Cisco Visual Networking Index (VNI) Global IP Traffic Forecast Update; 2010–2015

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IEEE 802.3 Bandwidth Advisory Ad-hoc, Sept 2011

Cisco Visual Networking Index (VNI)
Sharing Global IP Traffic Growth Projections & Analysis

5th Anniversary

The Cisco VNI Global Forecast methodology is built on independent analyst projections; fixed/mobile usage reports and verified with real network data.

Global Forecast Data

Global Usage Trends

Global, regional, and country-level data modeling of consumer/business usage trends.

Entering the Zettabyte Era

- By 2015, global IP traffic will reach an annual run rate of 966 exabytes per year

966 Exabytes is equal to:

- 8X more than all IP traffic generated in 2008 (121 EB)
- 28 million DVDs per hour

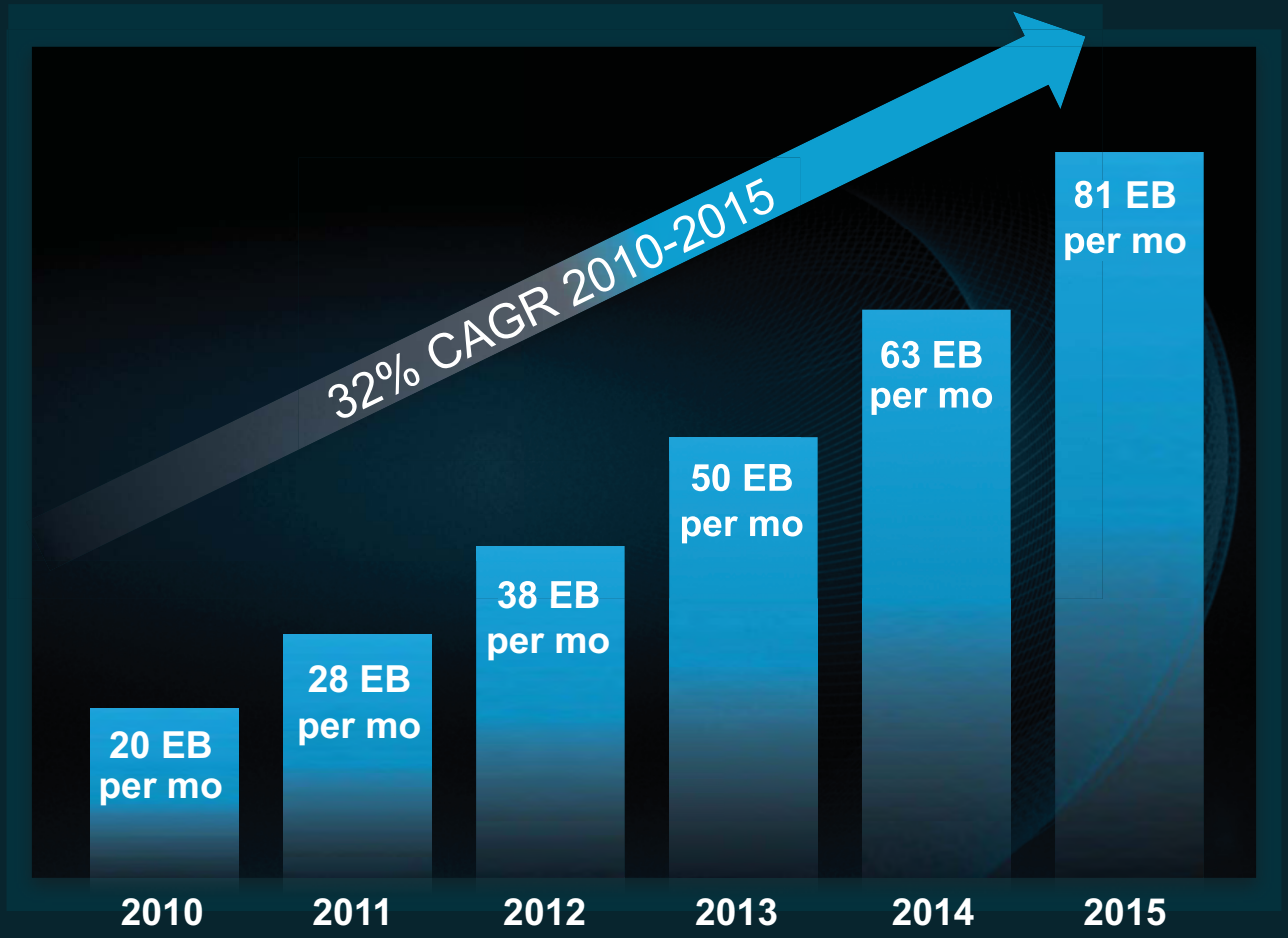
What is a zettabye?

- One sextillion bytes
- Approximately 10 to the 21st power (1,000,000,000,000,000,000,000) bytes

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

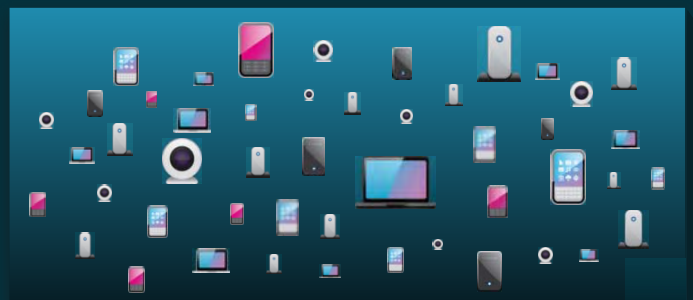
Entering the Zettabyte Era

Global IP traffic will increase 4-fold from 2010 to 2015



Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Global IP Traffic Drivers, 2010–2015



