Available Industry Data
Ethernet Bandwidth Assessment

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IEEE 802.3 NEW ETHERNET APPLICATIONS AD HOC

JUNE 11 ,2019 TELECONFERENCE AD HOC MEETING

The Search For Data

Increased # of users x **Increased access rates and methods** x **Increased services** = **Bandwidth explosion everywhere**

As noted in IEEE 802.3 NEA BWA2 Teleconference– “Getting real data of networks can be problematic, as it can be interpreted as an indication of the business of the organization providing the data.”

So what data can be found about–

- Users?
- Access Rates?
- Services (Applications) ?

Source Information

Sandvine

- The Global Internet Phenomena Report, Oct 2018 (see https://www.sandvine.com/hubfs/downloads/phenomena/2018-phenomena-report.pdf)
- The Mobile Internet Phenomena Report, Feb 2019 (see file:///C:/Users/jdamb/OneDrive/IEEE/802.3/NEA/BWA2/Ad%20hoc/19_0611/2019-mobile-phenomena-report.pdf)

Equinix

- Global Interconnection Index (see https://equinix.box.com/shared/static/it15zll0k0x0y4mqljtt1tm9r4qlu6op.pdf)

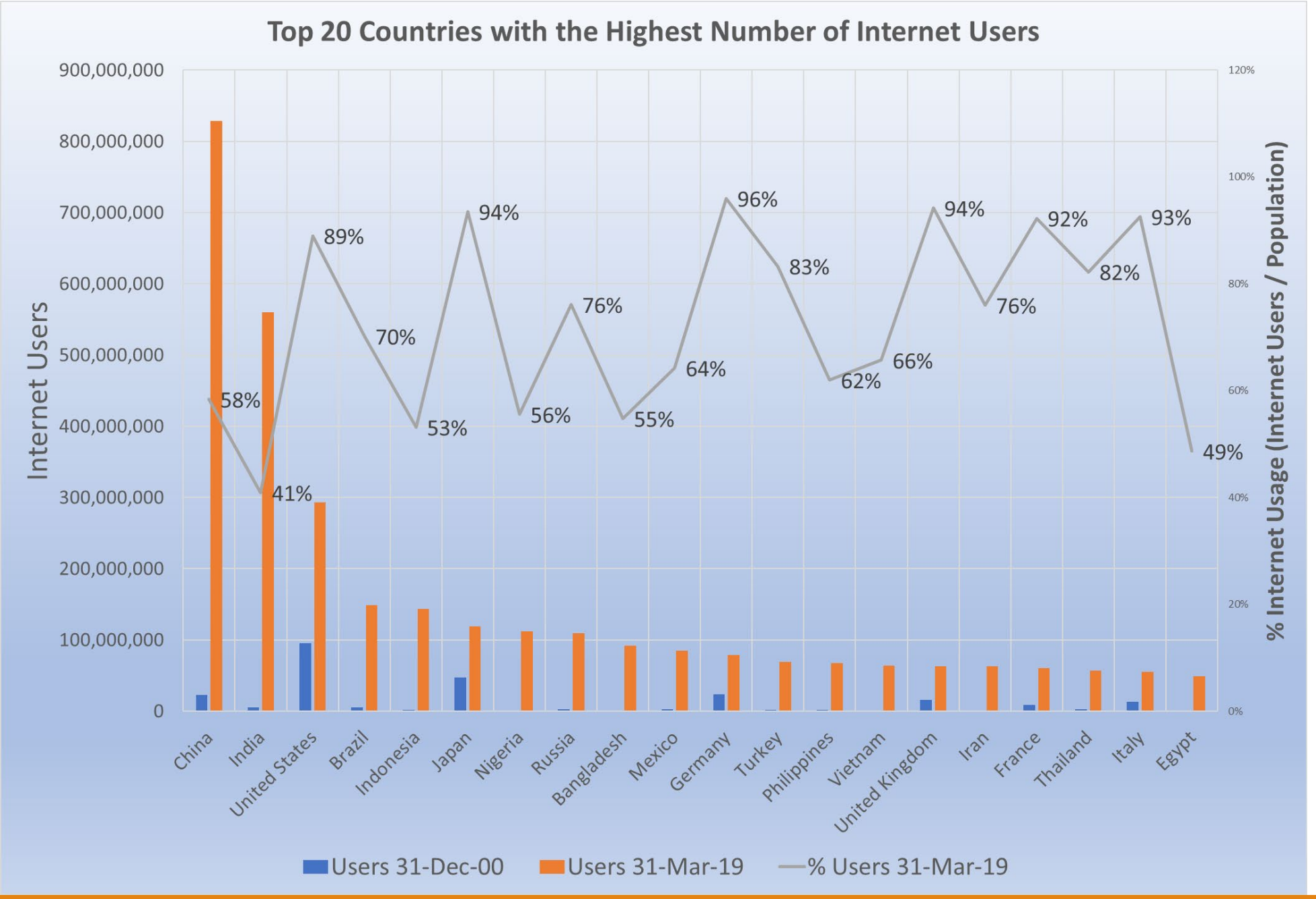
Internet World Stats

- https://www.internetworldstats.com/stats.htm

Akamai

- State of the Internet, Q1 20xx Report (2013 – 2017)
  - 2017 - https://www.akamai.com/us/en/multimedia/documents/state-of-the-internet/q1-2017-state-of-the-internet-security-report.pdf
  - 2016 - https://www.akamai.com/us/en/multimedia/documents/state-of-the-internet/akamai-state-of-the-internet-report-q1-2016.pdf
  - 2015 - https://www.akamai.com/us/en/multimedia/documents/content/akamai-state-of-the-internet-report-q1-2015.pdf
  - 2014 - https://www.akamai.com/us/en/multimedia/documents/content/akamai-state-of-the-internet-report-q1-2014.pdf
  - 2013 - https://www.akamai.com/us/en/multimedia/documents/content/akamai-state-of-the-internet-report-q1-2013.pdf

