9th World Telecommunication/ICT Indicators Meeting (WTIM-11)
Mauritius, 7 - 9 December 2011

Contribution to WTIM-11 session

Document C/9-E
7 December 2011

English

SOURCE: CISCO

TITLE: Forecasting Internet Growth: Towards A Zettabyte World

Cisco's Visual Networking Index

Forecasting Internet Growth: Towards A Zettabyte World

Robert Pepper
Arielle Sumits

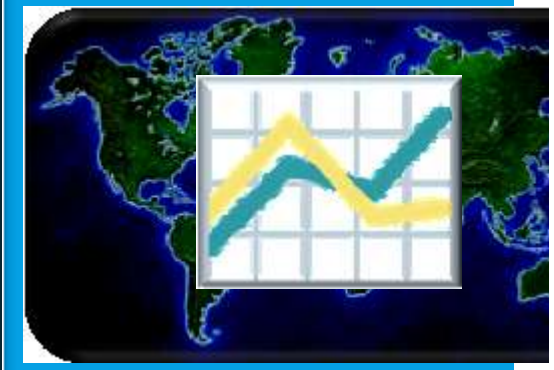
ITU World Telecom/ICT Indicators Meeting
7 December 2011

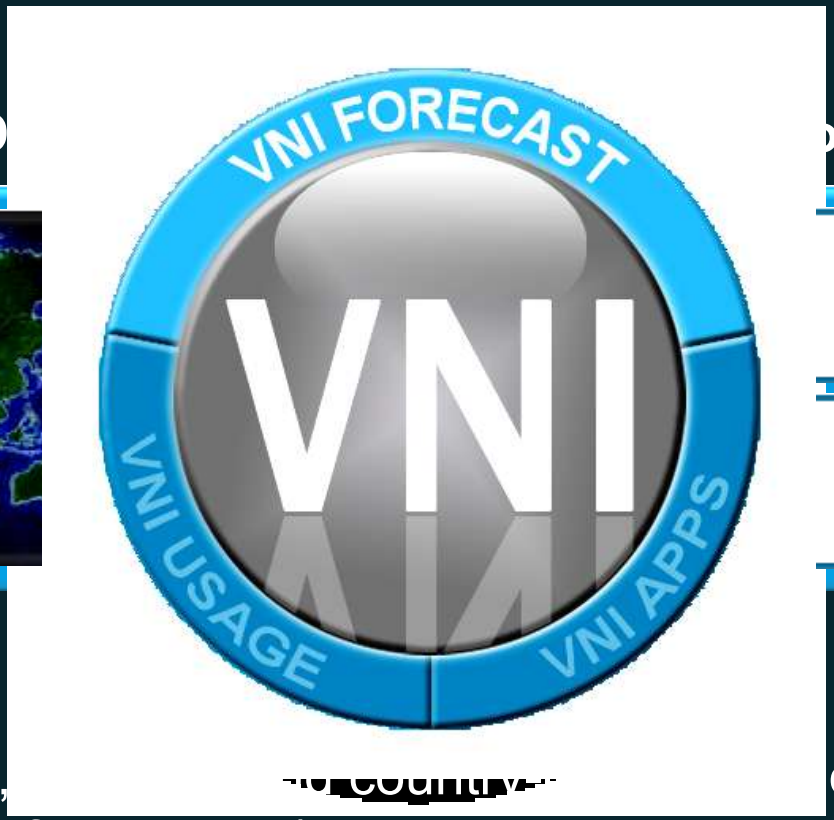
Cisco Visual Networking Index (VNI)
Sharing Global IP Traffic Growth Projections & Analysis

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 D **bal Usage Trends**

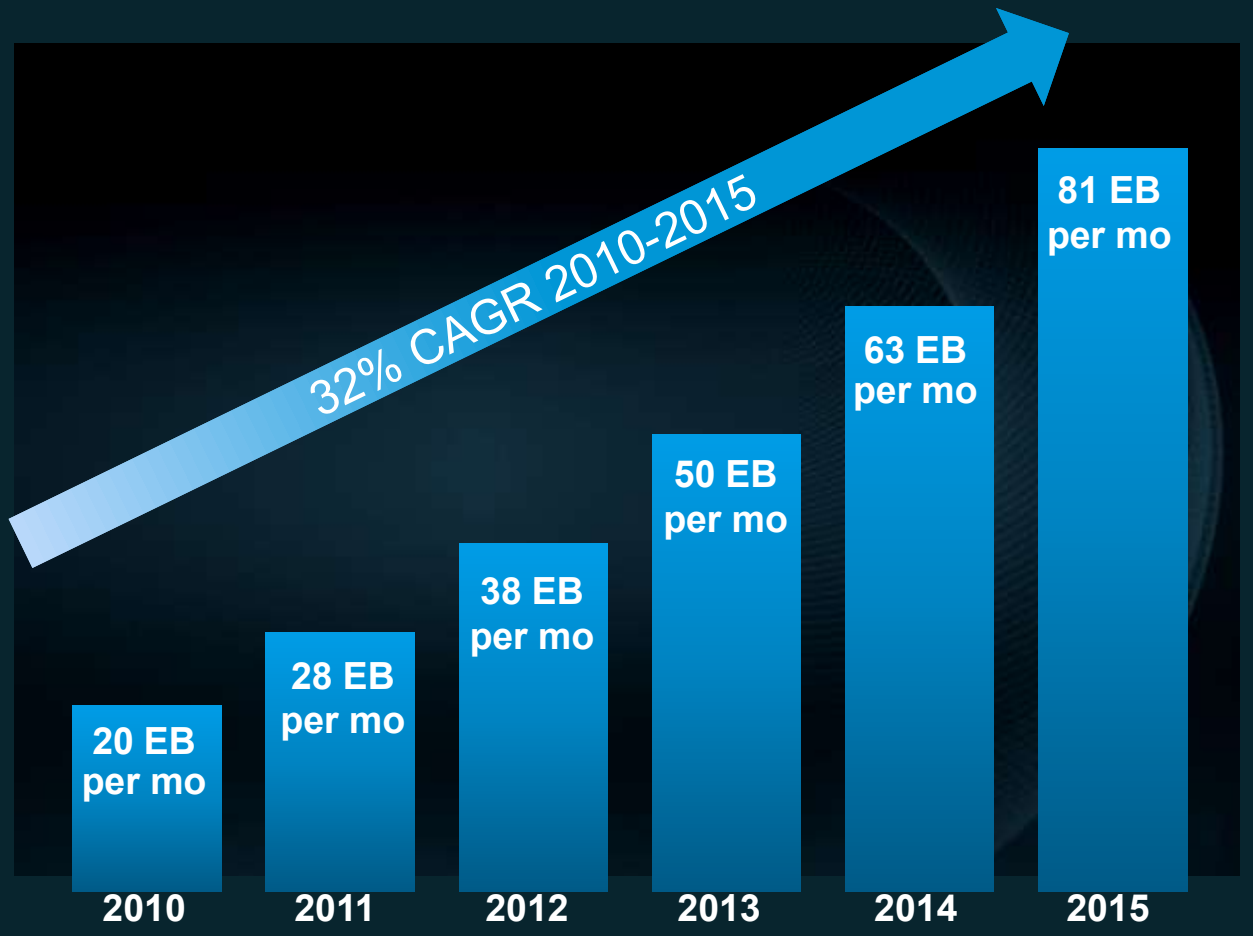




Global, [illegible] odeling of consumer/business usage trends.

Entering the Zettabyte Era

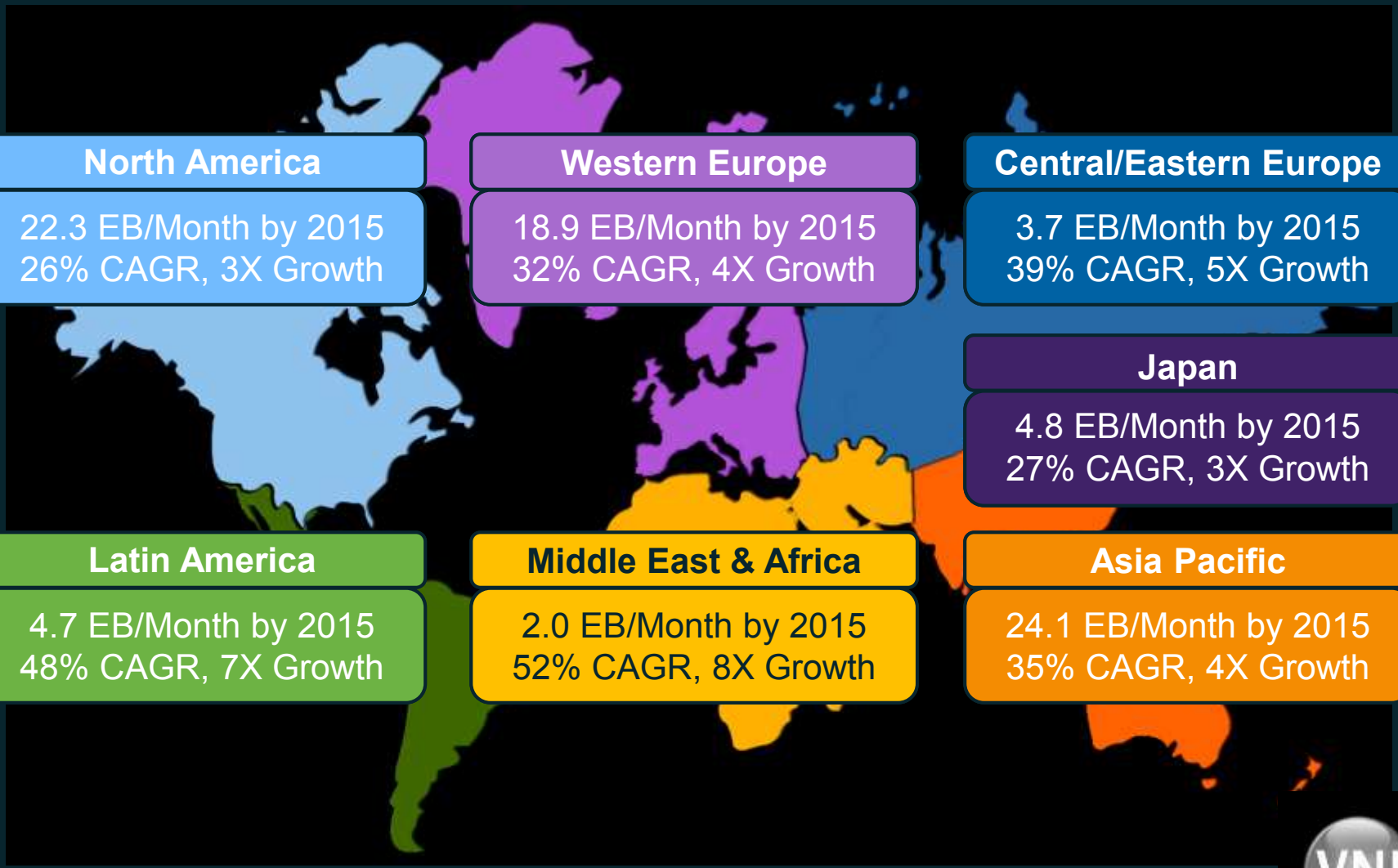
Global IP traffic will increase 4-fold from 2010 to 2015