More Devices
Nearly 15B Connections

Faster Broadband Speeds
4-Fold Speed Increase

Key Growth Factors

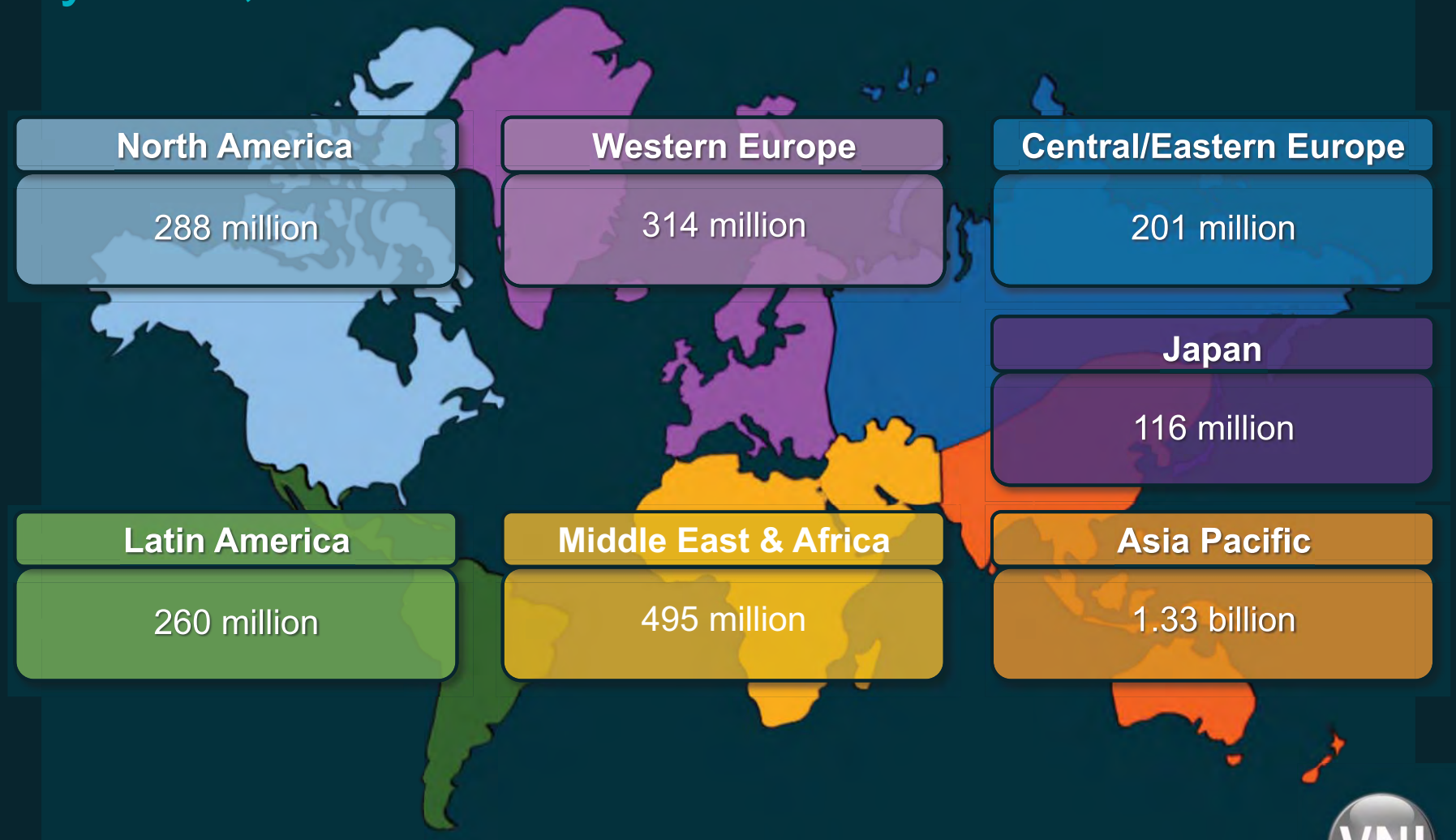
More Internet Users
3 Billion Internet Users

More Rich Media Content
1M Video Minutes per Second

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Global Internet Users by Region, 2015

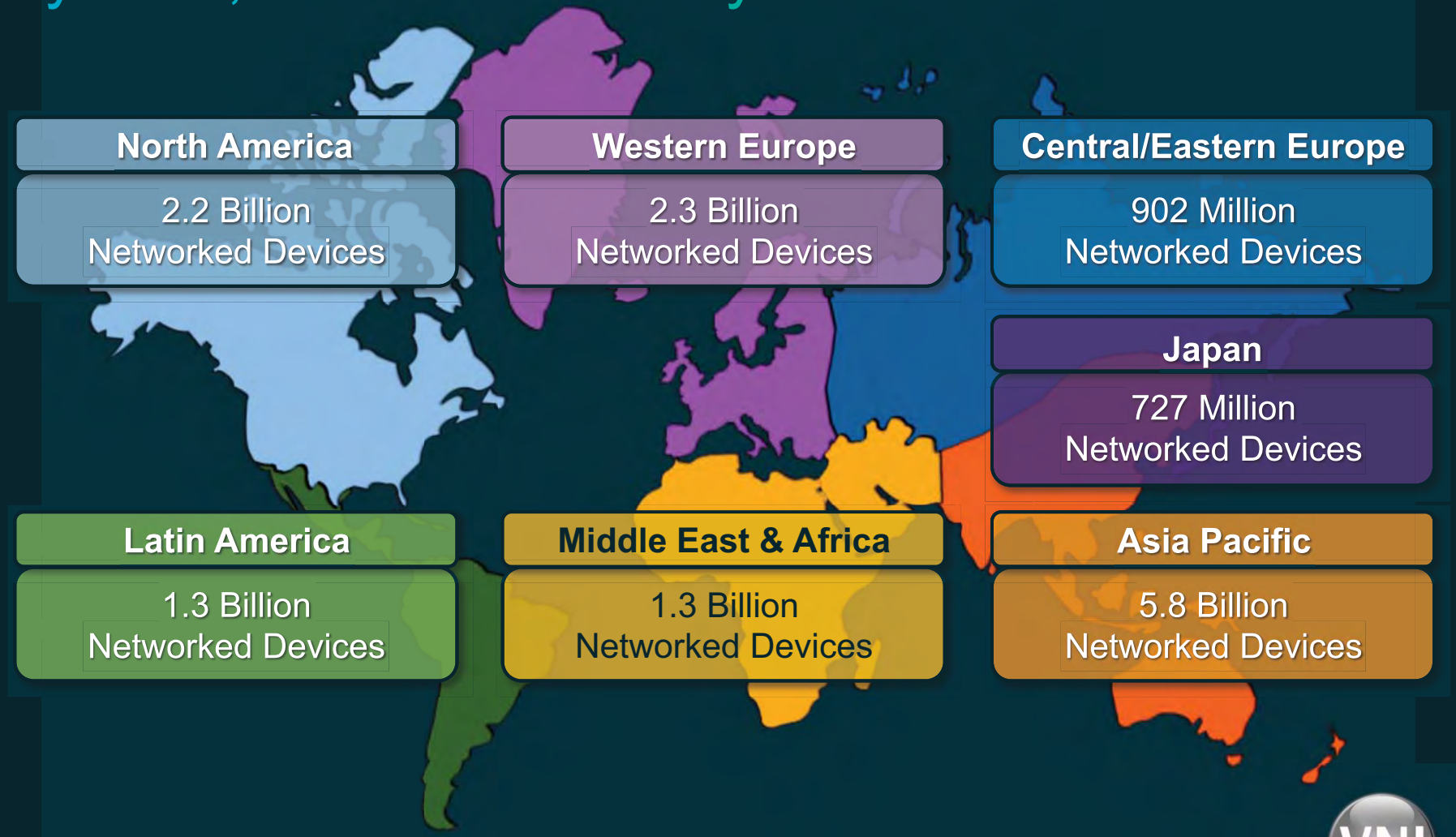
By 2015, there will about 3B Internet Users



Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Global Device Growth, 2010–2015

By 2015, there will be nearly 15B network connections



Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

VNI

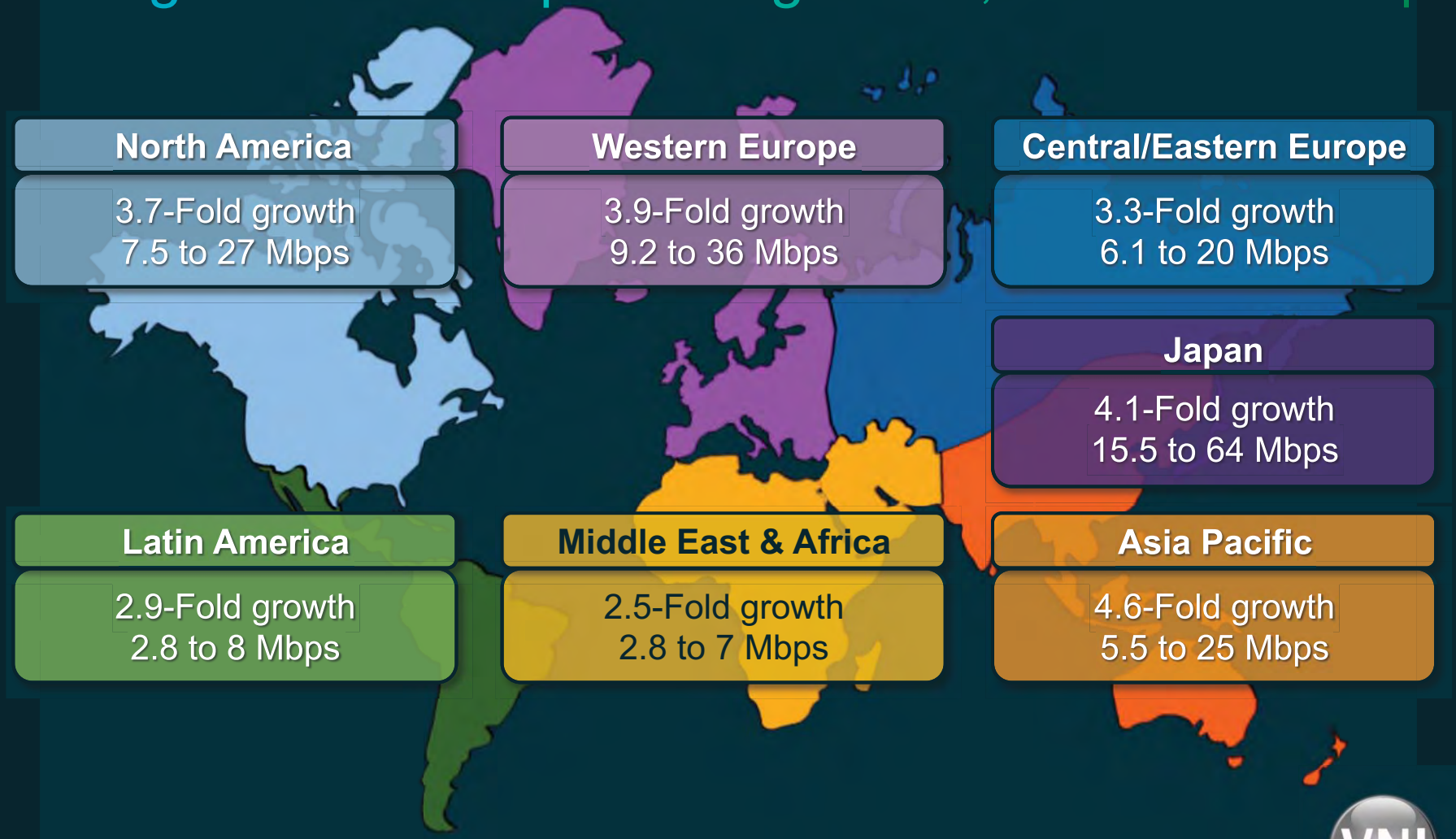
Consumer Broadband Devices
2010 Fixed traffic generation comparisons by device

Tablet		= 1.1 X	(monthly 32-bit laptop fixed traffic)
64-bit Laptop/PC		= 1.9 X	(monthly 32-bit laptop fixed traffic)
Internet-Enabled HDTV		= 2.9 X	(monthly 32-bit laptop fixed traffic)
Gaming Consoles		= 3.0 X	(monthly 32-bit laptop fixed traffic)
Internet-Enabled 3DTV		= 3.2 X	(monthly 32-bit laptop fixed traffic)

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

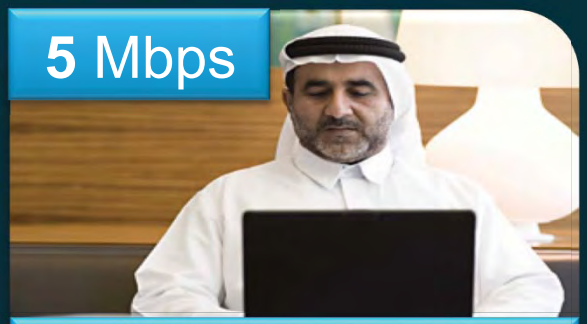
Global Broadband Speed, 2010–2015

Average broadband speed will grow 4X; from 7 to 28 Mbps



Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Faster Networks Enable More Experiences