Information on Users



As of 31 Mar 2019

Total World

- Population – 7,716, 223, 209
- Internet Users – 4,383,810,342
- Internet Usage – 57%

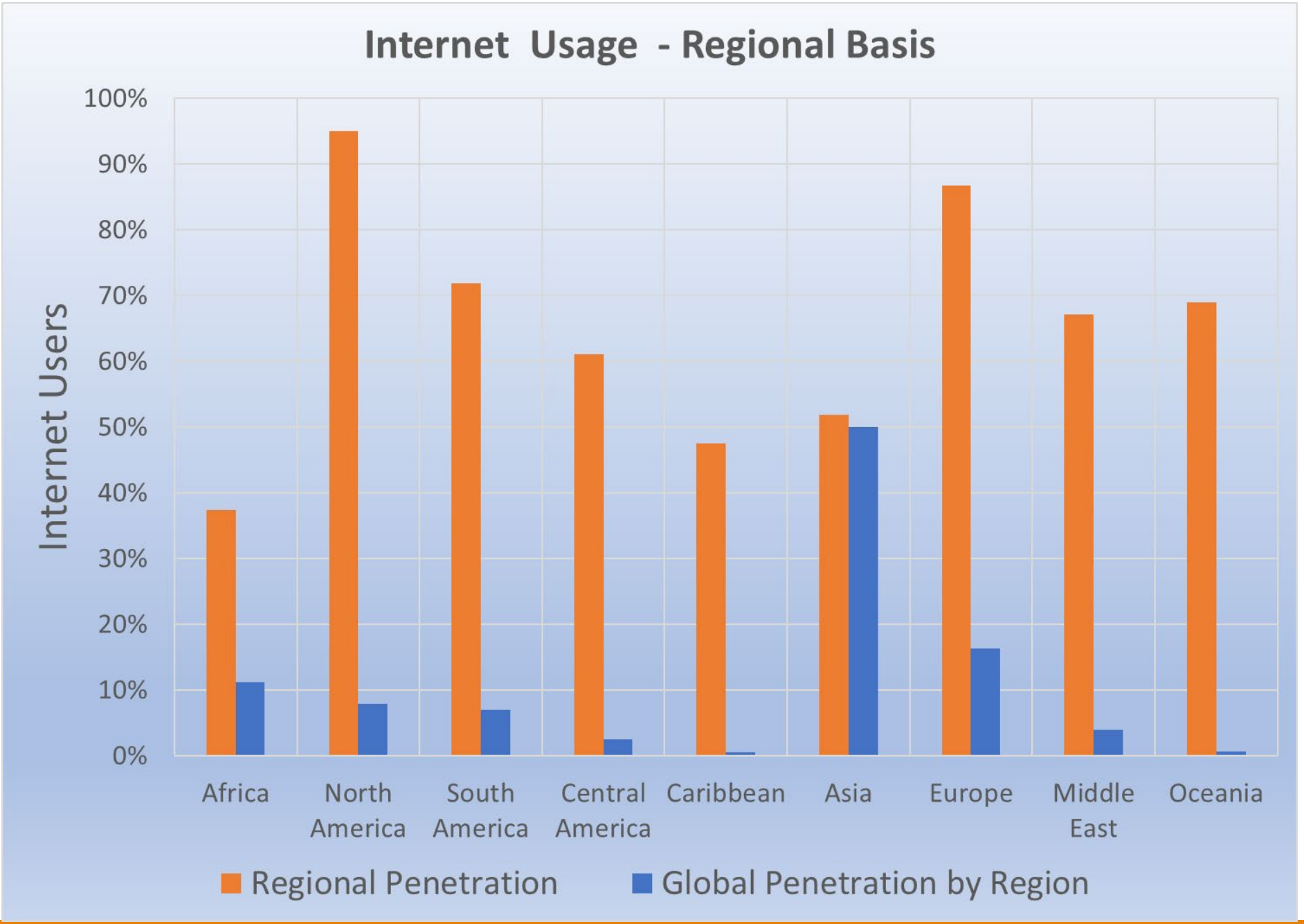
Top 20 Countries

- Population – 5,187,499,066
- Internet Users – 3,117,533,898
- Internet Usage – 60%

Rest of the World

- Population – 2,565,984,143
- Internet Users – 1,229,027,955
- Internet Usage – 48%