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

Global IP Traffic Growth, 2010–2015

Regional contributions to the Zettabyte journey



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

China IP Traffic Growth

In China, IP traffic will grow 6-fold from 2010 to 2015, a 43% CAGR.

In China, IP traffic will reach 8.7 exabytes per month in 2015, up from 1.5 exabytes per month in 2010.

China's IP networks will carry 285 petabytes per day in 2015, up from 48 petabytes per day in 2010.

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

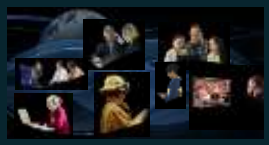
Key Growth Factors

More Internet Users
3 Billion Internet Users

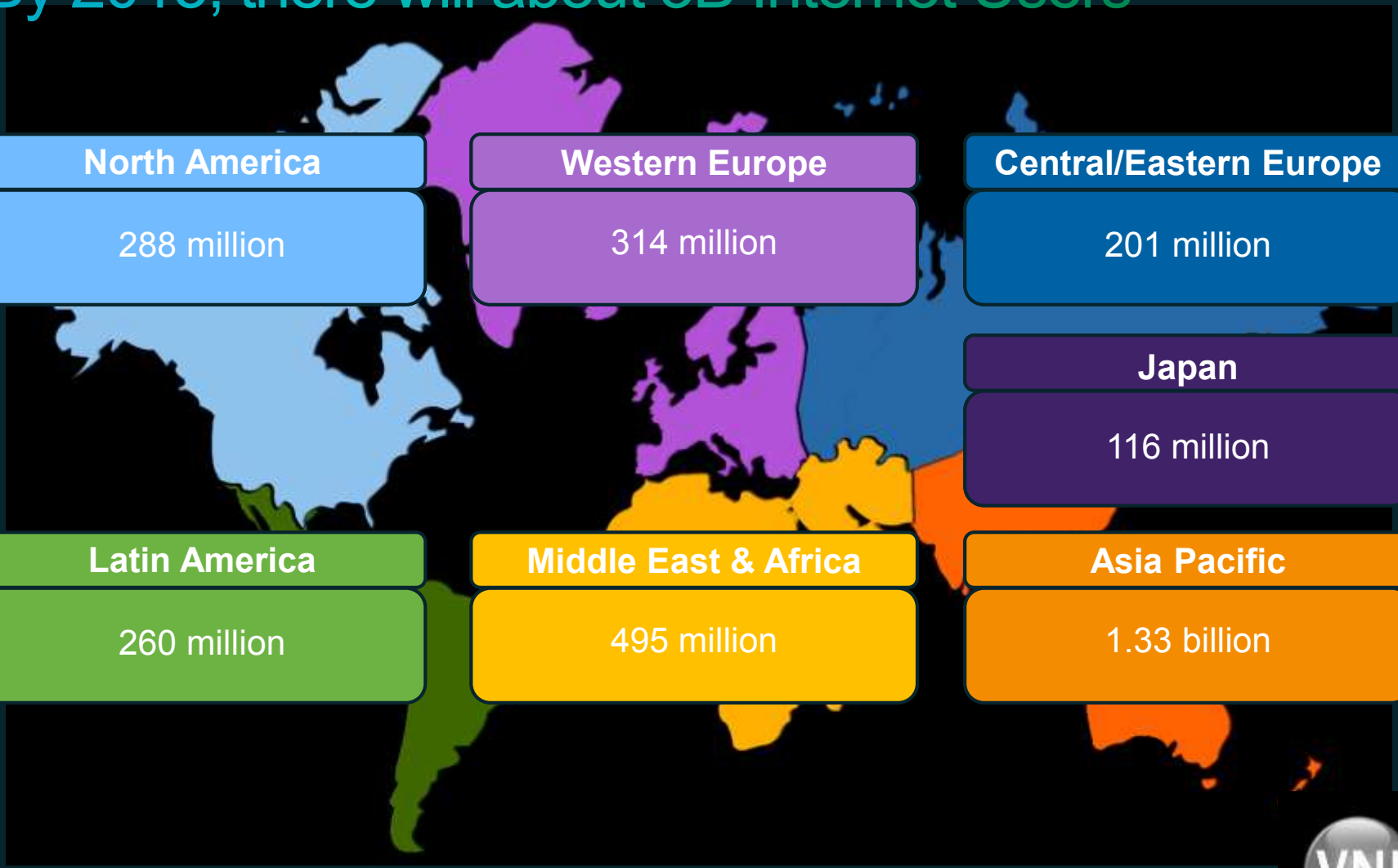
More Rich Media Content
1M Video Minutes per Second

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

Western Europe Internet Users

In Western Europe, there will be 314 million total Internet users in 2015, up from 262 million in 2010.

.

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

India Internet Users

In India, there will be 196 million total Internet users in 2015, up from 72 million in 2010.

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

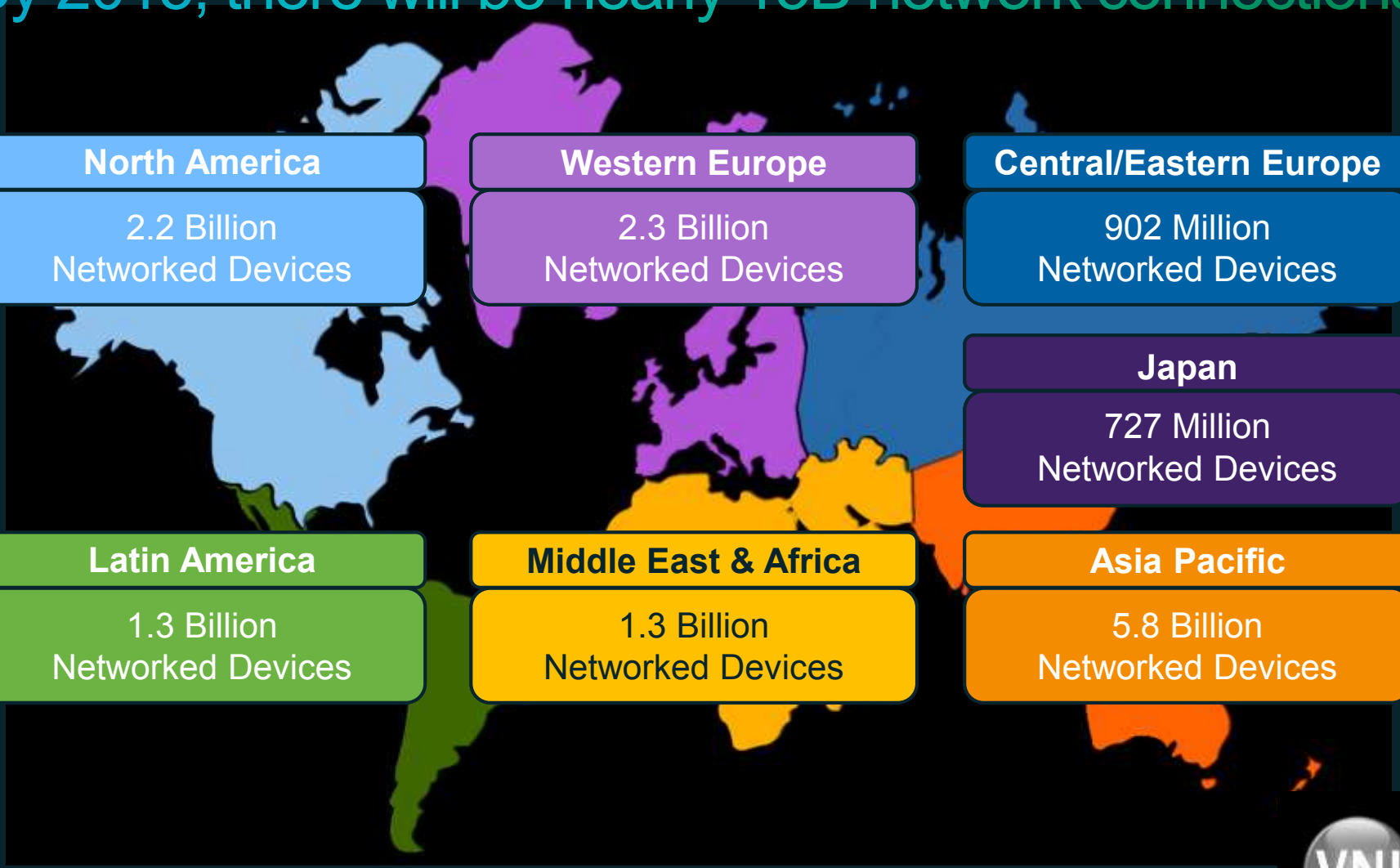
China Internet Users

In China, there will be 740 million total Internet users in 2015, up from 504 million in 2010.

