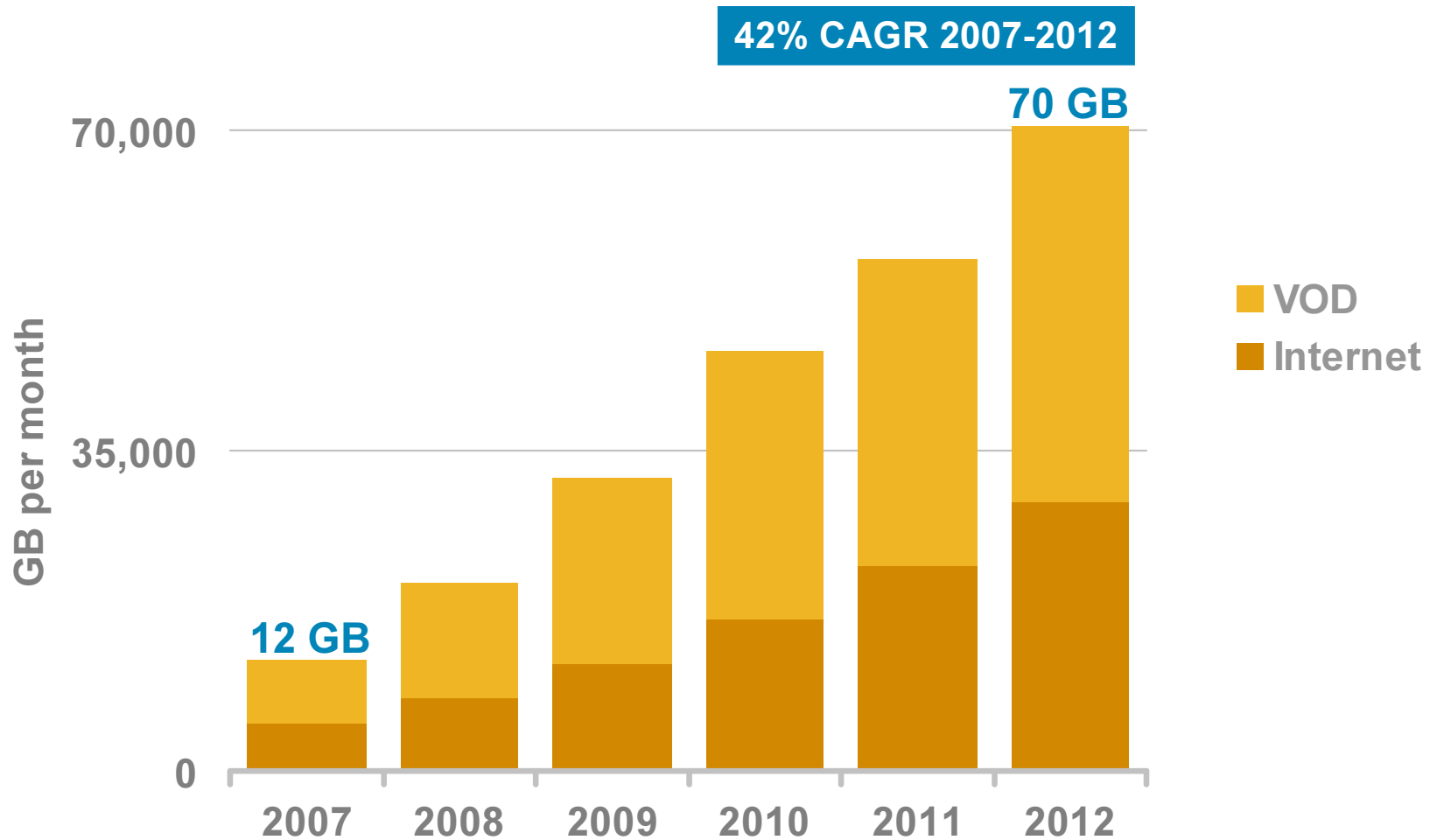
Per Household Internet Traffic Forecast – WE