Source - https://www.internetworldstats.com/top20.htm

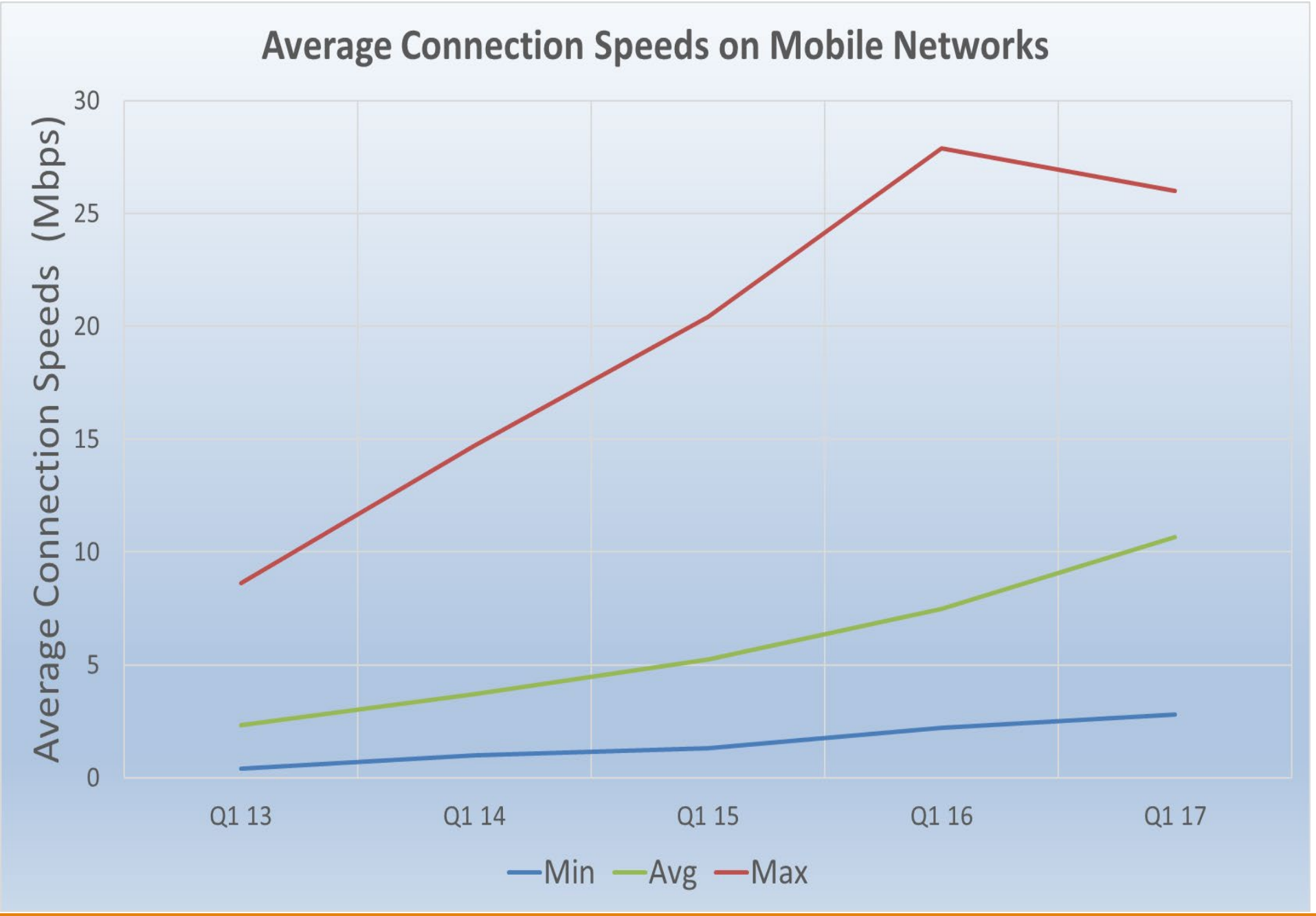


Global
Population – 7,706,707,492
Users – 4,395,463,128
% Usage - 57%

Data Points
Africa – 31 Mar 2019
America – 30 Jun 2018
Asia – 31 Mar 2019
Europe – 31 Mar 2019
Middle East – 31 Mar 2019
Oceania – 30 Jun 2018

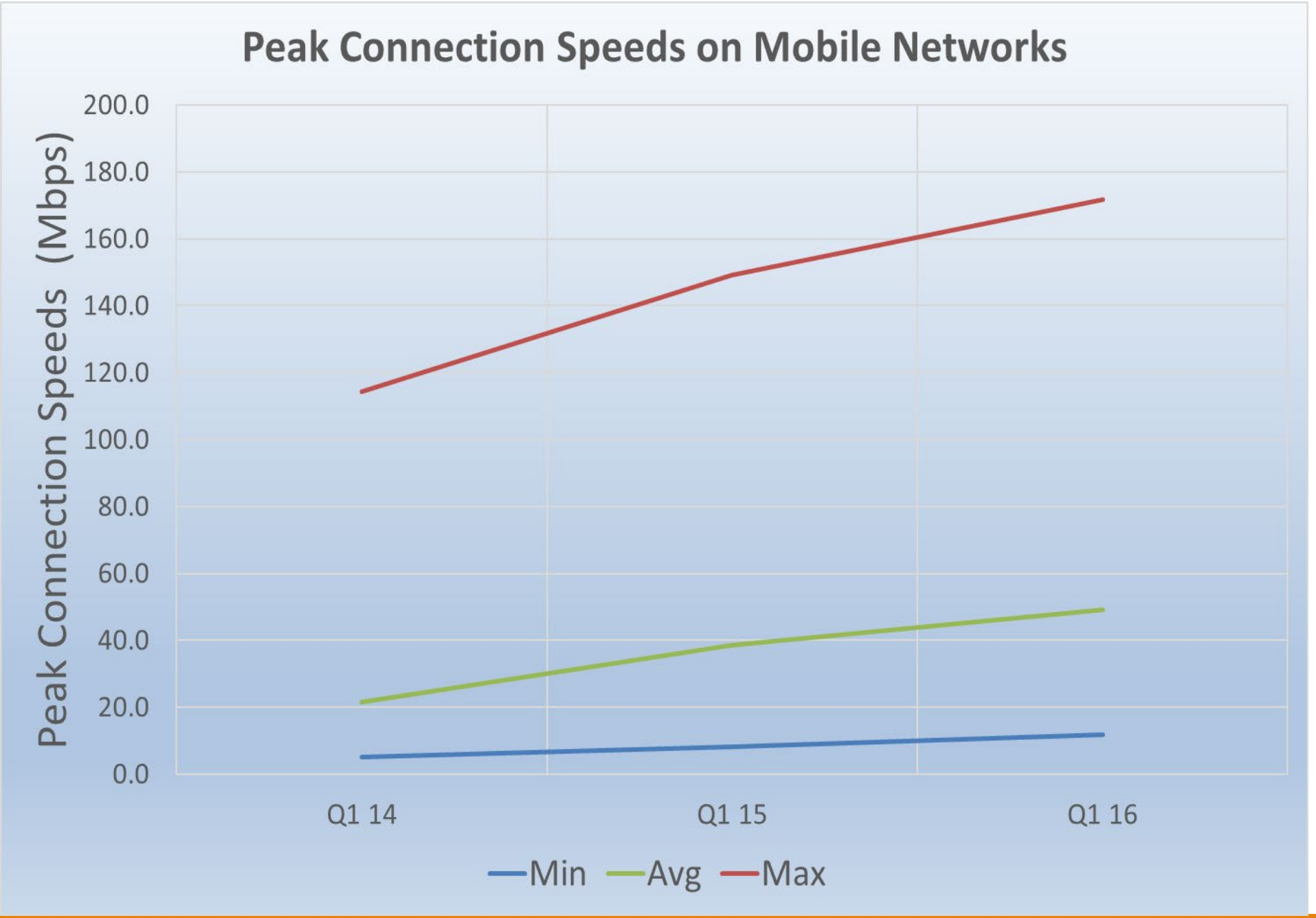
Source - https://www.internetworldstats.com/stats.htm