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

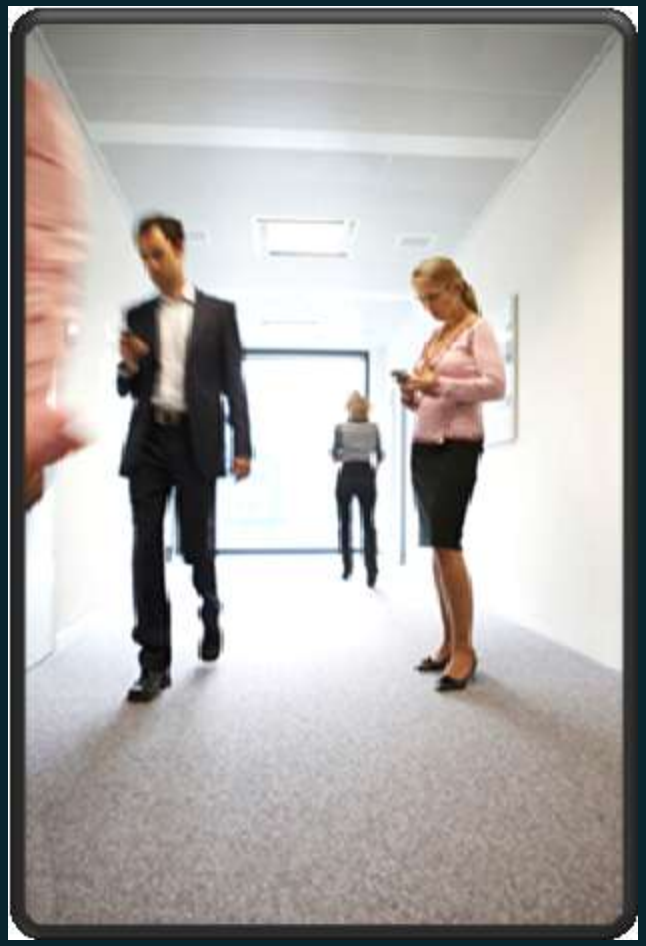


Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

VNI

United States Devices/Connections

In the United States, there will be over 2 billion networked devices in 2015, up from 1 billion in 2010.



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

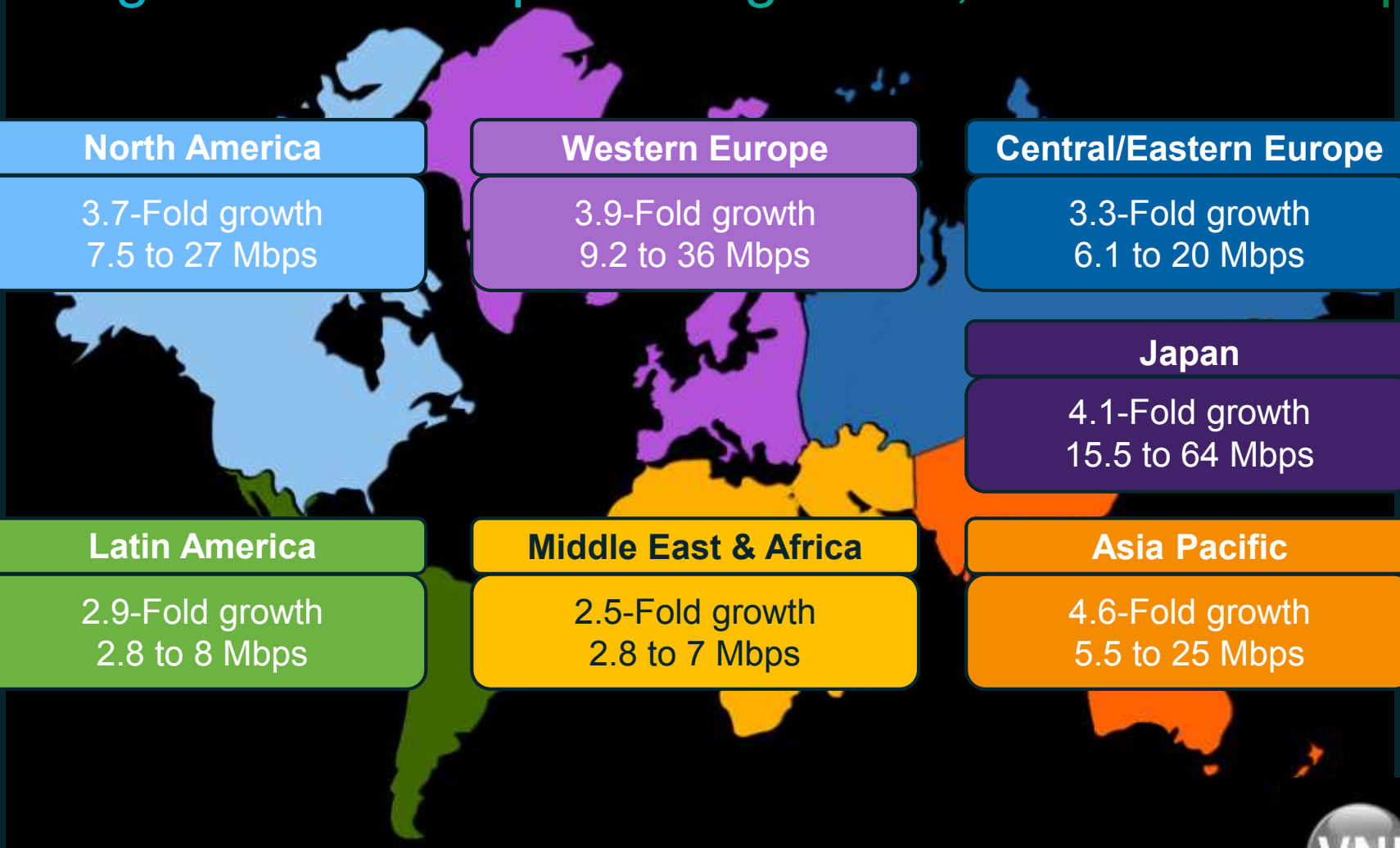
China Devices/Connections

In China, there will be over 3 billion networked devices in 2015, up from 1 billion in 2010.

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



North America	Western Europe	Central/Eastern Europe
3.7-Fold growth 7.5 to 27 Mbps	3.9-Fold growth 9.2 to 36 Mbps	3.3-Fold growth 6.1 to 20 Mbps

Japan
4.1-Fold growth 15.5 to 64 Mbps

Latin America	Middle East & Africa	Asia Pacific
2.9-Fold growth 2.8 to 8 Mbps	2.5-Fold growth 2.8 to 7 Mbps	4.6-Fold growth 5.5 to 25 Mbps

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

United States Fixed Broadband Network Speed

In the United States, the average broadband speed will grow 3.7-fold from 2010 to 2015, from 7.5 Mbps to 28 Mbps.

In the United States, 84% of broadband connections will be faster than 5 Mbps in 2015, up from 52% today.

In the United States, 55% of broadband connections will be faster than 10 Mbps in 2015, up from 30% today.

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

South Africa
Fixed Broadband Network Speed

In South Africa, the average broadband speed will grow 2.7-fold from 2010 to 2015, from 1.9 Mbps to 5 Mbps.

In South Africa, 15% of broadband connections will be faster than 5 Mbps in 2015.

In South Africa, 4% of broadband connections will be faster than 10 Mbps in 2015.

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

Europe: Average Internet User

In Europe, the average Internet user will generate 47.4 gigabytes of Internet traffic per month in 2015, up 270% from 12.8 gigabytes per month in 2010.

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

China Average Internet User

In China, the average Internet user will generate 12.6 gigabytes of Internet traffic per month in 2015, up 400% from 2.5 gigabytes per month in 2010.

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

Europe: Average Internet Household

In Europe, the average Internet household will generate 98.8 GBs of traffic per month in 2015, +278% from 26.1 GBs per month in 2010.