Internet Household Traffic to Grow At 41% CAGR

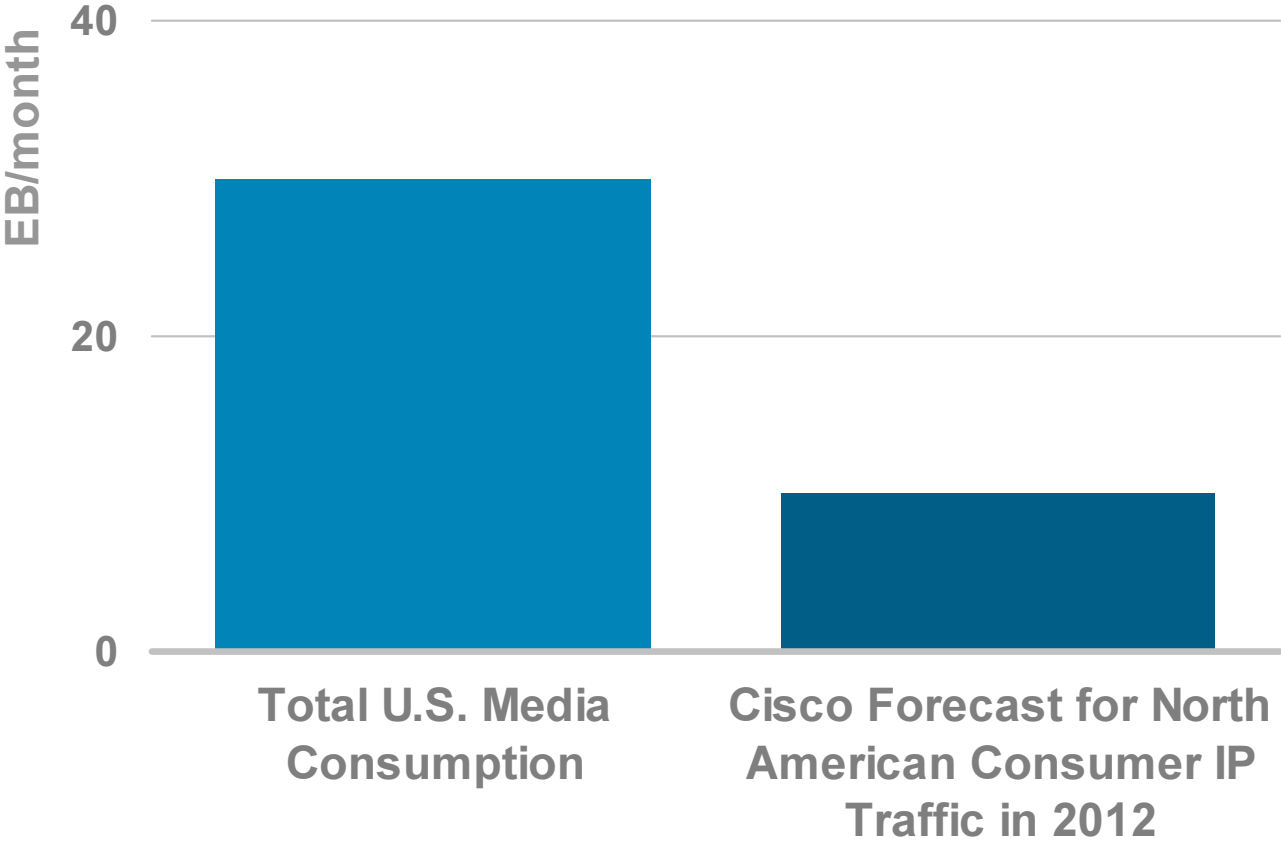


Per Household IP Traffic Forecast – WE

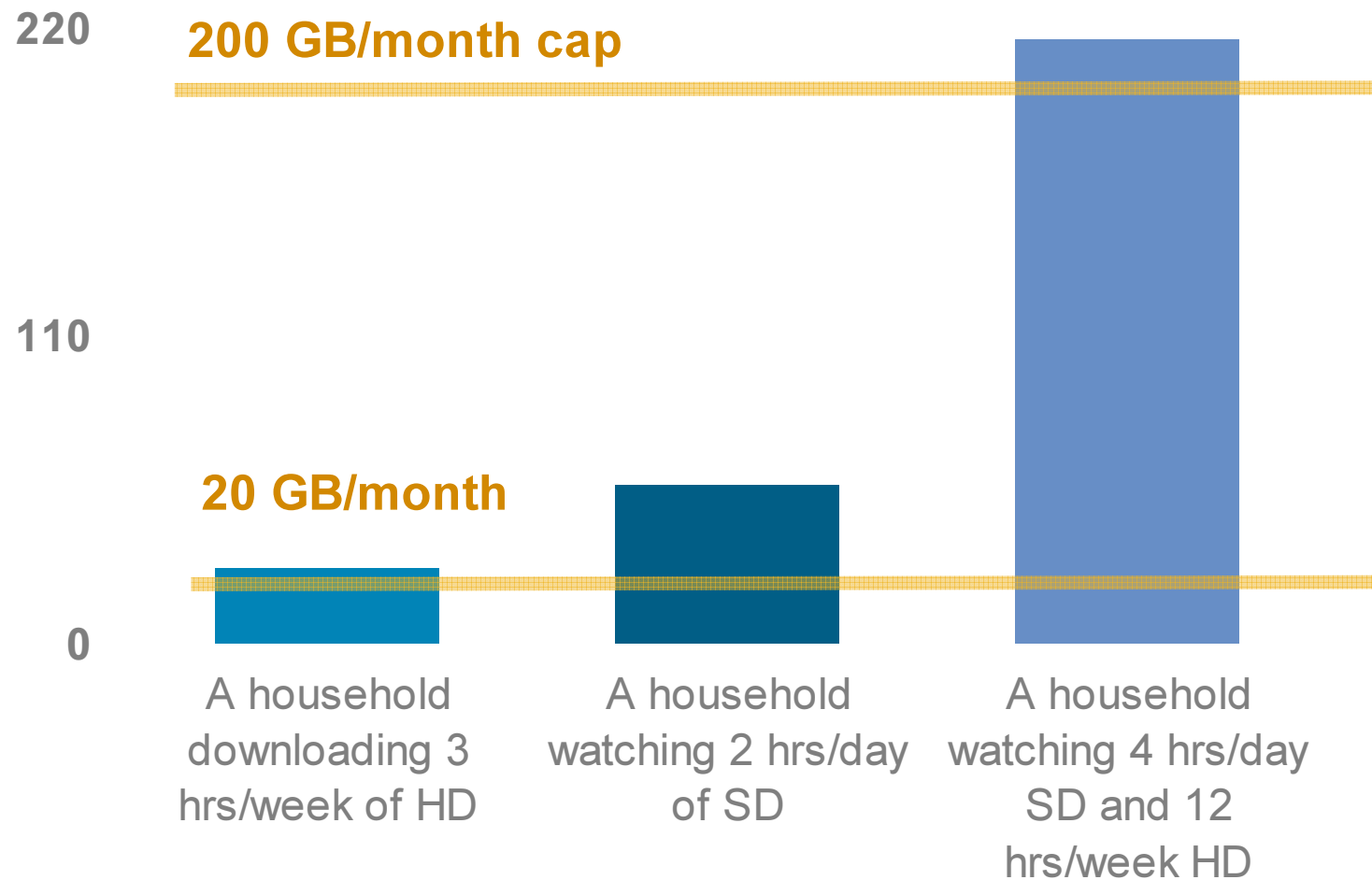
Internet + VoD Traffic to Exceed 70GB per Month by 2012