Access Rates



Calculations based on all countries provided in each respective report.

Source – Akamai “State of the Internet” Reports



Calculations based on all countries provided in each respective report.

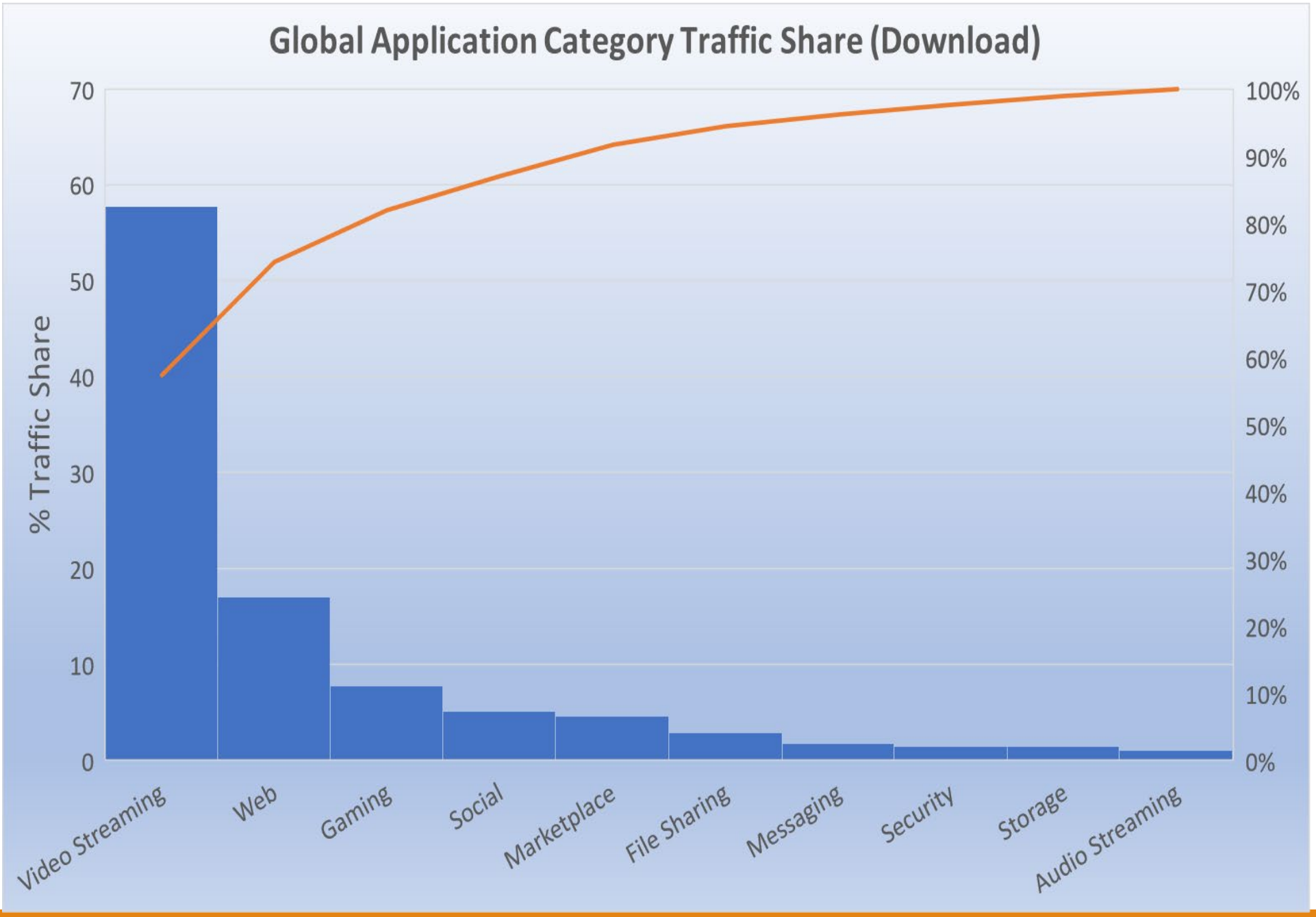
Source – Akamai "State of the Internet" Reports