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

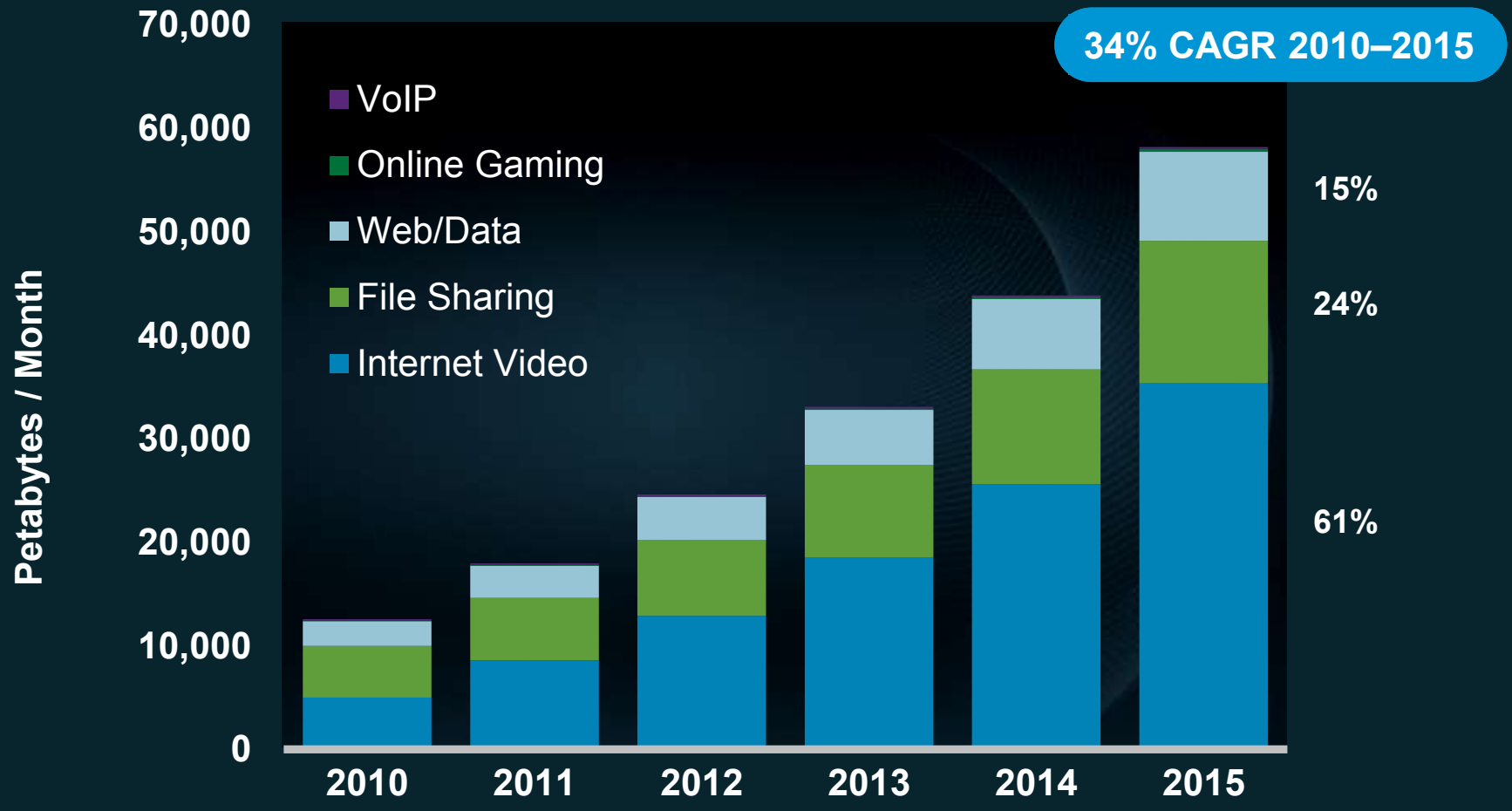
China Average Internet Household

In China, the average Internet household will generate 36 GBs of traffic per month in 2015, 329% from 8.4 GBs per month in 2010.

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

Global Consumer Internet Traffic / Applications

Internet Video dominates consumer Internet traffic

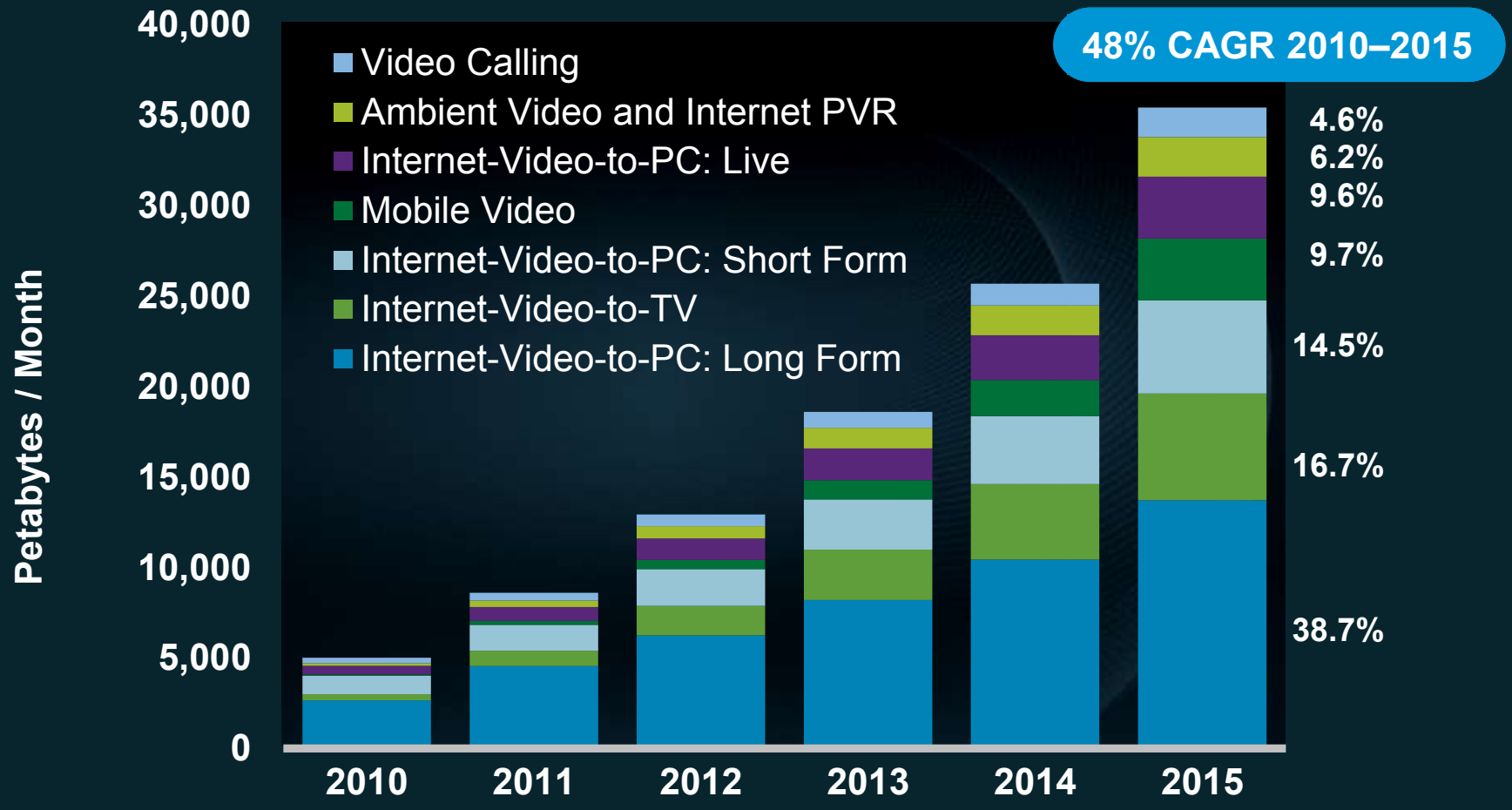


Online Gaming andVoIP forecast to be 0.79% of all consumer Internettraffic in 2015

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

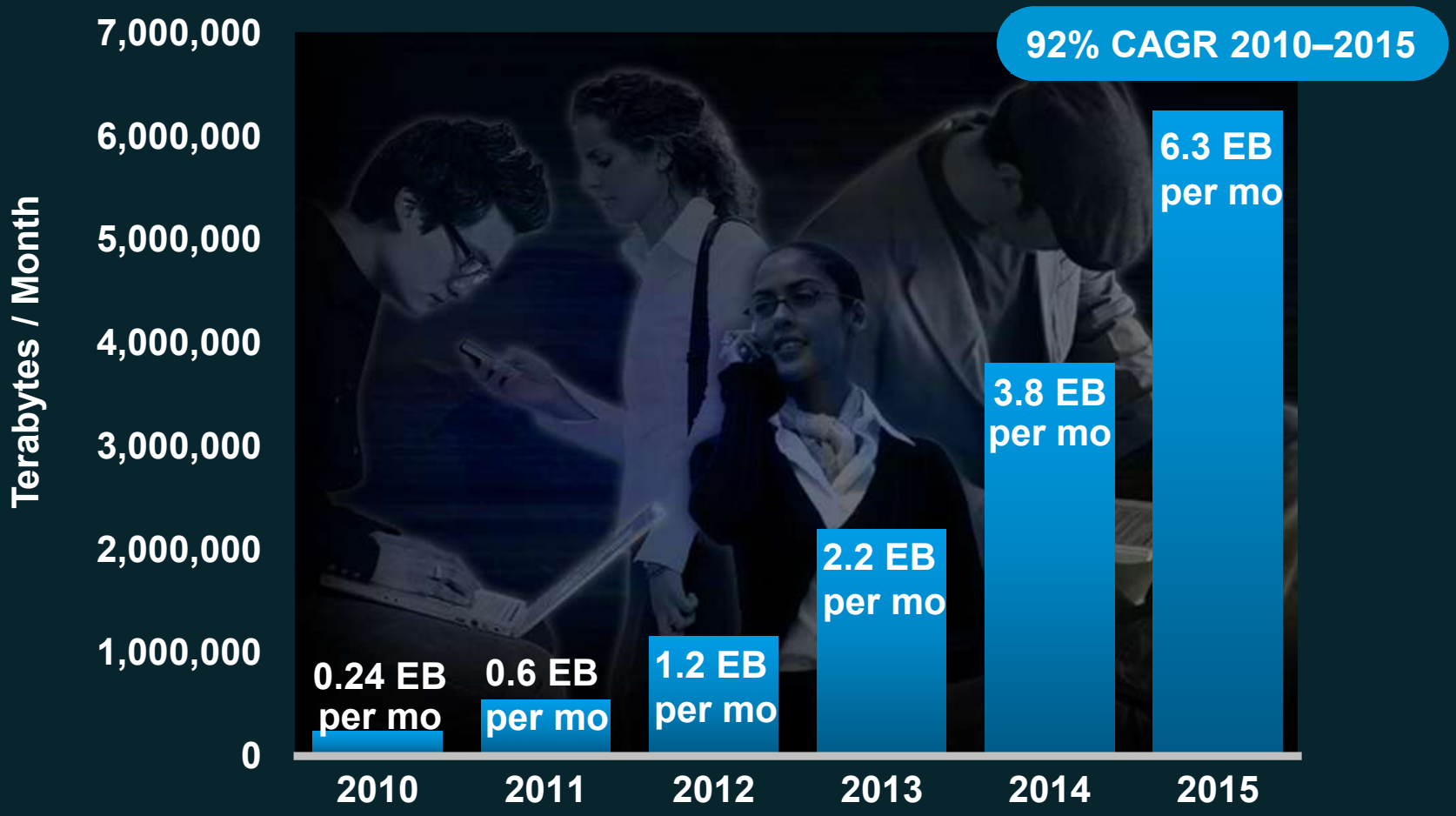
China: Internet Video

In China, Internet video traffic will be 83% of all consumer Internet traffic in 2015, up from 57% in 2010.