The Forecast In Perspective



Internet Video Scenarios



Household Bandwidth to Reach 1.1 TB/mo

Household Bandwidth Needs in 2010 (U.S.)

1x HDTV

+

1x SDTV

+

2x PVRs

+

1x VoIP

w/ 2 Dual Mode
Handsets

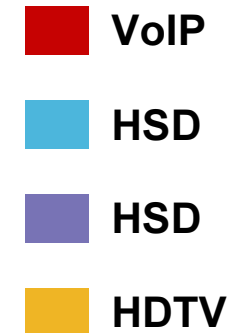
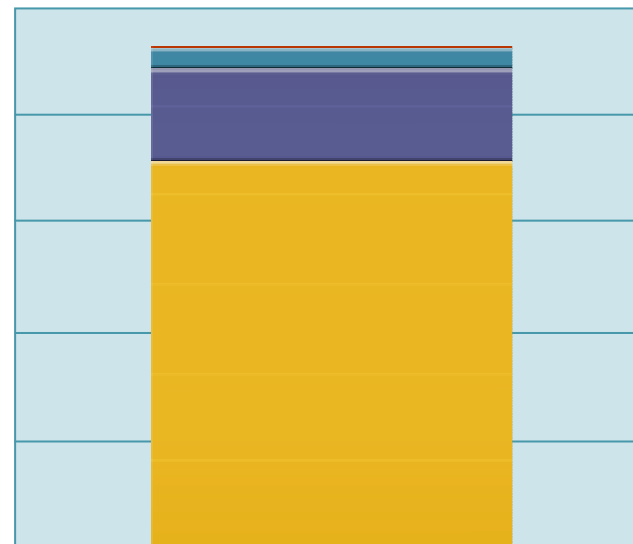
+

1x HSD

w/ 2 PCs



1.1 TB per Month



2010

Twenty such homes would generate more traffic than traveled the entire Internet backbone in 1994/1995.

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Three Waves of Internet Video Growth