68% of all broadband connections by 2015

- 2 HD Streams
- 1 SD Video call
- 1 Audio stream

40% of all broadband connections by 2015

- 3 HD Streams
- 1 HD Video call
- 1 Audio stream
- 1 SW Update
- 1 Gaming stream

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Faster Networks Enable Better Experiences

5 Mbps

68% of all broadband connections by 2015

HD movie download

41 minutes

10 Mbps

40% of all broadband connections by 2015

HD movie download

20 minutes

100 Mbps

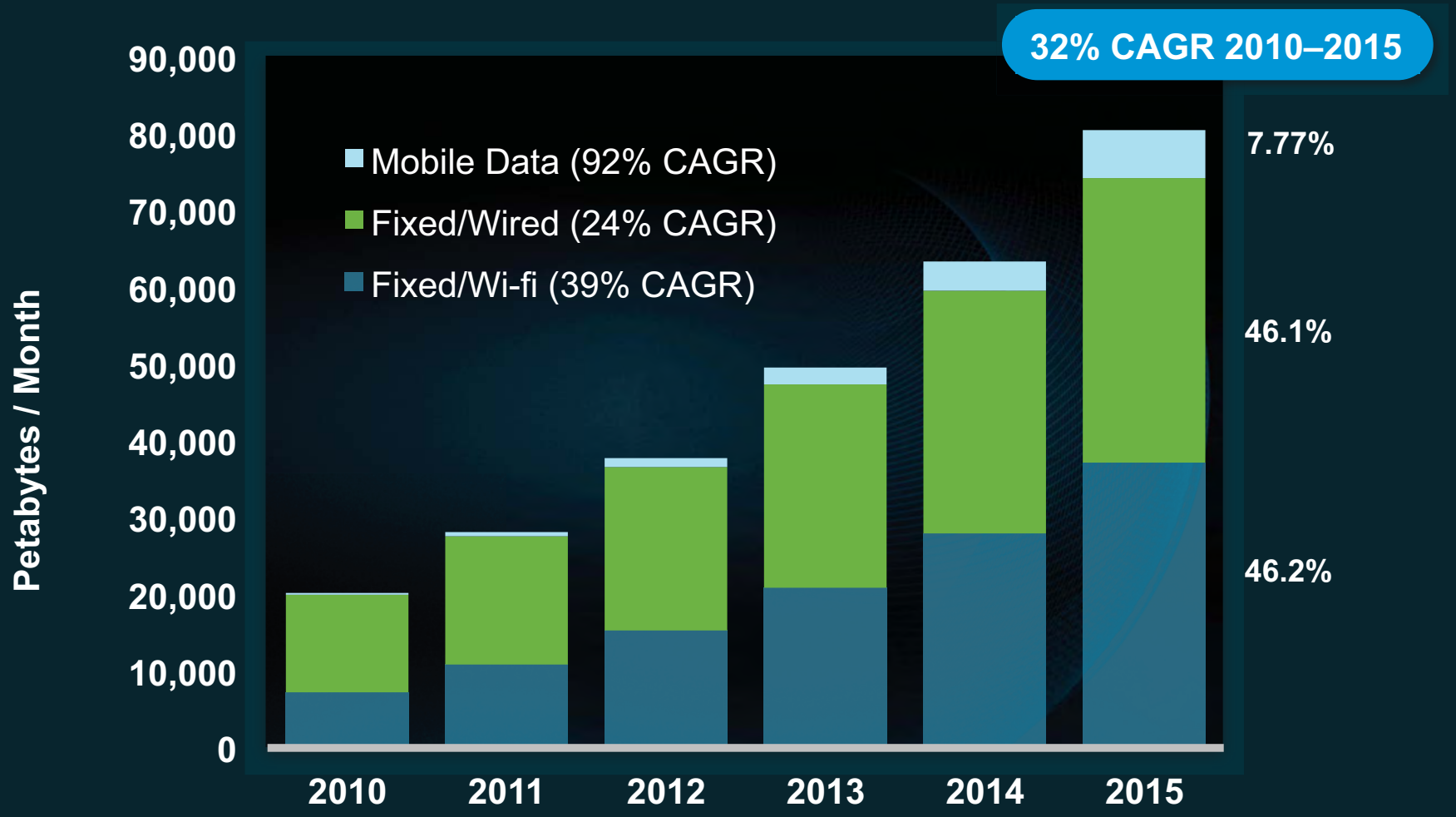
3% of all broadband connections by 2015

HD movie download

2 minutes

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

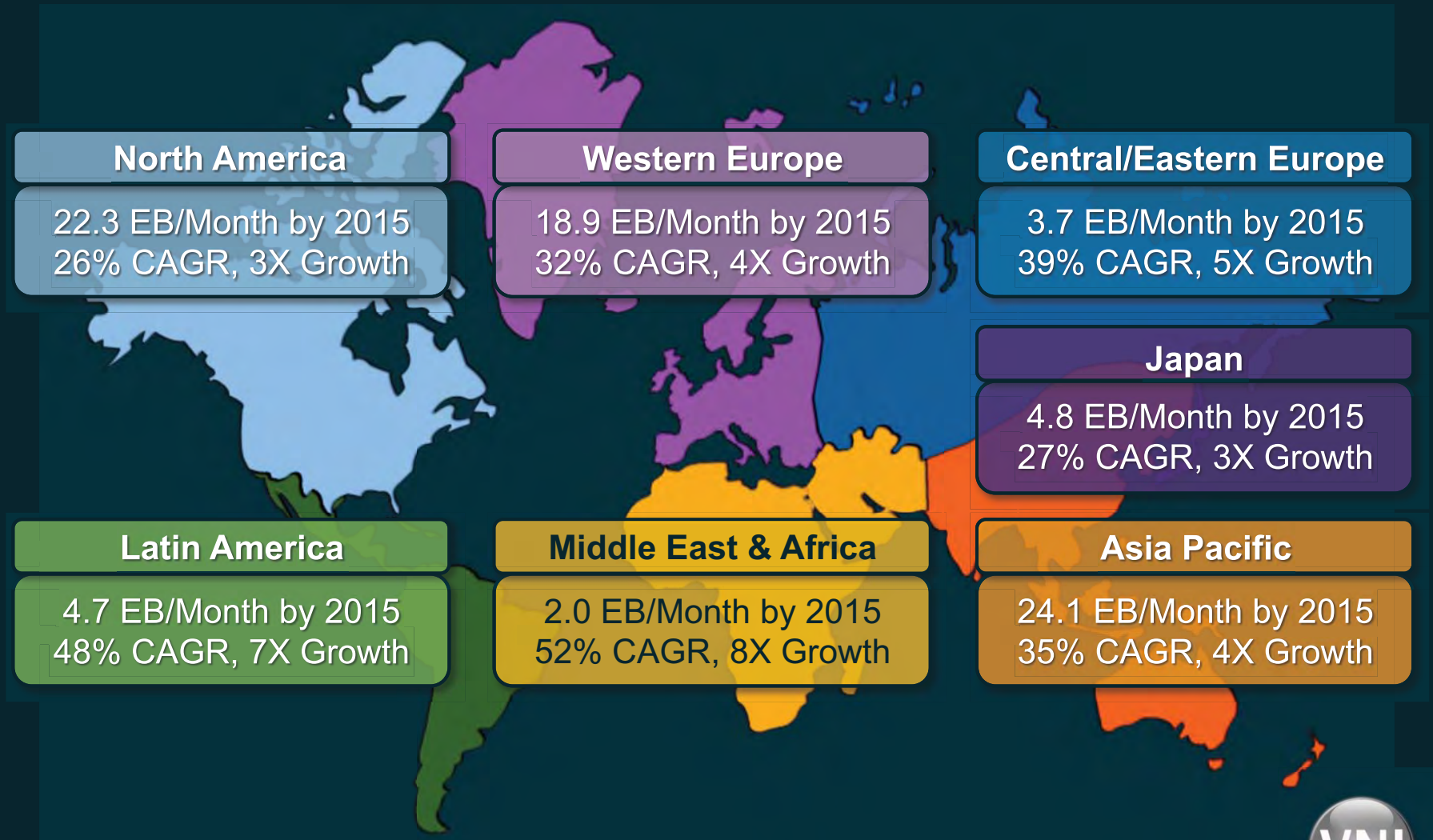
Global IP Traffic by Local Access Technology
By 2015, fixed/wi-fi traffic surpasses fixed/wired traffic



Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Global IP Traffic Growth, 2010–2015

Regional contributions to the Zettabyte journey



Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Average Internet User; Traffic per Month

2010

7.3 GB Traffic/month

- 3 HD videos
- 5 VoD episodes
- 50 Audio tracks
- 2 HD video calls
- 4 SW updates

2015

24.8 GB Traffic/month

- 1 3D movie
- 6 HD movies
- 28 VoD episodes
- 240 Audio tracks
- 12 HD video calls
- 10 SW updates

Future

50 GB Traffic/month

- 2 3D movies
- 11 HD movies
- 52 VoD episodes
- 410 Audio tracks
- 33 HD Video calls
- 14 SW updates

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Average Internet Household; Traffic per Month

2010

17.1 GB Traffic/month

- 5 HD videos
- 18 VoD episodes
- 155 Audio tracks
- 8 HD video calls
- 7 SW updates

2015

61.8 GB Traffic/month

- 3 3D movie
- 15 HD movies
- 69 VoD episodes
- 525 Audio tracks
- 26 HD video calls
- 17 SW updates