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

Not Just Fixed: Global Mobile Data Traffic

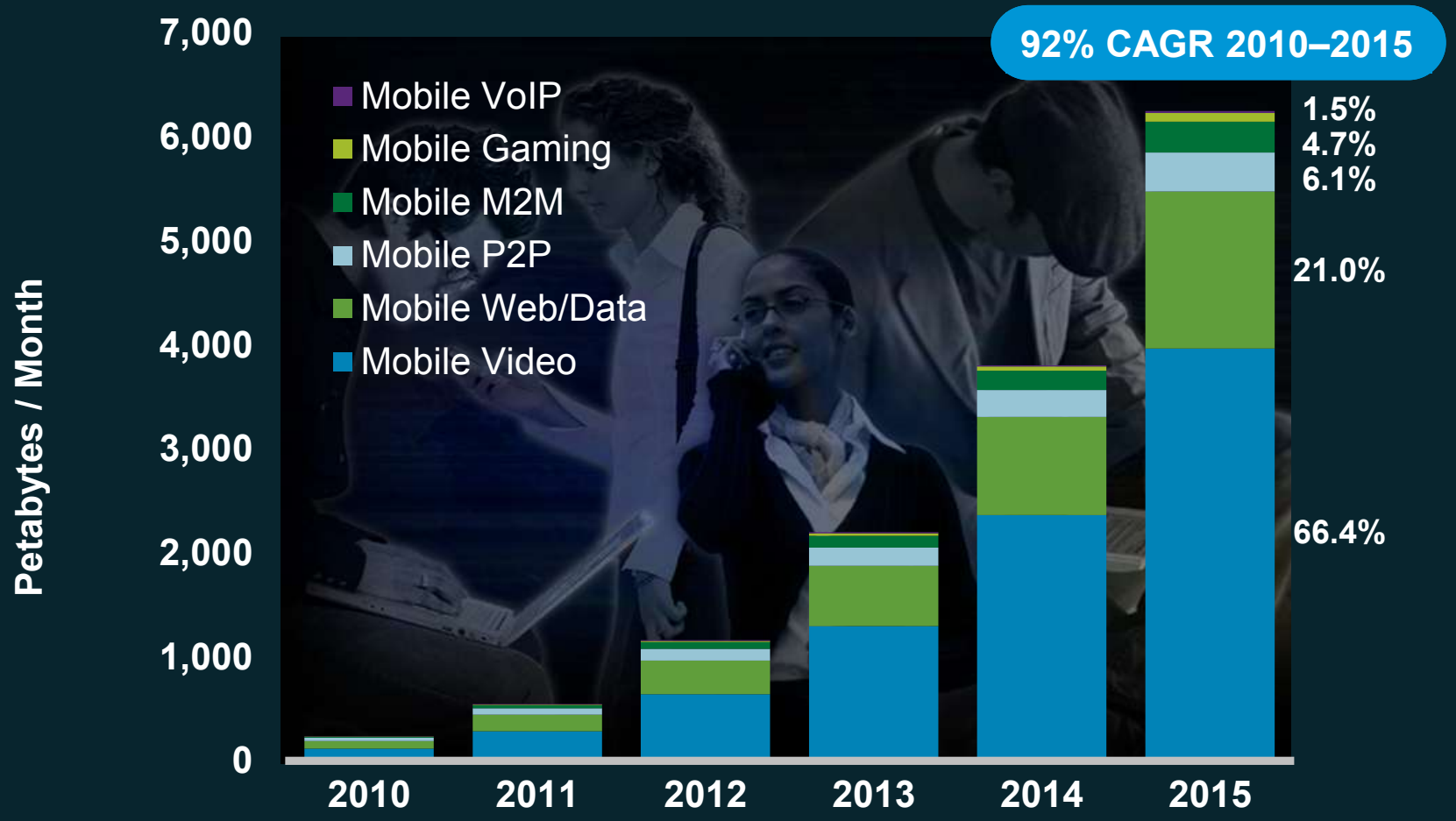
Global mobile data traffic will increase 26X from 2010 to 2015



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

Global Mobile Data Traffic Growth / Applications

Video to reach more than 50 percent of mobile data traffic by 2011

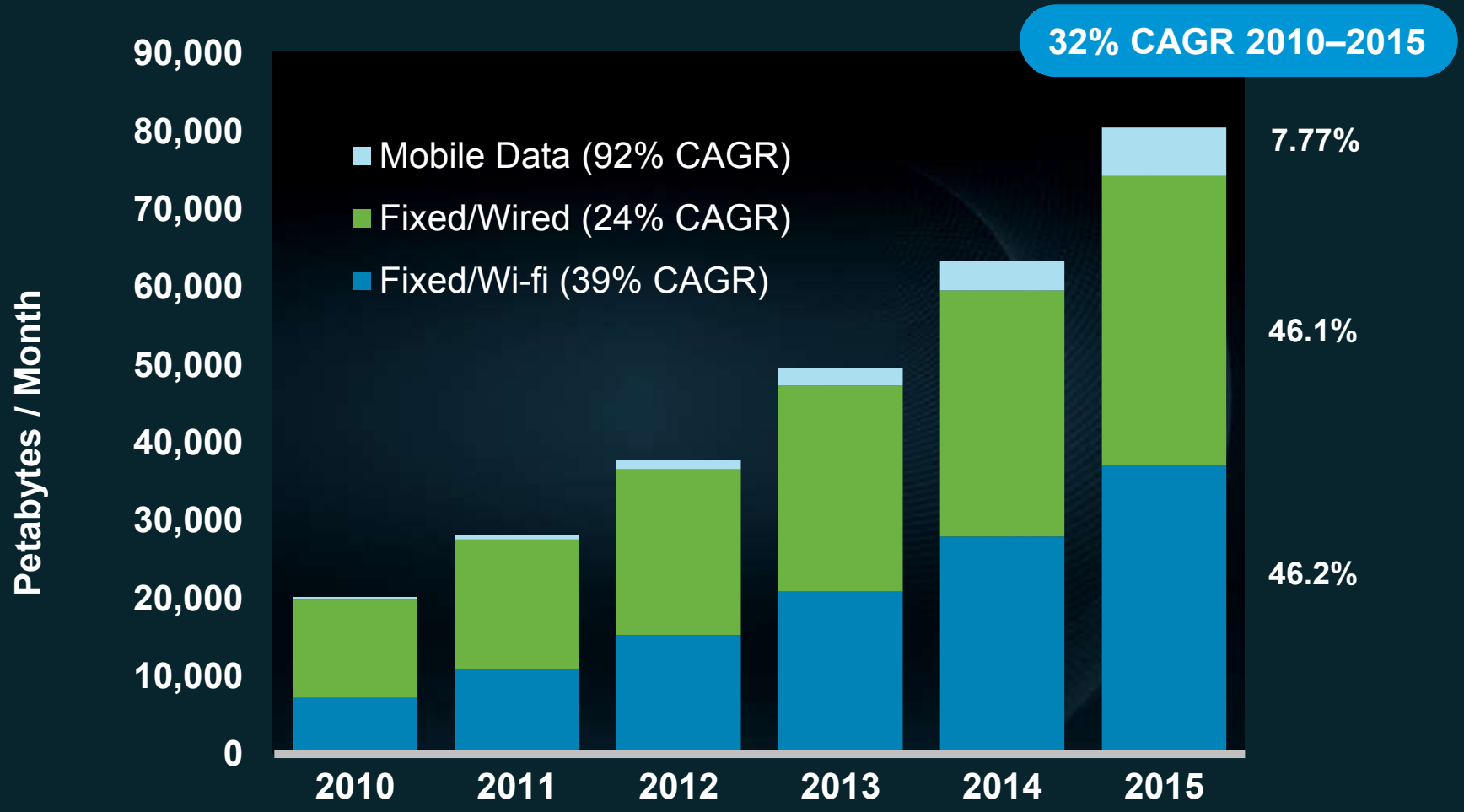


VoIP traffic forecast to be 0.4% of all mobile data traffic in 2015

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

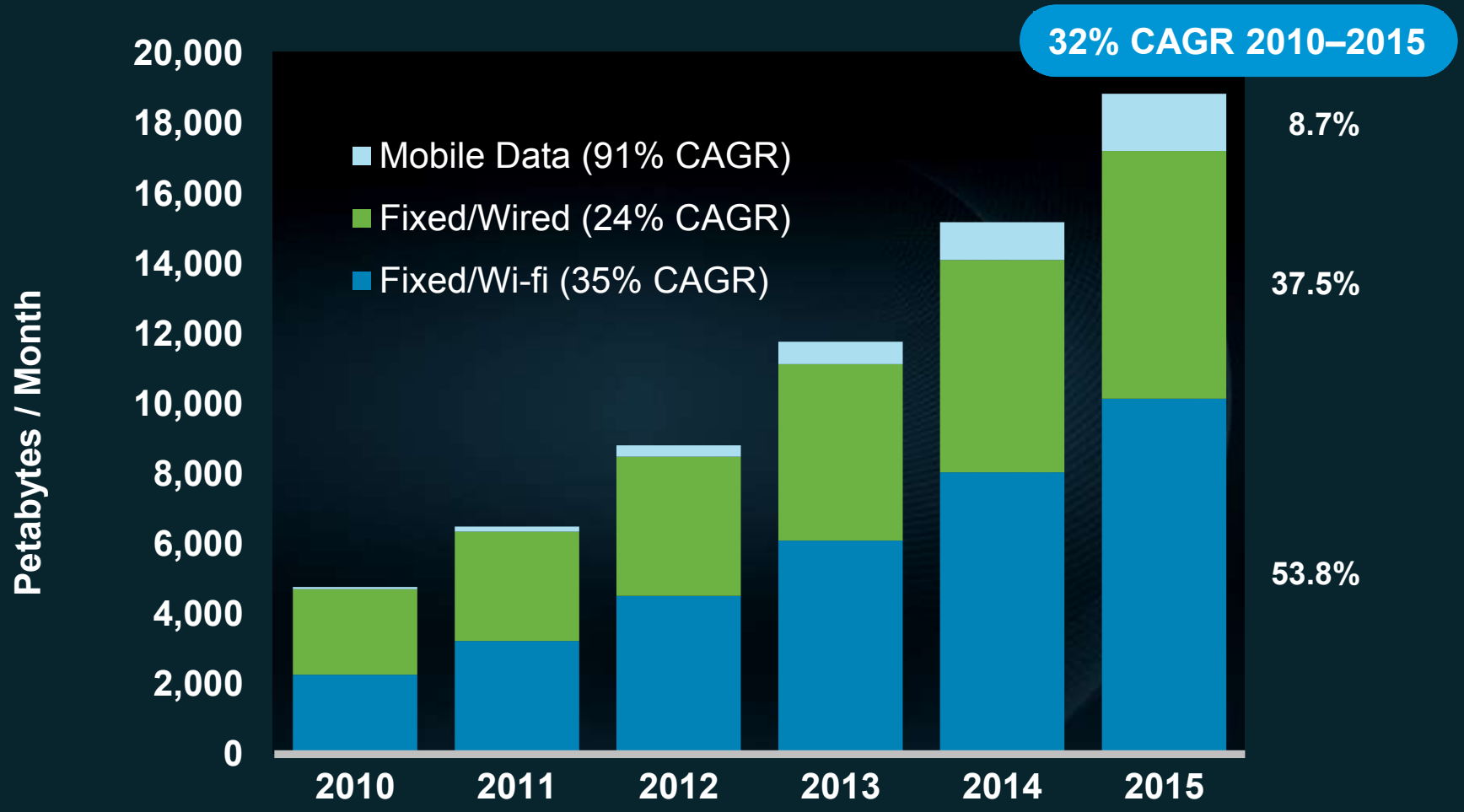
Global IP Traffic by Local Access Technology