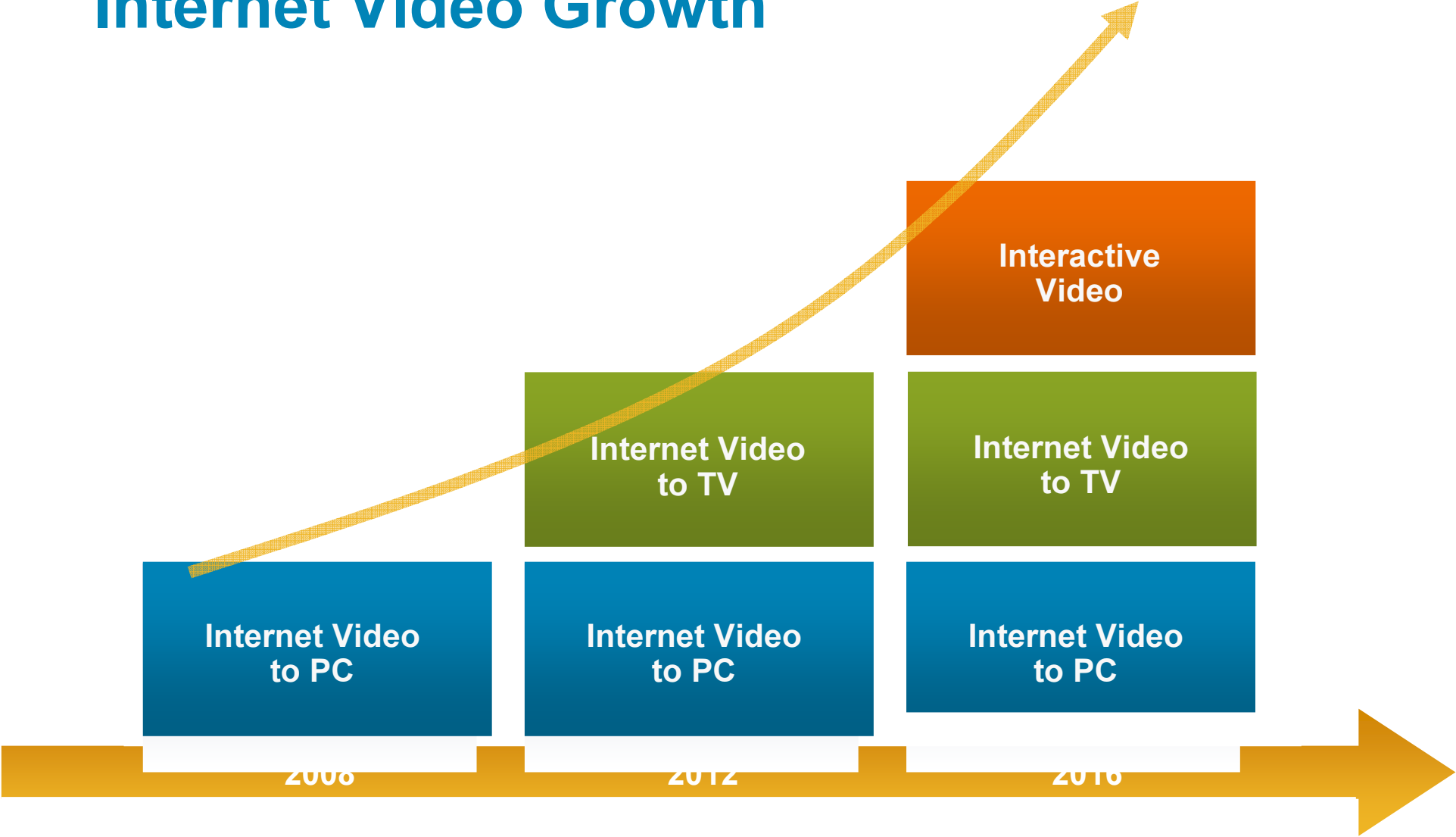


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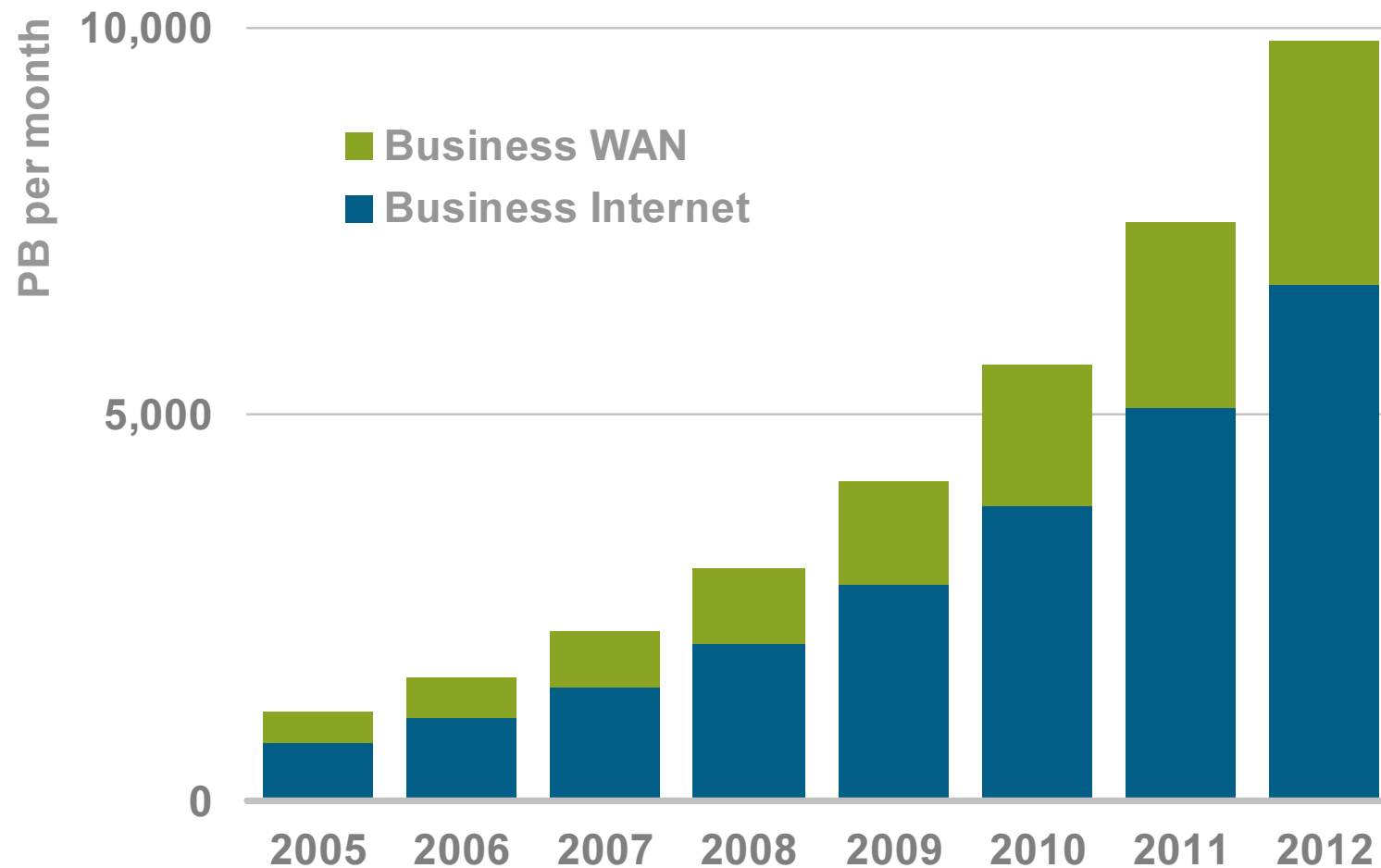
Business IP Traffic