Services & Applications

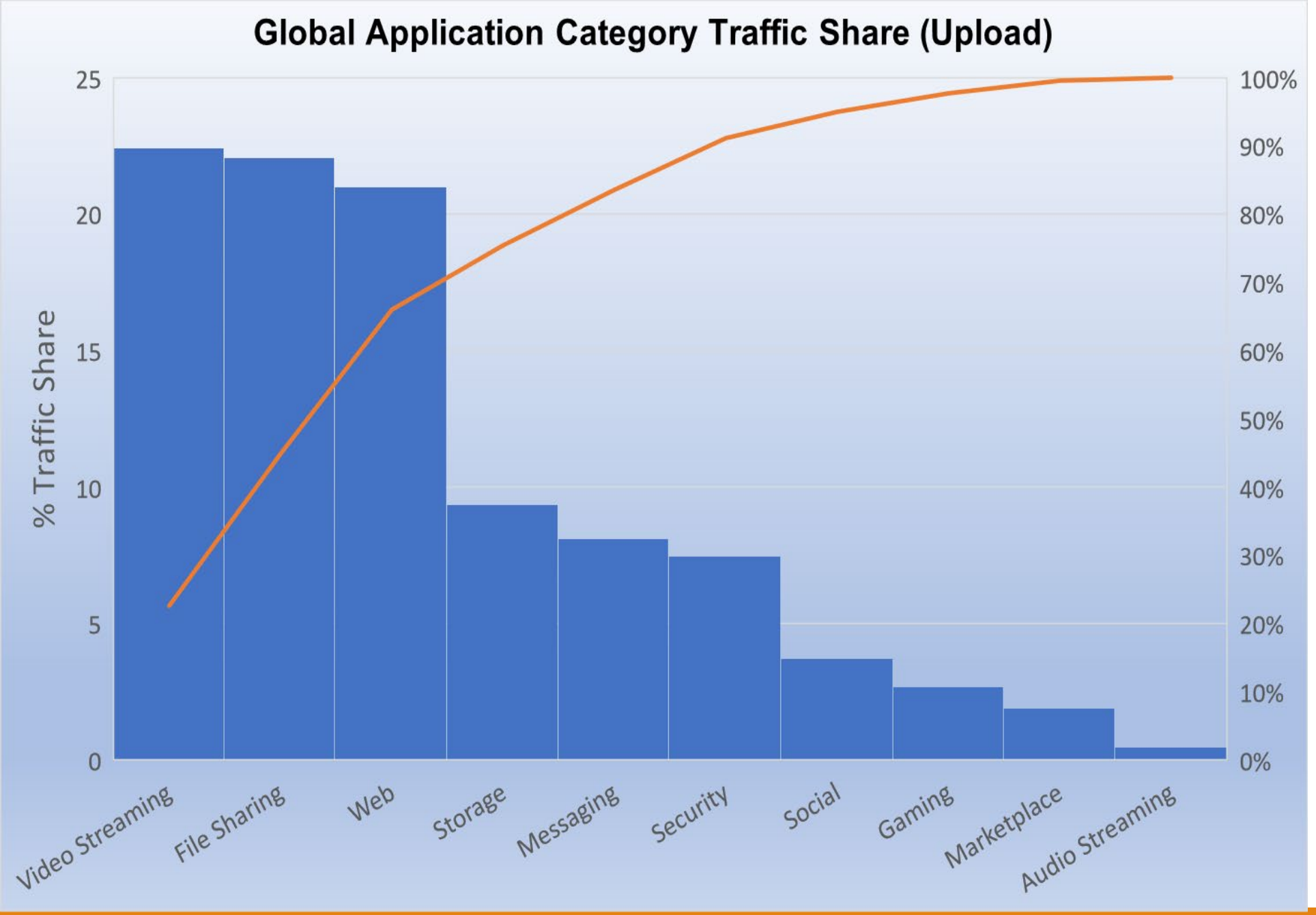
Sandvine Application Descriptions

- Streaming Video – OTT video streaming services (Netflix, YouTube, Amazon Prime, and also operator-based streaming and direct consumer streaming
- Web – All web traffic not attributed by Sandvine to an individual application
- Gaming – Downloads from major gaming networks, as well as traffic from specific games
- Social – Largest social networks worldwide (43 in report used)
- Marketplace – Itunes, Google Play, Window Store, as well as updates for major device types
- File Sharing – BitTorrent is dominant file sharing protocol
- Storage – Dropbox, iCloud, Google Drive, SharePoint, others
- Messaging – VoIP & chat applications
- Audio Streaming – Spotify, Apple Music, Google Play Music, and others