By 2015, fixed/wi-fi traffic equals/exceeds fixed/wired traffic



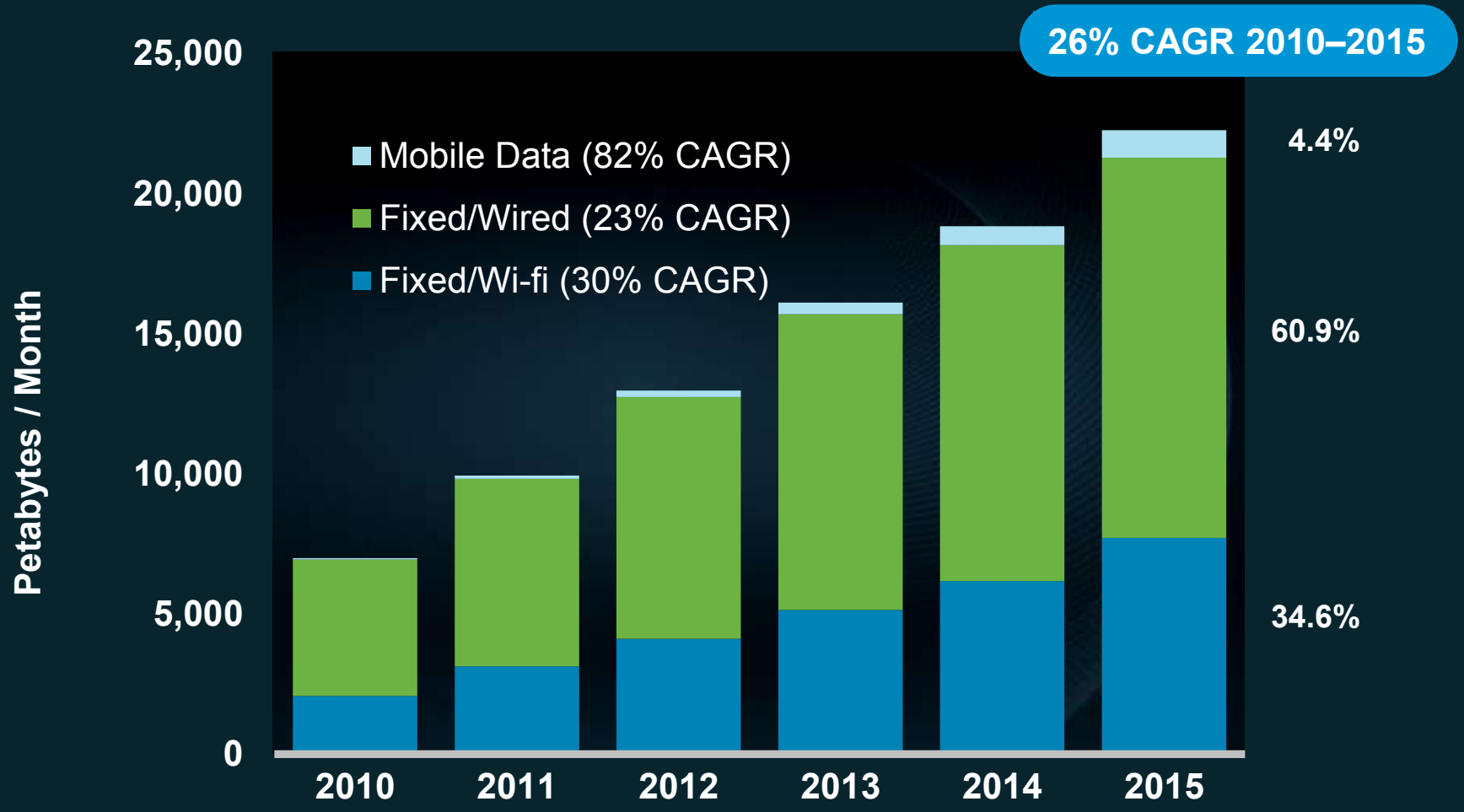
Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

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



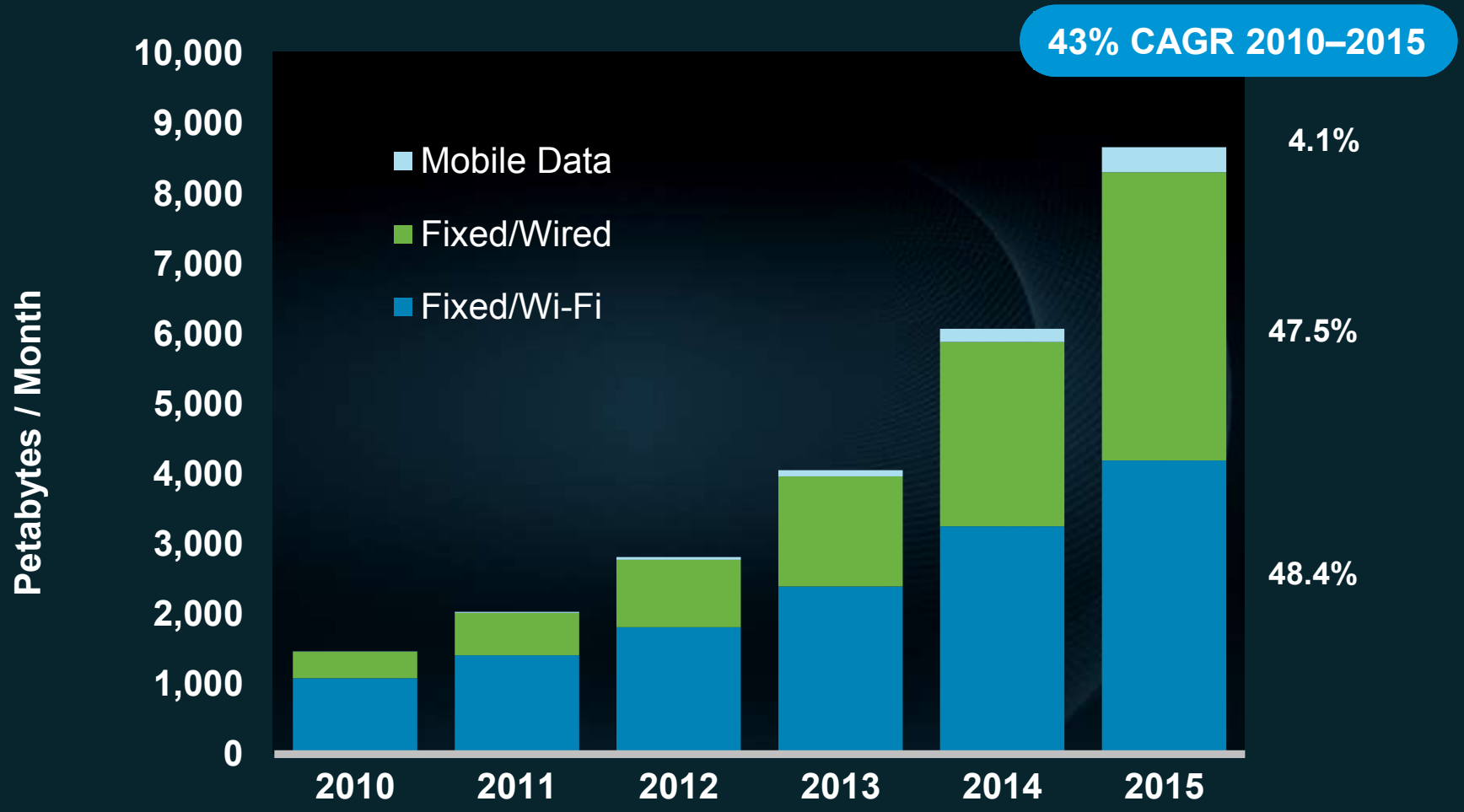
Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