Mobile Data Traffic

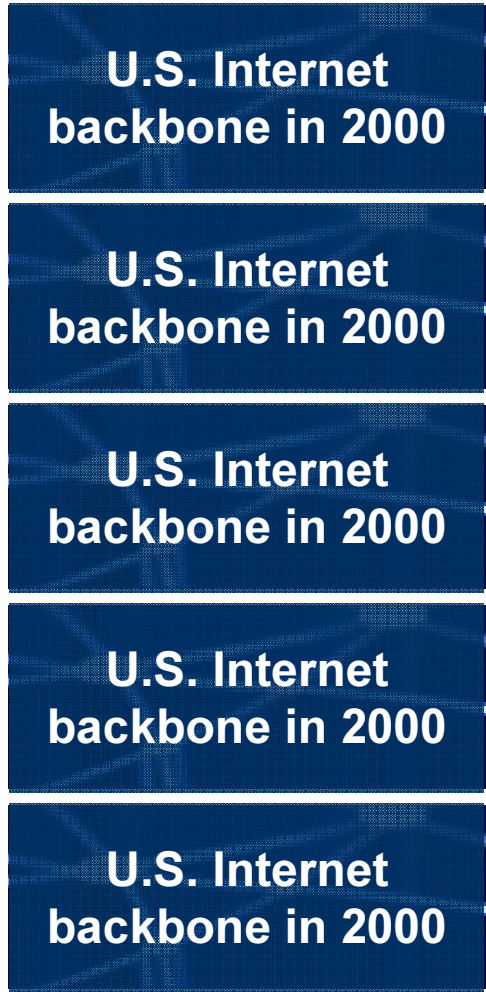
Current Consumer Traffic Trends

Global Business IP Traffic

Business IP to Grow at 35% CAGR 2007-2012



By 2012, corporate telepresence will be 5 times larger than the U.S. Internet backbone in 2000



TelePresence in 2012

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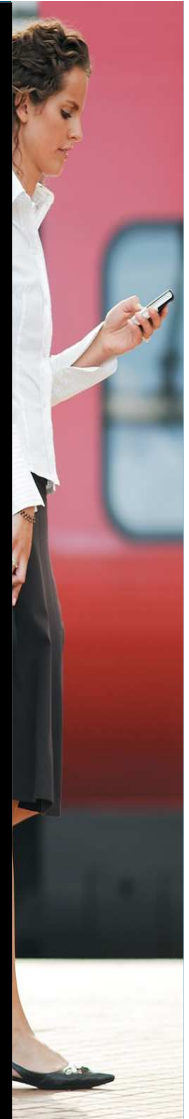
Traffic Per Household