Source – Sandvine, The Global Internet Phenomena Report, Oct 2018

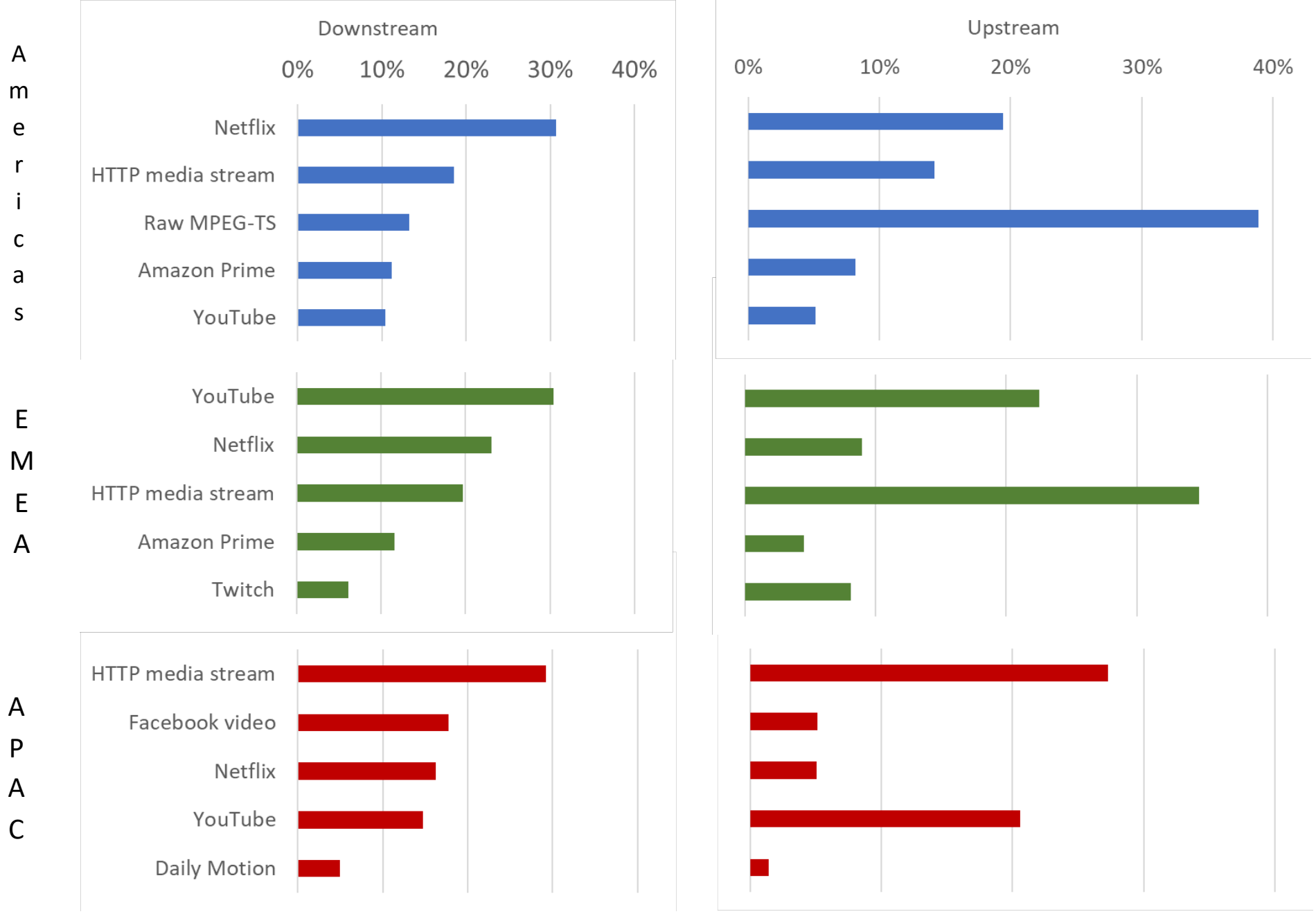


Source – Sandvine, The Global Internet Phenomena Report, Oct 2018



Source – Sandvine, The Global Internet Phenomena Report, Oct 2018

GLOBAL VIDEO STREAMING TRAFFIC



Source – Sandvine, The Global Internet Phenomena Report, Feb 2019

Mobile Application Traffic Share

	Global	North America	LATAM	Europe	Middle East	APAC
YouTube	37%	15%	17%	25%	37%	38%
Facebook	8%	7%	13%	5%	8%	11%
Snapchat	8%	5%		2%	11%	
Instagram	6%	14%	15%	8%	6%	4%
Web Browsing	5%	11%	8%	6%	3%	6%
WhatsApp	4%		12%		5%	
Facebook Video	3%	6%	11%	6%		11%
Netflix	2%	6%	2%	7%	3%	
App Store	2%	3%			2%	
Google Play	2%		3%			2%
iCloud		2%				
Google		4%	4%			
Spotify			1%			
HTTP Media Stream				3%		1%
QUIC				2%		3%
Itunes Store				2%		
PlayStation Download					2%	
Tik Tok					2%	1%
Line						3%