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



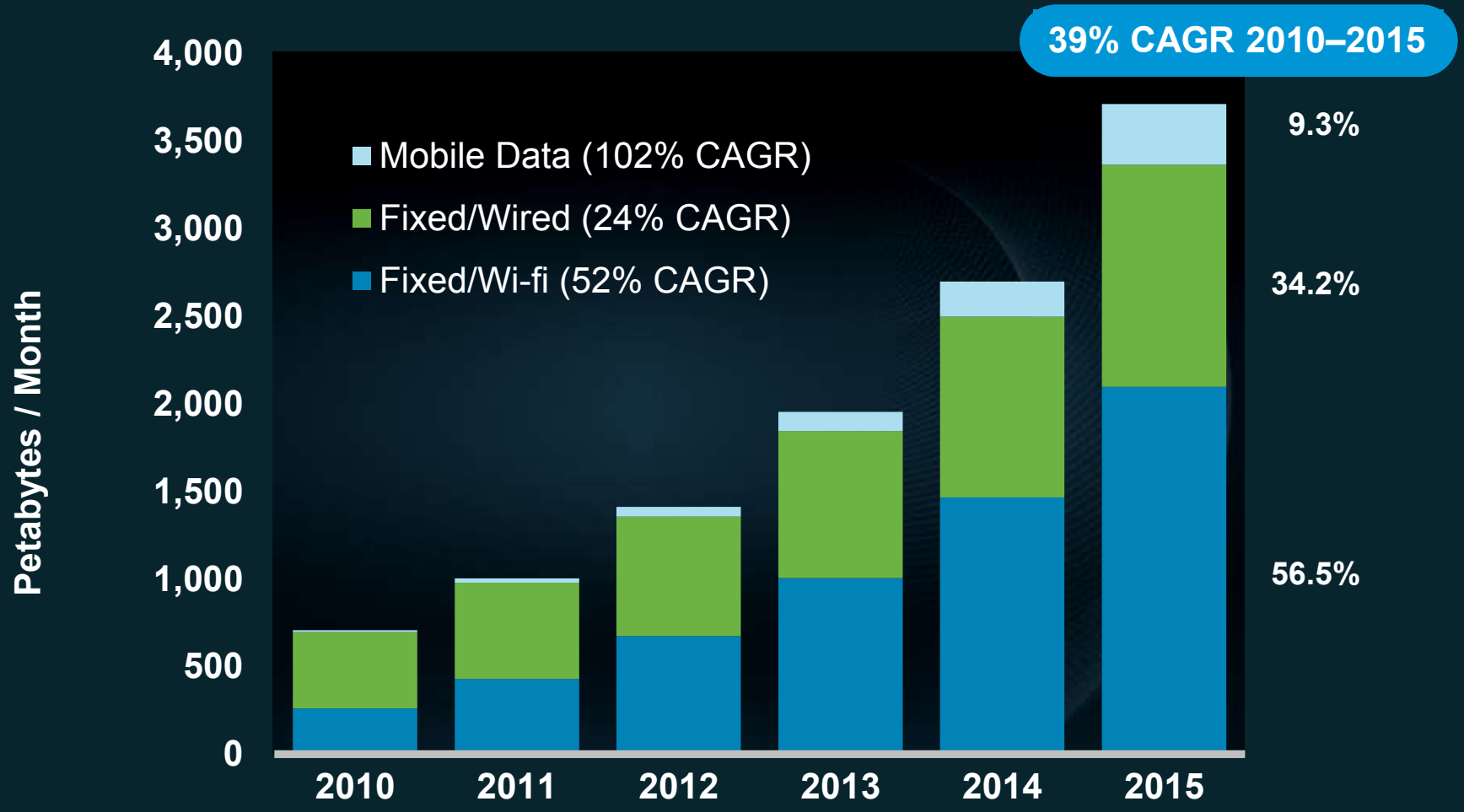
Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

China IP Traffic by Local Access Technology
By 2015, fixed/WiFi traffic exceeds fixed/wired traffic



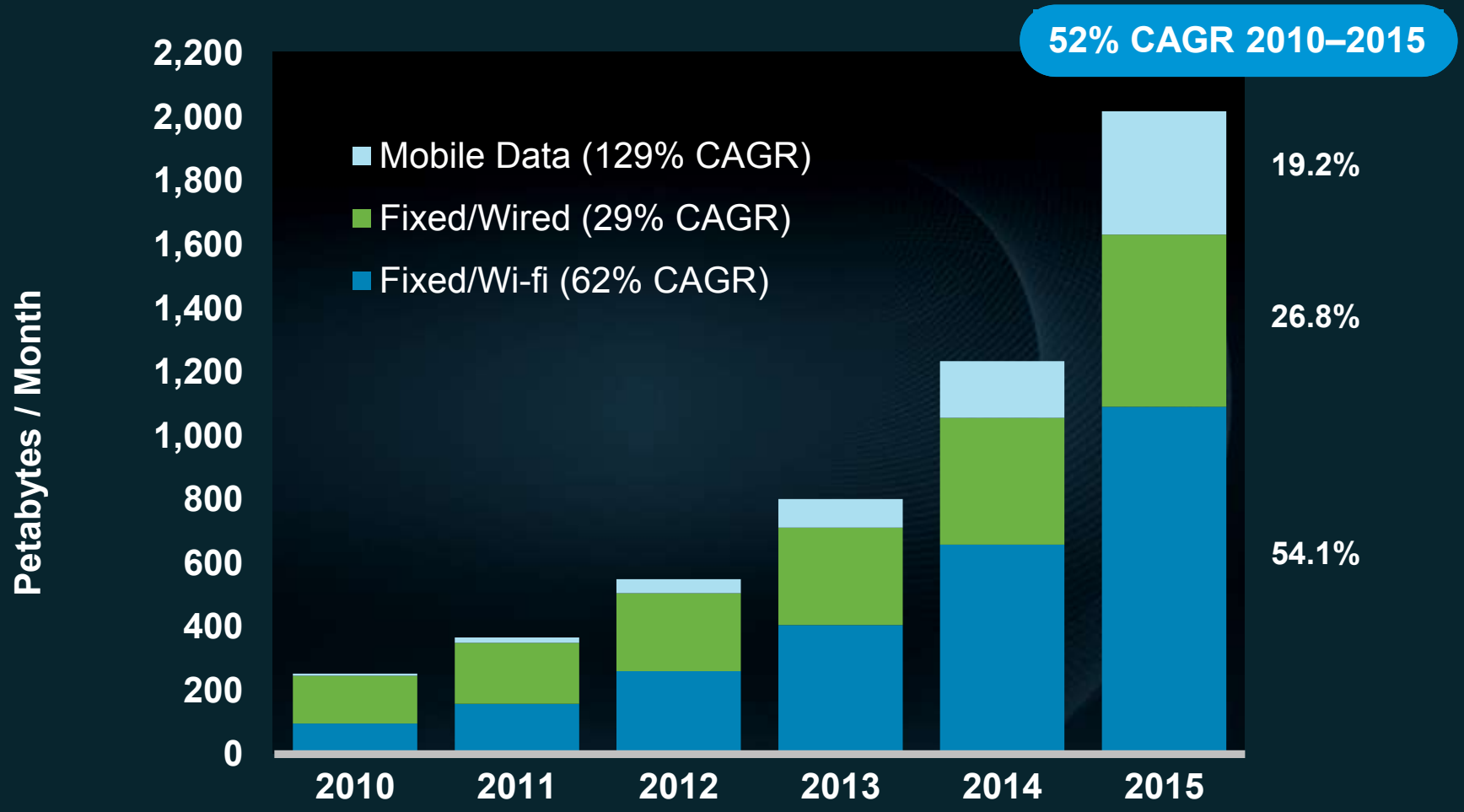
Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

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



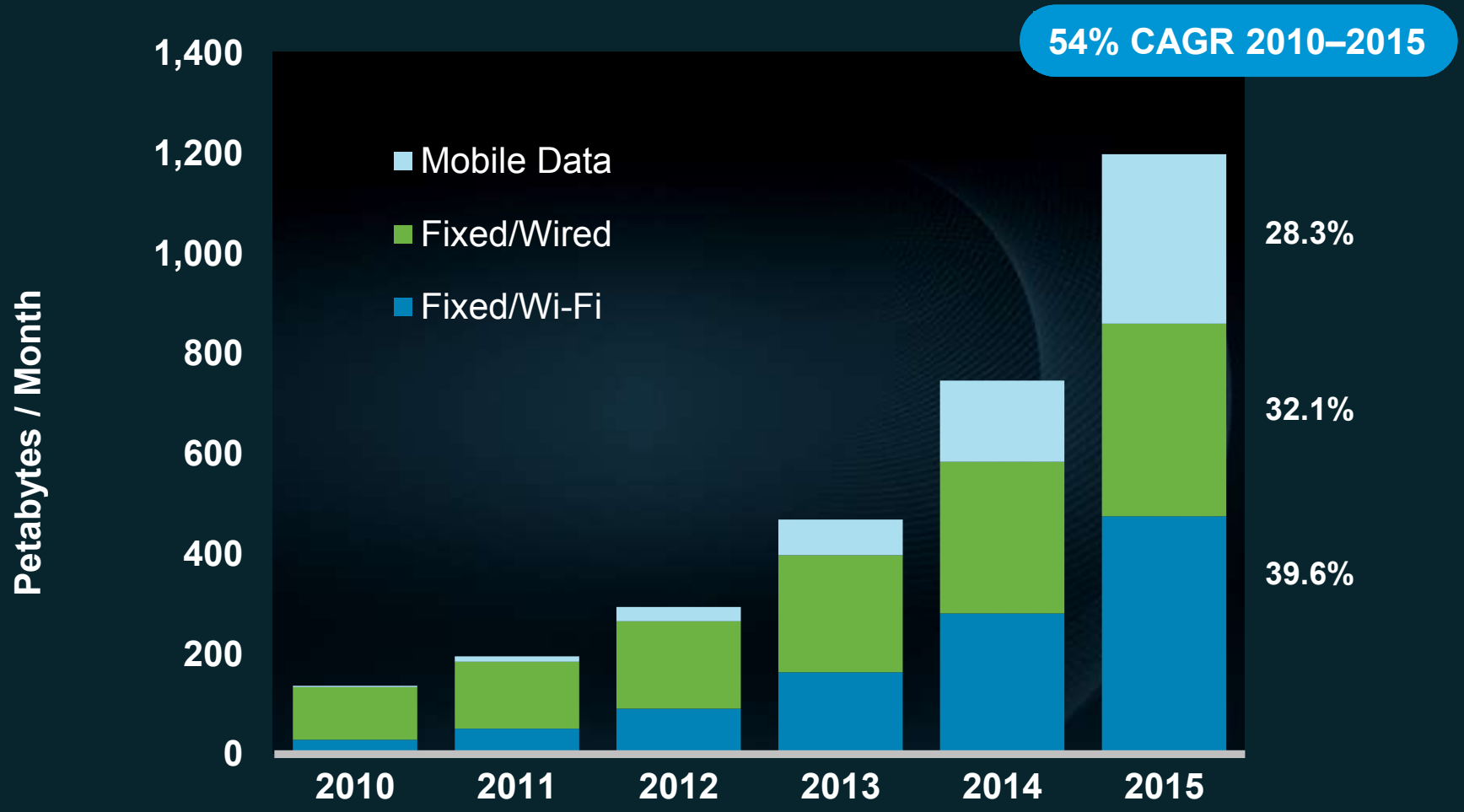
Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