Beyond 2012

Business IP Traffic

➤ Mobile Data Traffic

Current Consumer Traffic Trends



Global Mobile Data Traffic

Mobile Data to Grow at 116% CAGR 2007-2012

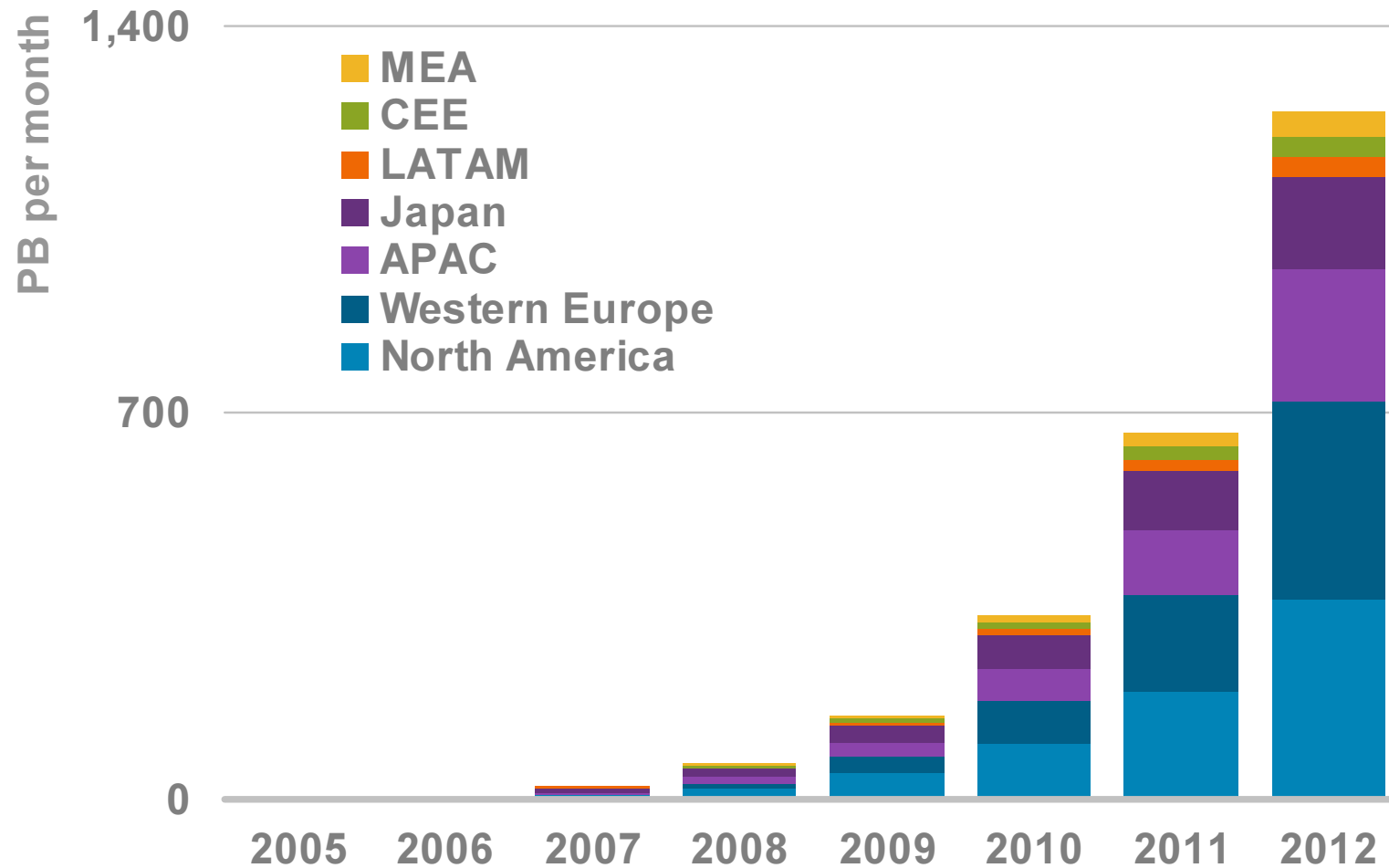


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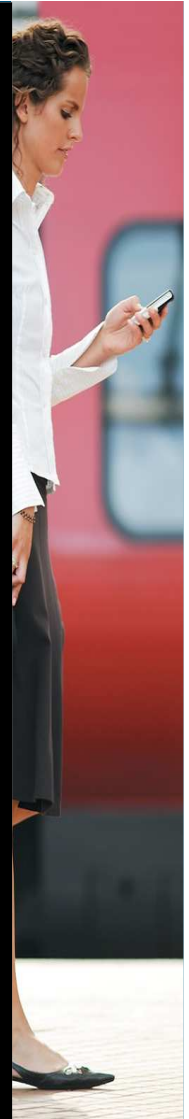
Traffic Per Household

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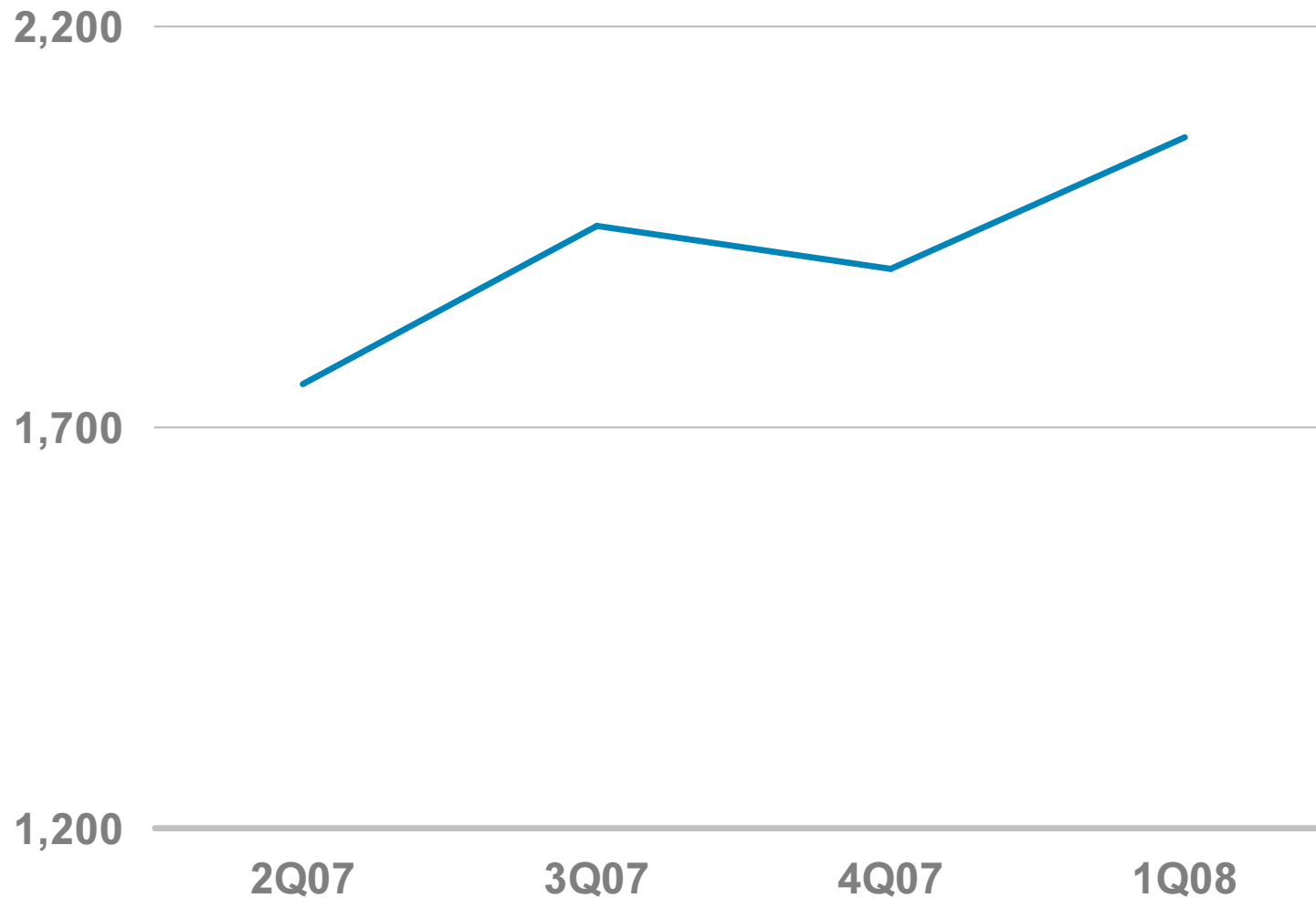
Mobile Data Traffic