Future

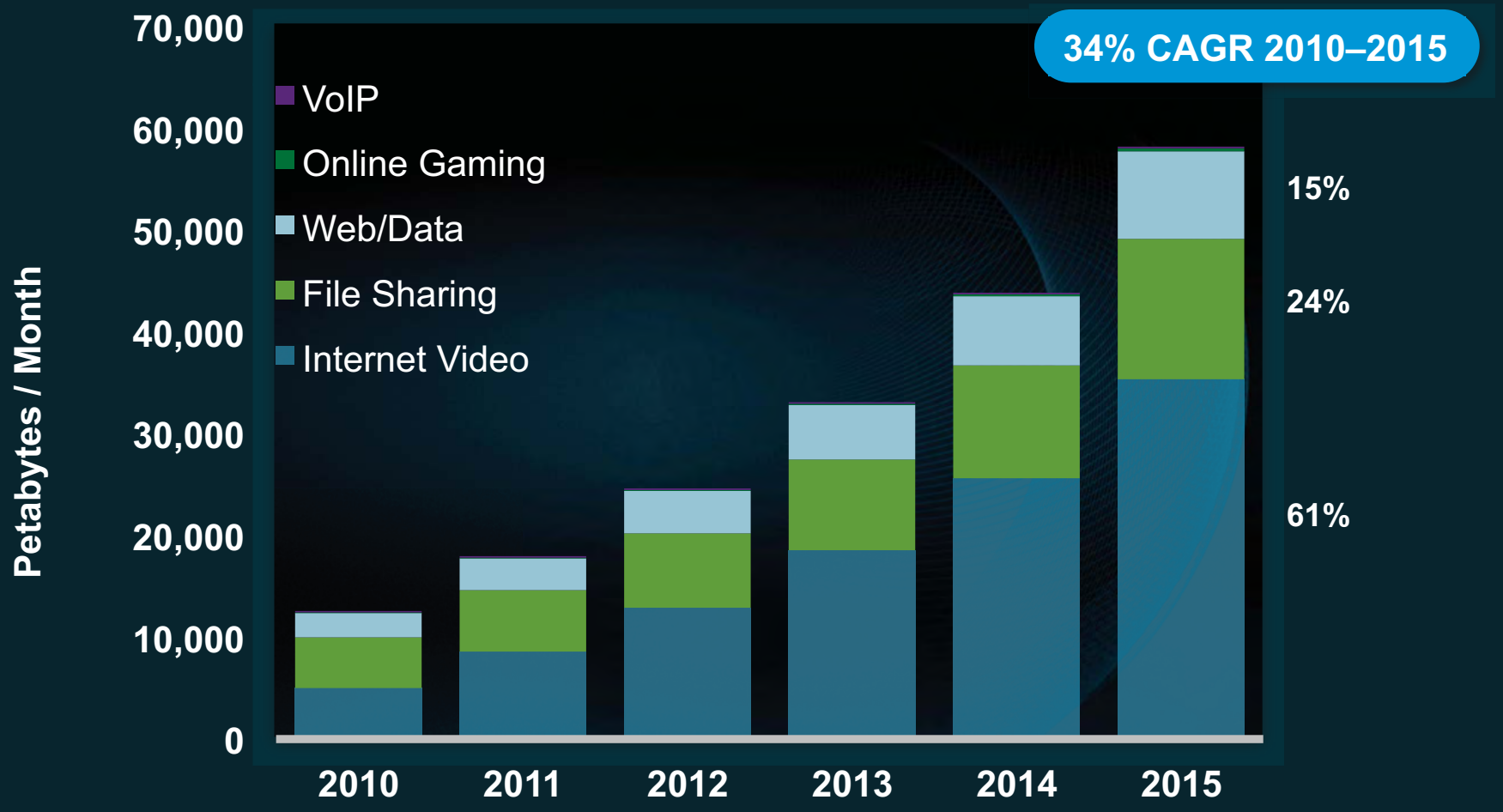
100 GB Traffic/month

- 6 3D movies
- 23 HD movies
- 113 VoD episodes
- 802 Audio tracks
- 40 HD Video calls
- 22 SW updates

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Global Consumer Internet Traffic / Applications

Internet Video dominates consumer Internet traffic

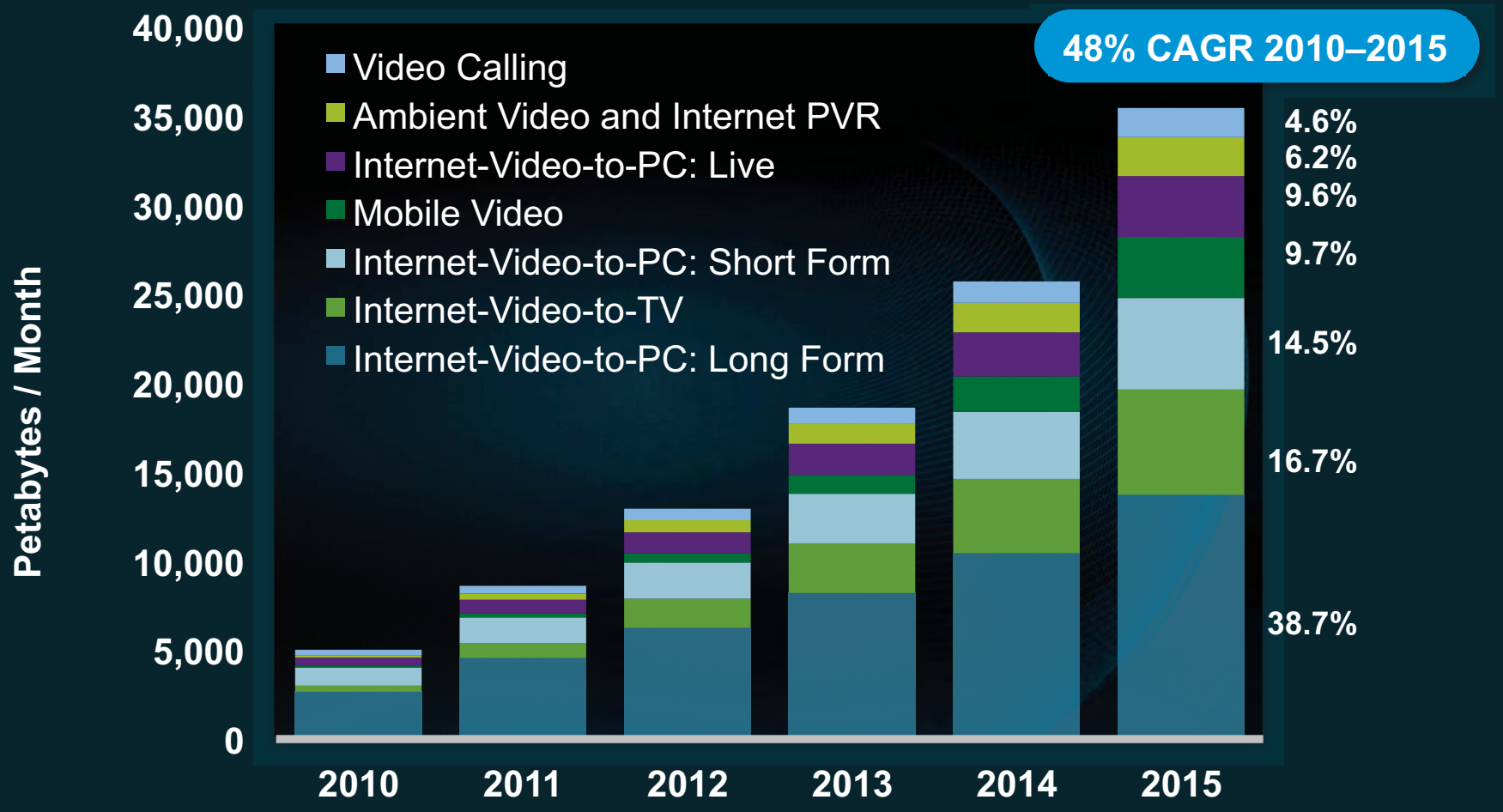


Online Gaming and VoIP forecast to be 0.79% of all consumer Internet traffic in 2015

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Consumer Internet Video Composition

Video traffic increasingly driven by long-form video



Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Long-form Internet Video Drives 3X more Traffic than short-form Internet video traffic

Time per viewer/month:

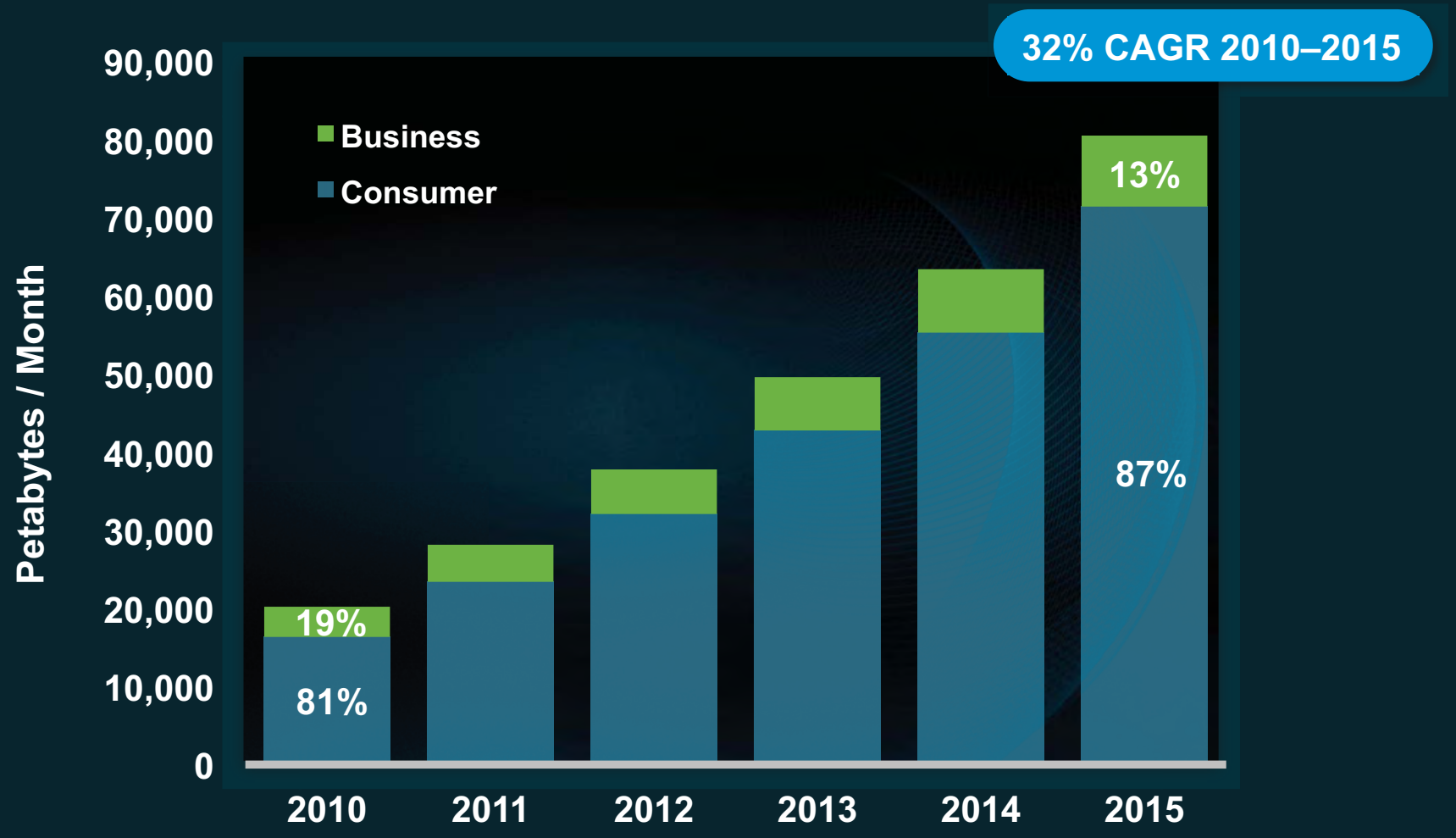
- Netflix: 10 hrs
- Hulu: 5 hrs
- YouTube: 2 hrs

(Source: Nielsen, 2011)

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Global IP Traffic Growth by User Segment

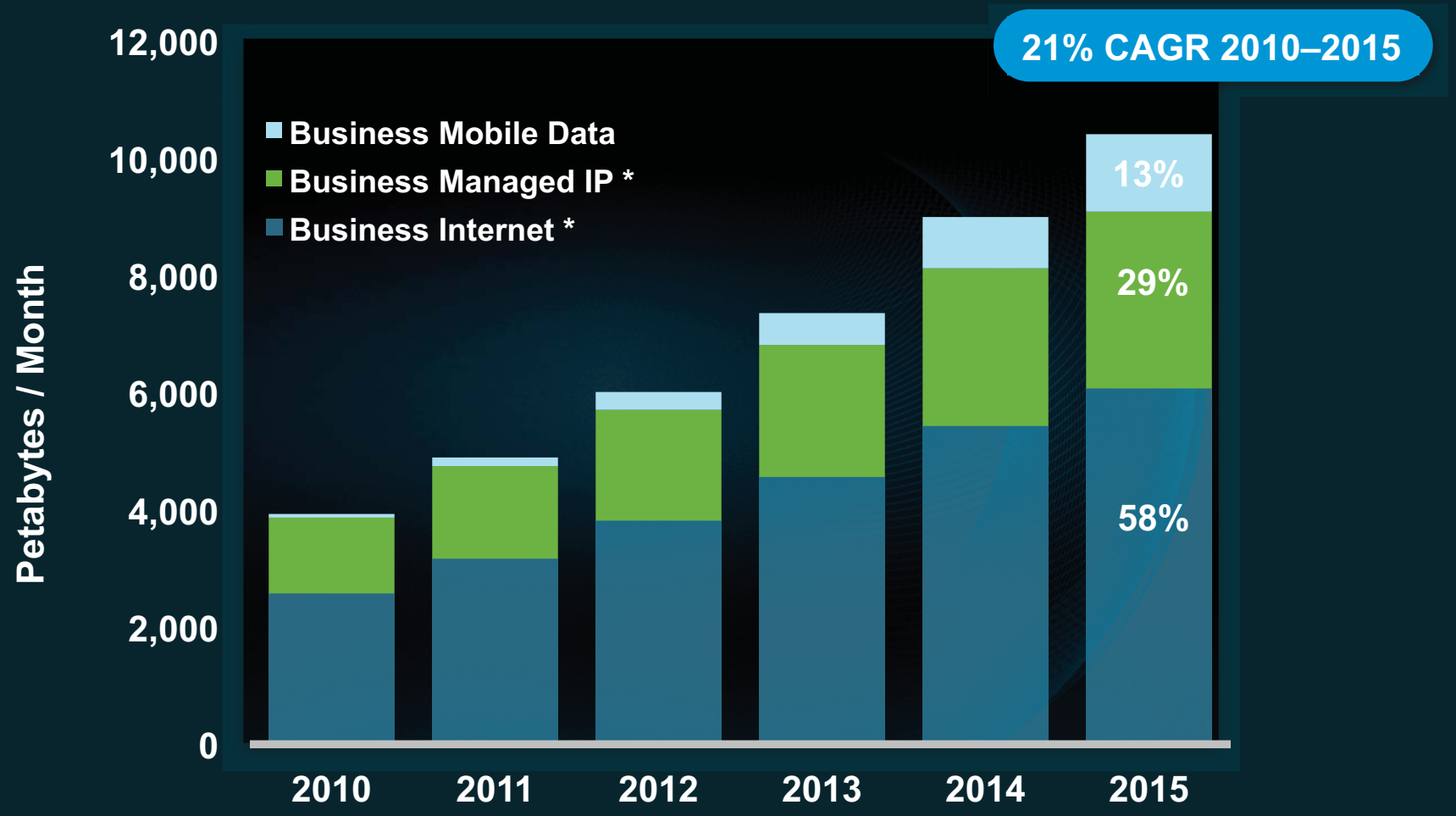
Consumer CAGR 34%; Business CAGR 21% (2010 to 2015)



Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Global Business IP Traffic Growth / Segment

The Internet is the major component of business IP traffic

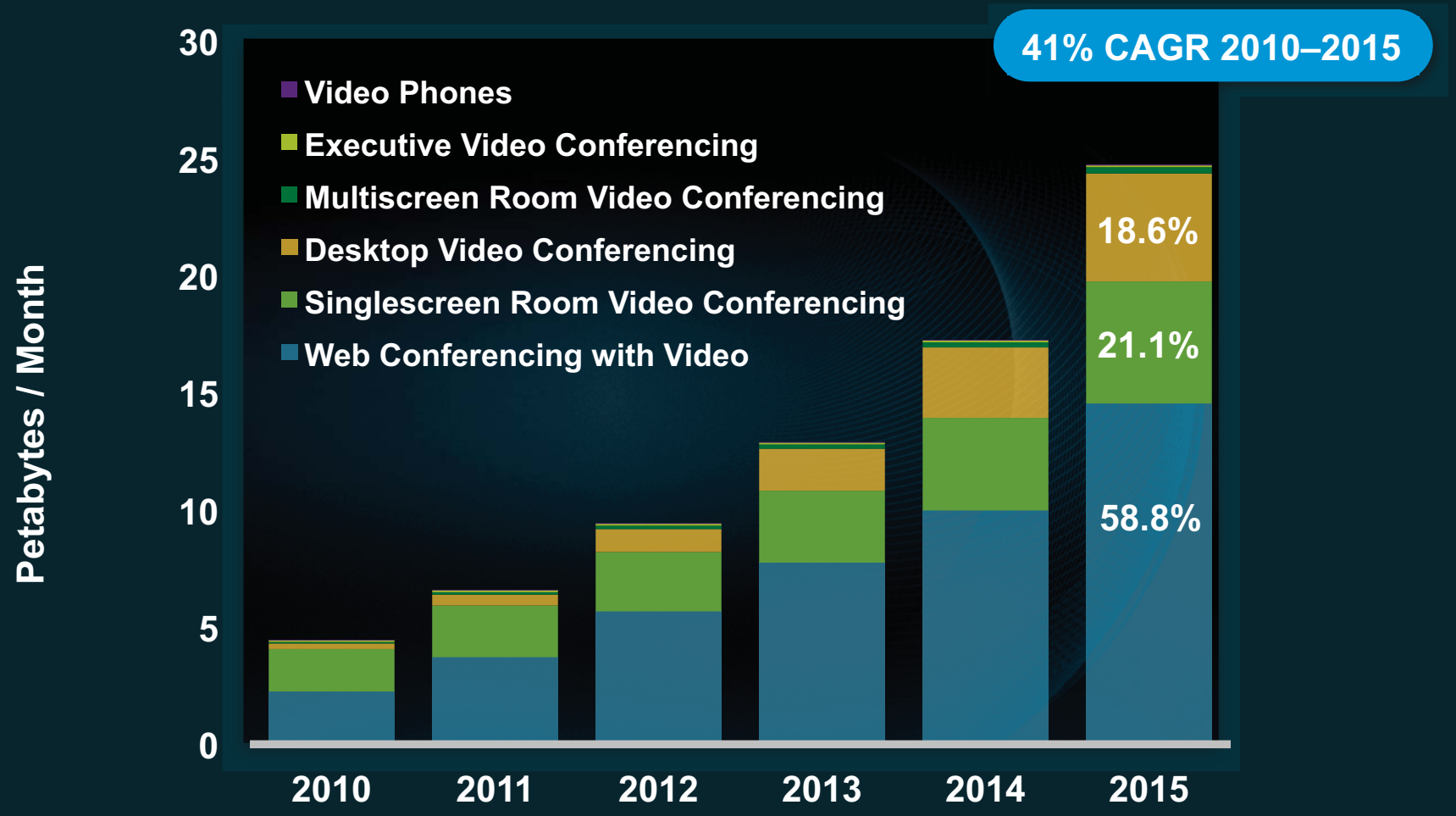


*** Video conferencing is included in both the Business Internet and Managed IP categories**

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Global Business Video Conferencing Detail

Web video conferencing leads collaborative apps



Multiscreen/Executive Videoconferencing and Videophones will be 1.6 % of all business video traffic in 2015

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Cisco VNI Global IP Traffic Forecast, 2010–2015
Key Takeaways / Summary

Total IP Traffic — **80.5 Exabytes per month by 2015**

By 2015, annual global IP traffic will almost reach a zettabyte

Fixed Internet — **59.4 Exabytes per month by 2015**

By 2015, one million video minutes cross the network each second

Managed IP — **14.8 Exabytes per month by 2015**

Business IP video conferencing will grow six-fold from 2010-2015

Mobile Data — **6.3 Exabytes per month by 2015**

Mobile video will increase 35-fold from 2010 to 2015

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Public Cisco VNI Web Site
URL: http://www.cisco.com/go/vni

- Press Releases
- White Papers / Research
- Cisco VNI Tools / Apps

Send Cisco VNI Forecast inquiries to:
traffic-inquiries@cisco.com

Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

Thank you.