MEA 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

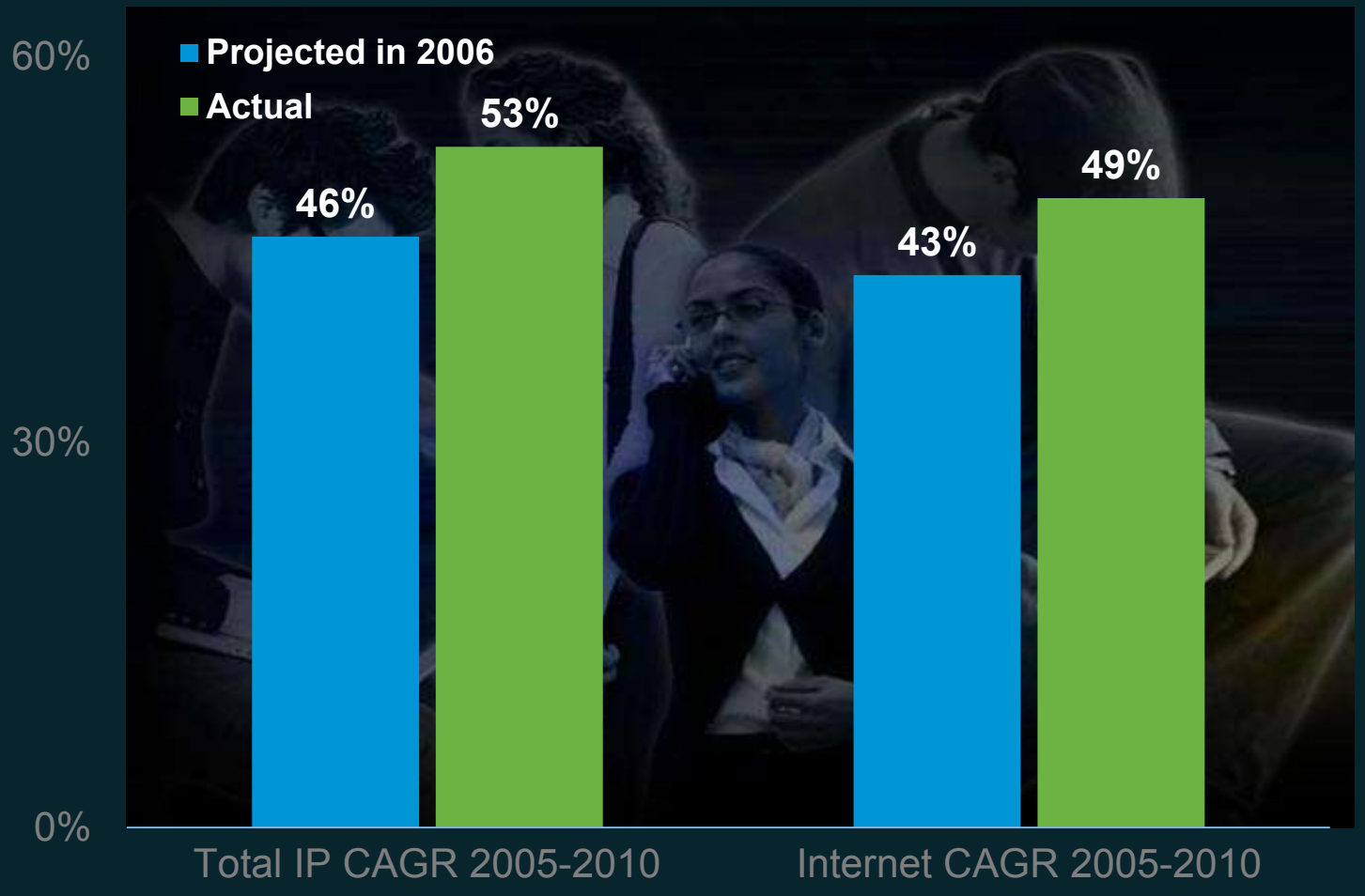
India IP Traffic by Local Access Technology
By 2015, fixed/wi-fi traffic surpasses fixed/wired traffic



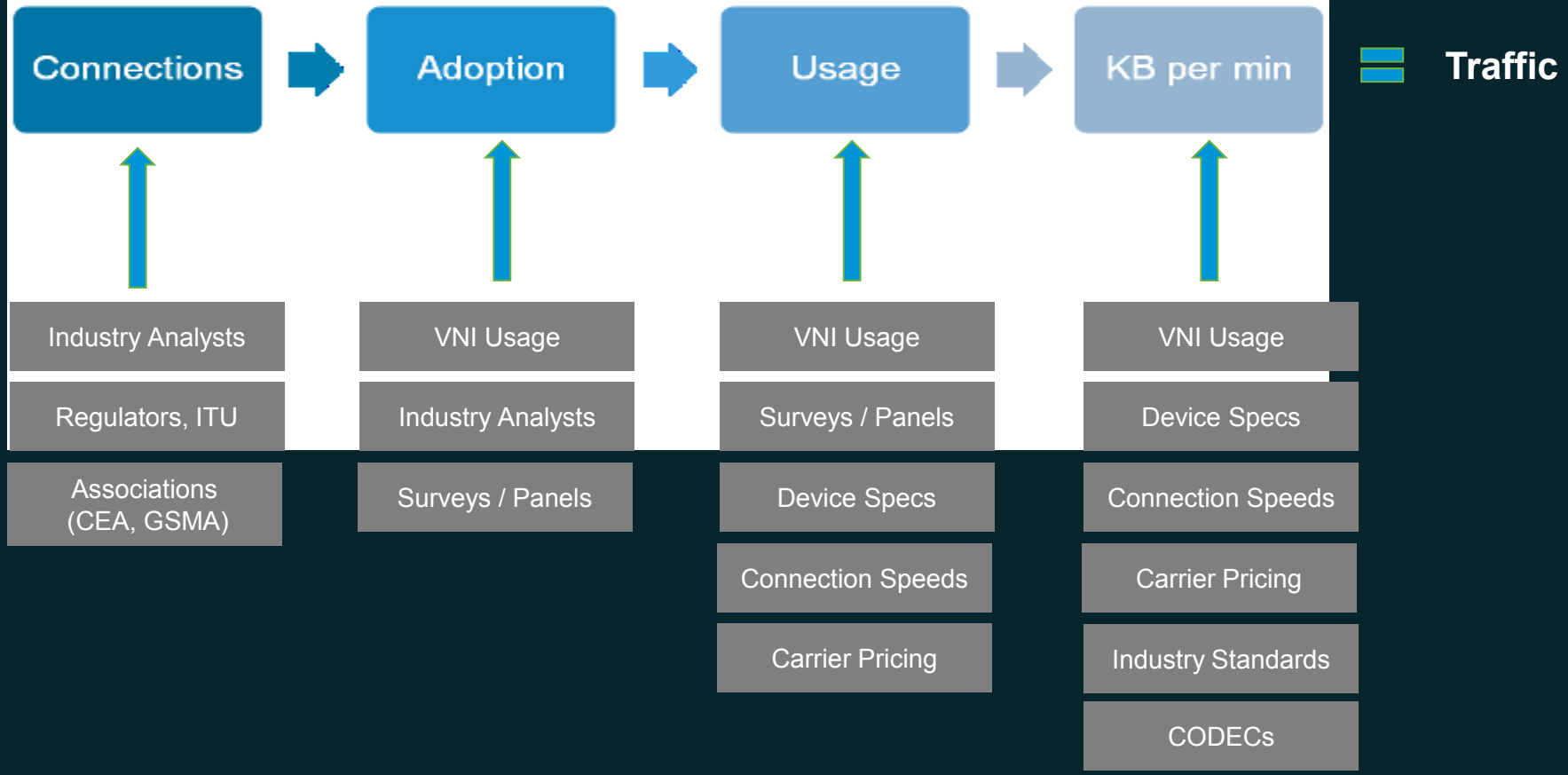
Source: Cisco Visual Networking Index (VNI) Global IP Traffic Forecast, 2010–2015

VNI projections vs. actuals

5th Anniversary



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



Sources for Internet Video Users, 2010

Country	2010	Source
Australia	4,313,00	VNI estimates based on Australia telecom regulator data, ITU
Brazil	26,284,600	VNI estimates based on Brazil telecom regulator data, ITU
Canada	3,259,300	VNI estimates based on comScore, Nielsen, IDC
China	283,980,000	VNI estimates based on China telecom regulator data, ITU
France	17,356,450	IDC, Ovum
Germany	17,785,740	IDC, Ovum
India	9,574,400	IDC, Ovum
Italy	13,051,400	IDC, Ovum
Japan	40,473,650	IDC, Ovum
Korea	15,830,600	IDC, Ovum
Mexico	12,515,400	IDC, Ovum
New Zealand	770,300	VNI estimates based on adoption rates from consumer surveys
Russia	19,266,000	VNI estimates based on adoption rates from consumer surveys
South Africa	1,879,053	VNI estimates based on adoption rates from consumer surveys
United Kingdom	15,665,259	VNI estimates based on UK telecom regulator data, ITU
United States	149,561,804	IDC, Nielsen

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

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

Thank you.