Legend
- #1 Traffic Share
- #2 Traffic Share
- #3 Traffic Share

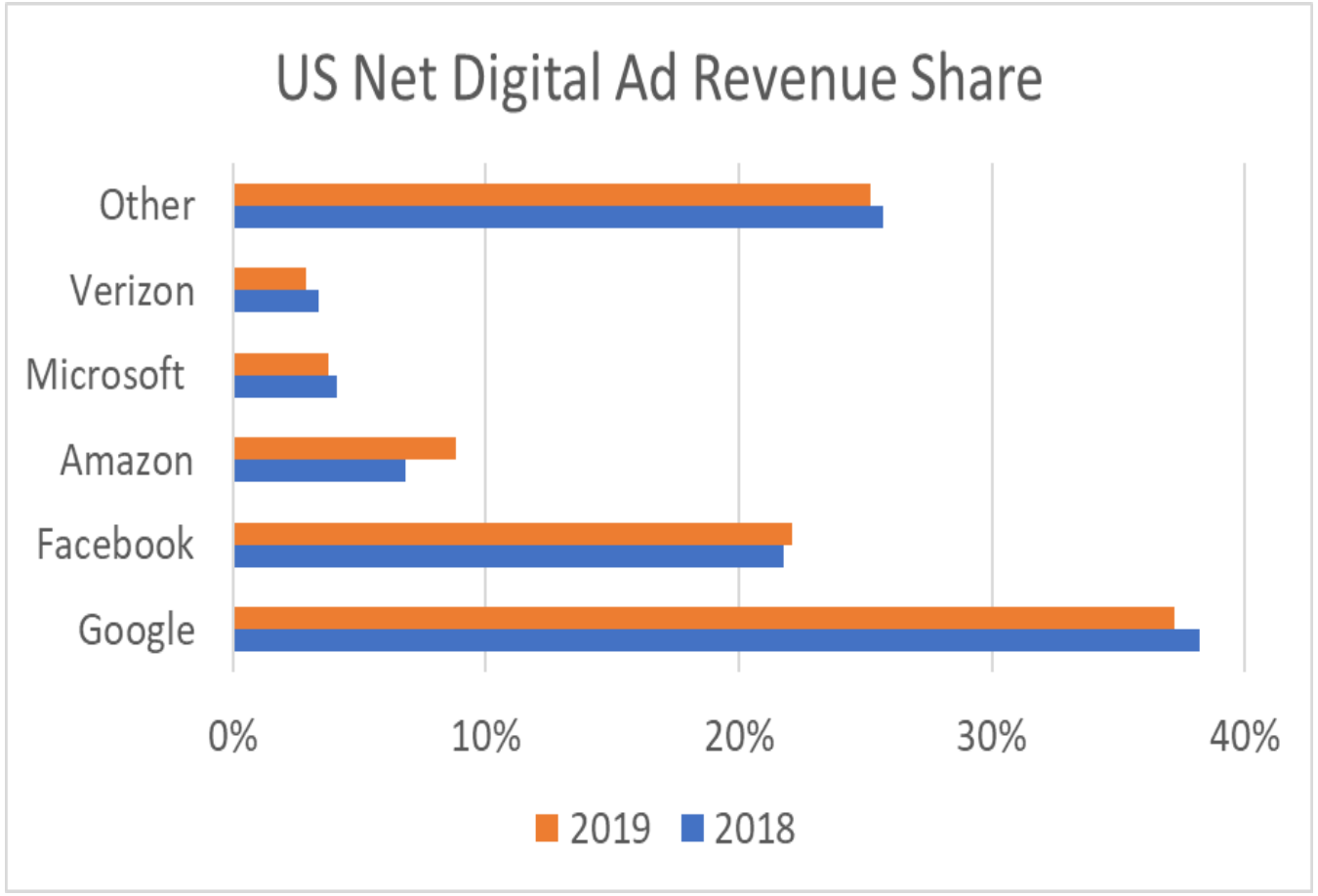
Source – Sandvine, The Mobile Internet Phenomena Report, Feb 2019

Digital Ad Spending

eMarketer - https://www.emarketer.com/content/us-digital-ad-spending-will-surpass-traditional-in-2019

Total digital ad spending in the US will grow 19% to 129.34 billion

Mobile will continue dominance – 87.06 billion (>2/3)