Current Consumer Traffic Trends

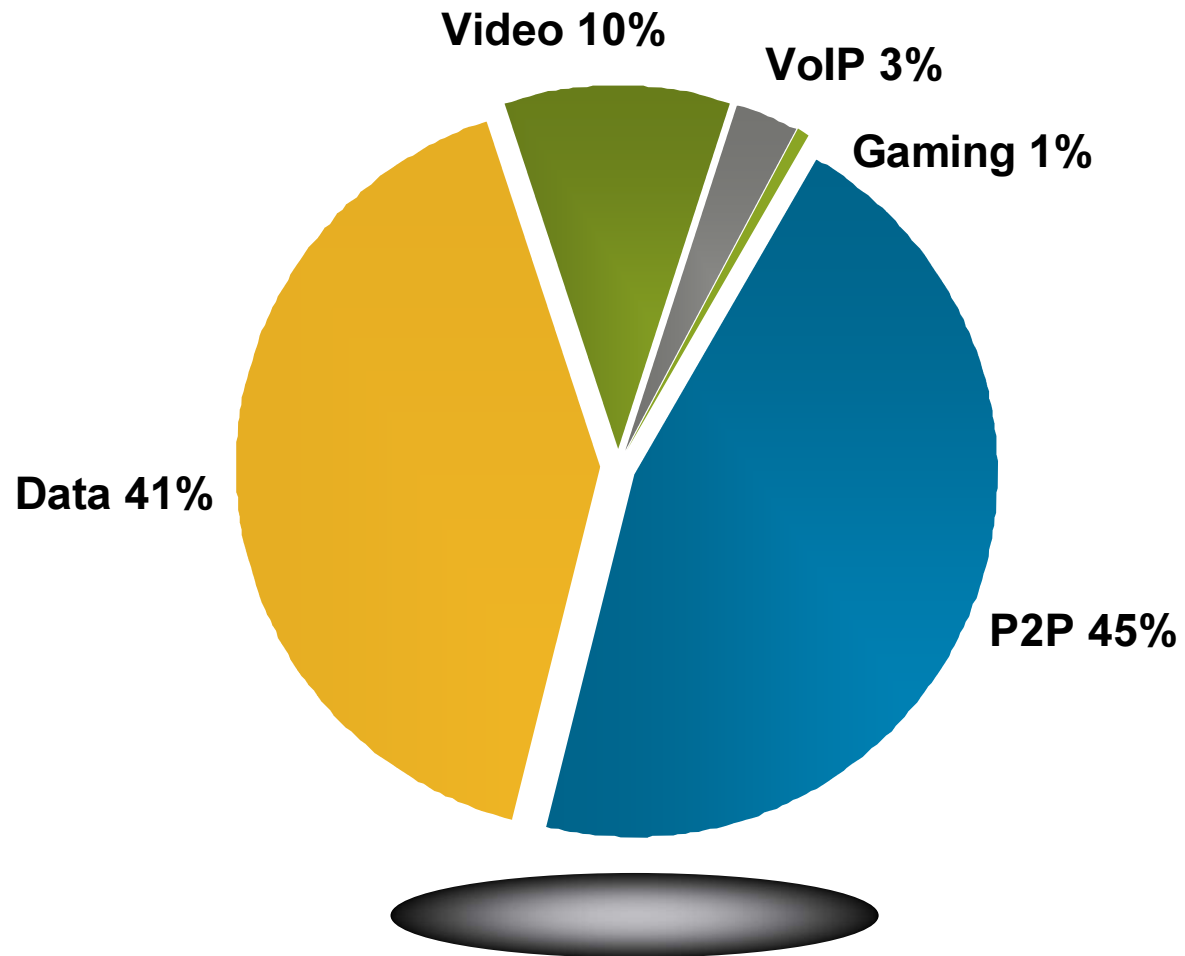


Traffic is Growing 6% per Quarter per Sub

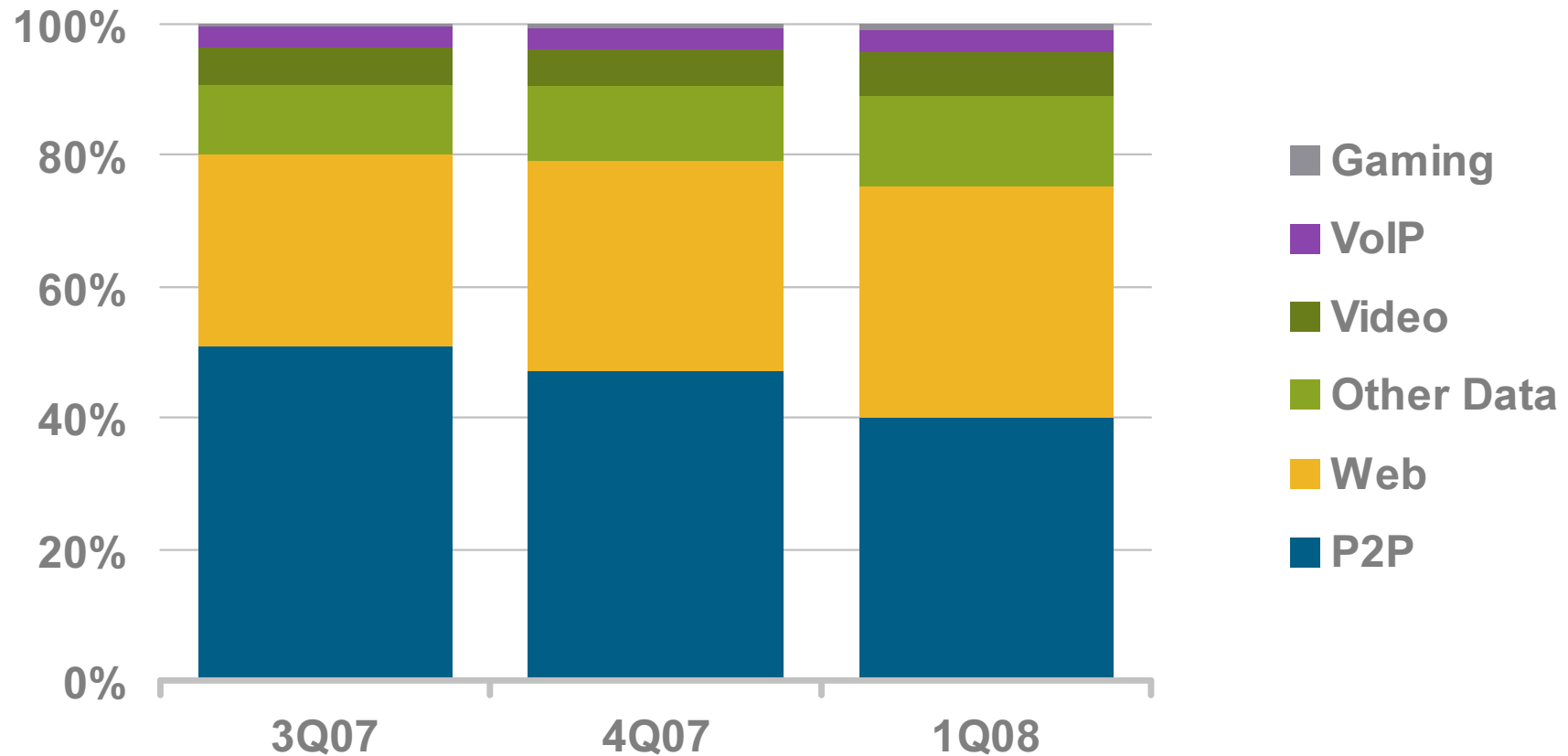
Traffic excluding P2P growing at 12%



Residential Broadband Traffic Mix



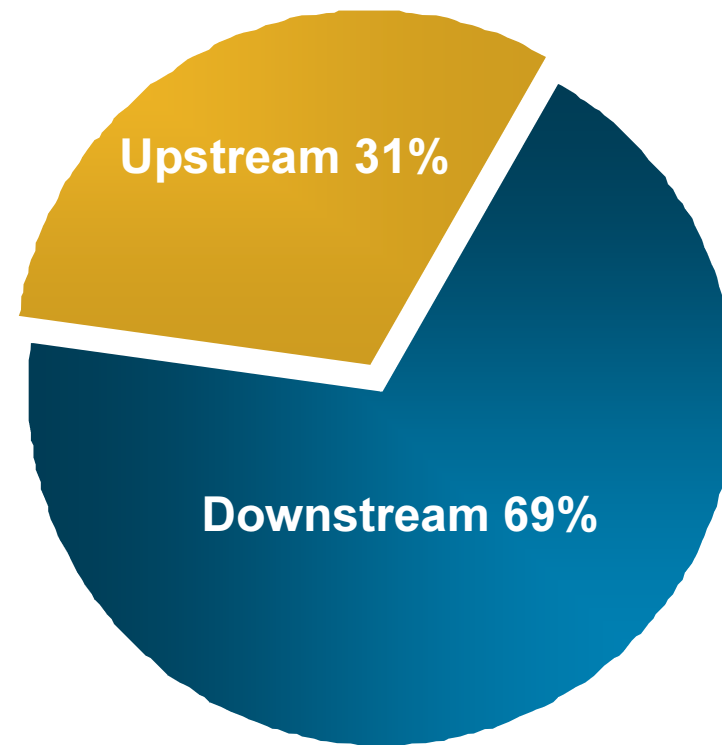
Decline of P2P as a Percentage



Upstream Steady at One-Third of BB Traffic

Upstream has remained at 30% for the last year

P2P is 76% of Upstream, and 68% of Downstream



U.S. TV Minutes – 1CQ08

8 hrs per day of TV time, nearly 1 hr of VOD/PVR/HD

	Jan '08	Feb '08	Mar '08	1Q08
Total minutes per day per STB	437	511	487	479
VOD minutes per day per active VOD STB	40	56	42	46
PVR minutes per day per active PVR	55	70	62	63
HD minutes per day per active HD STB	120	165	133	139
VOD minutes per day over all STBs	13	16	15	15
PVR minutes per day over all STBs	9	11	10	10
HD minutes per day over all STBs	30	33	34	32

For more information, please contact:

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ccromwel@cisco.com or (408) 526-6914