Bandwidth

Interconnection Bandwidth

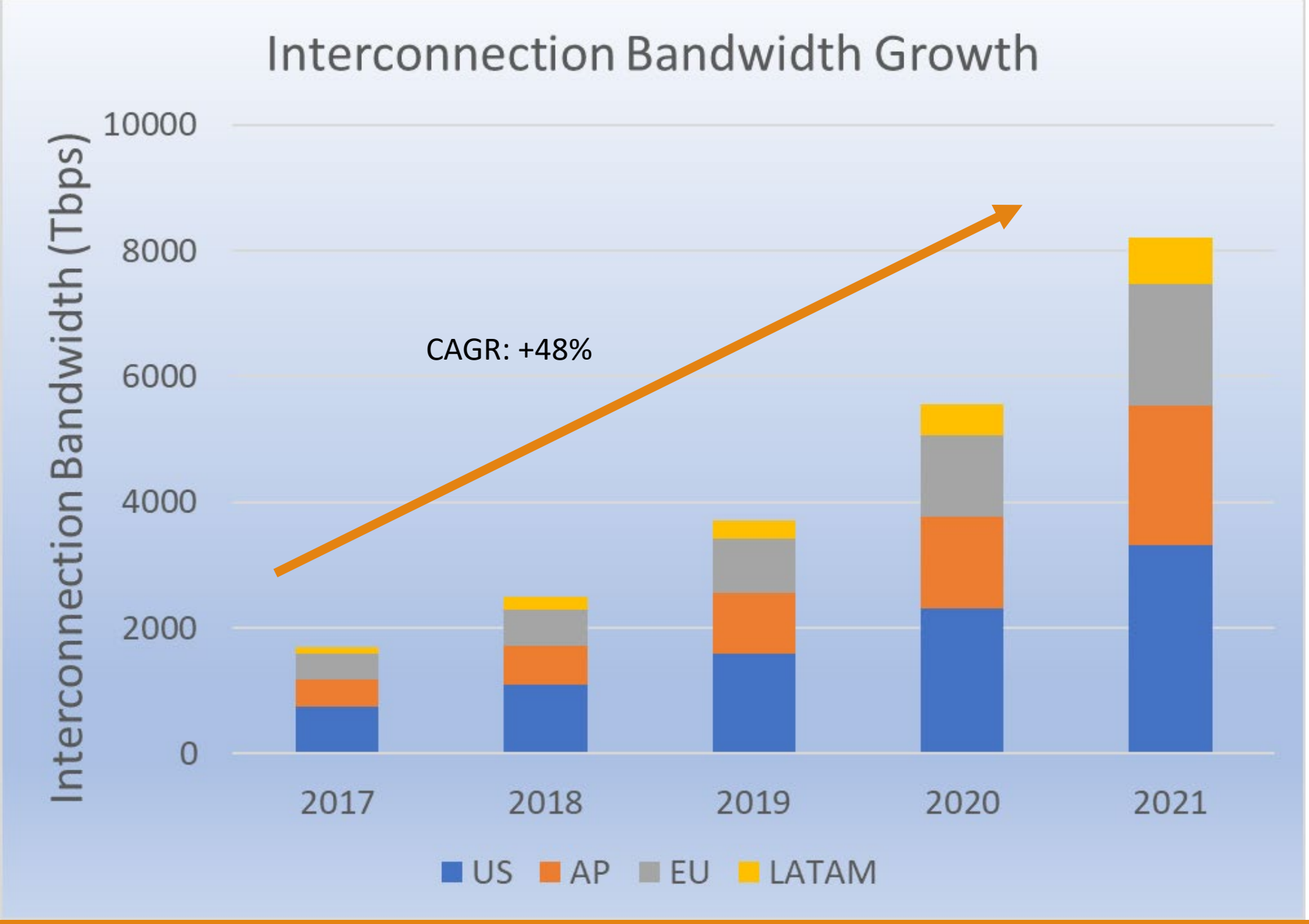
Following Definition from Equinix–

The total capacity provisioned to privately and directly exchange traffic with a diverse set of courterparties (networks, clouds, partners) and providers at distributed IT exchange points inside carrier-neutral colocation data centers.

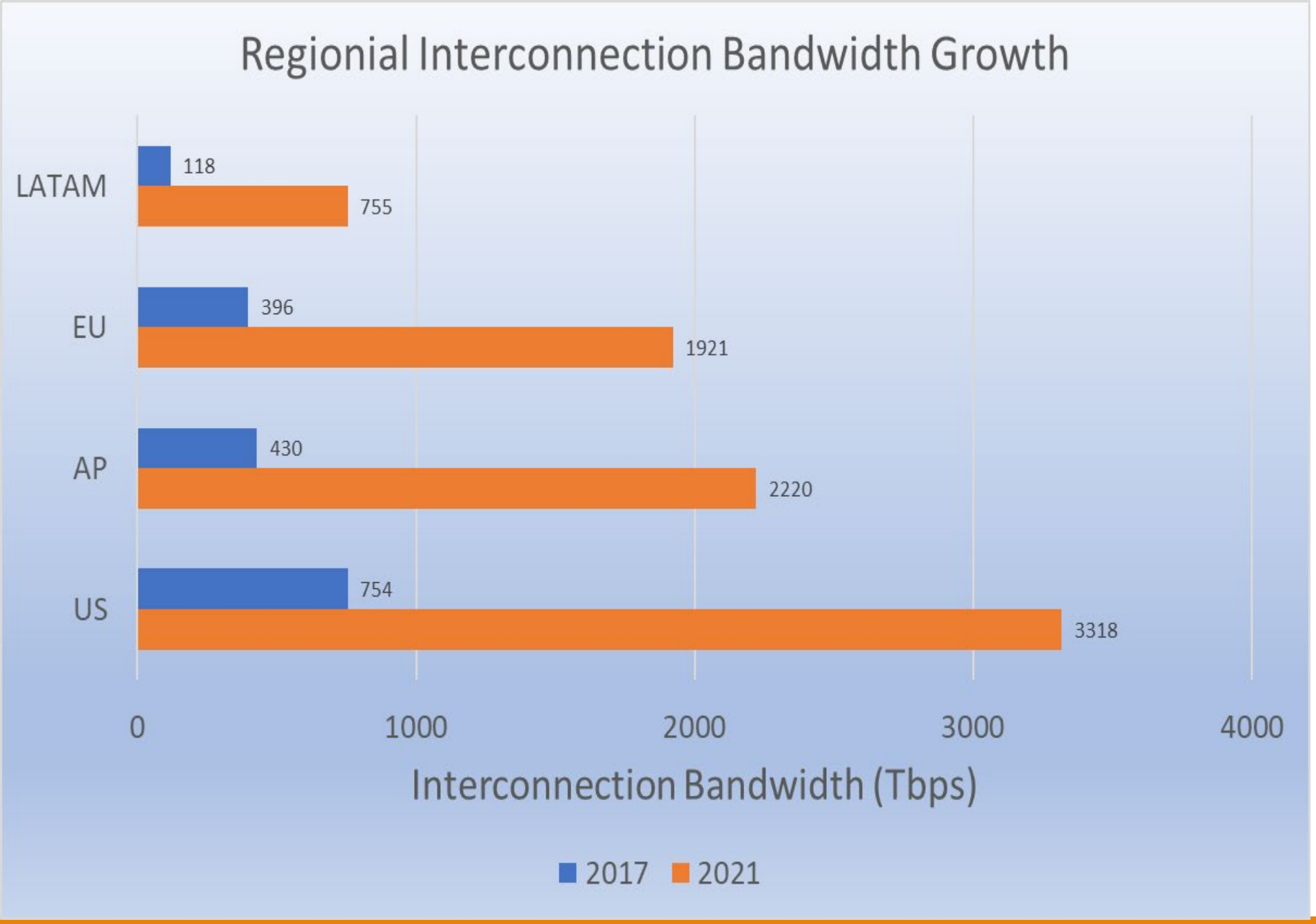
Global Interconnection Index – annual publication

The Index published 13 sept 2018 forecasts Interconnection bandwidth to grow to 8,200+ Terabits by 2021.

Additional analysis to be provided in the future.



Source – Equinix – Global Interconnection Index



CAGR%

- LATAM – 59%
- EU – 48%
- AP – 51%
- US – 45%

Source – Equinix – Global Interconnection Index