



Policy Challenges for the Digital Age

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The World Is Going Digital

- Every Country
- Every Company
- Every City
- Every Person
- Every Thing



Going Digital

Global Trends & Challenges

Trends Reshaping the Global Landscape

Social Demographics



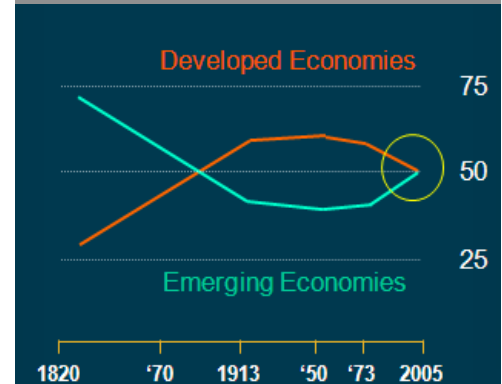
Aging
Shrinking
Hyper growth

Environment & Energy



*By 2030, world
energy demand
will increase by
40%*

Economics



Biggest Economic & Social Shifts in History

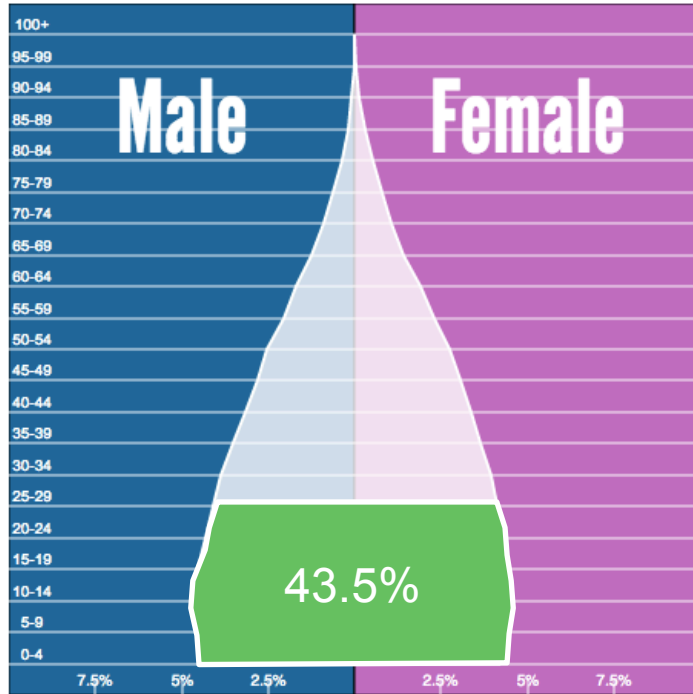
Aging		
Elderly (65+ yrs)	2000	2050
World	6.8%	16.2%
USA	12.4%	21.6%
Canada	14.4%	24.7%
China	6.8%	23.3%
Canada	12.6%	25.5%
Netherlands	13.6%	25.6%
Switzerland	15.4%	26.0%
Europe	14.8%	27.4%
Poland	12.2%	29.9%
Singapore	7.2%	32.6%
Germany	16.4%	32.5%
Italy	18.4%	33.3%
S. Korea	7.3%	34.2%
Japan	17.2%	37.8%

Shrinking		
2050 Estimate	Million	% Decline From 2000
Portugal	10.0	(2%)
Europe	691.0	(5%)
S. Korea	44.0	(5%)
Slovakia	4.9	(9%)
Hungary	8.9	(13%)
Germany	70.5	(14%)
Poland	32.0	(17%)
Japan	101.6	(20%)
Russia	116.0	(21%)
Romania	17.2	(22%)
Ukraine	35.0	(28%)
Bulgaria	5.3	(33%)

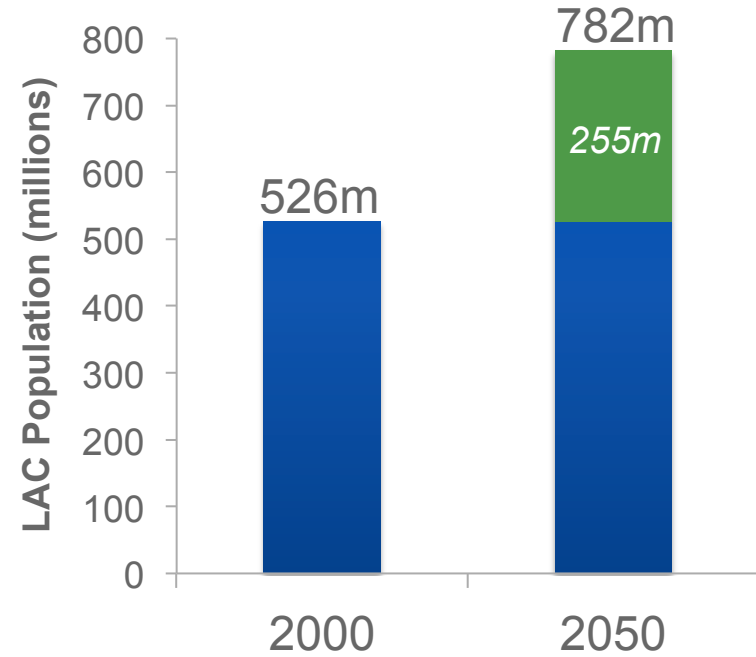
Growth		
2050 Estimate	Million	% Growth From 2000
World	9,149.9	50%
Lebanon	4.6	25%
Brazil	222.8	28%
India	1,613.8	55%
Bangladesh	222.4	58%
Egypt	129.5	85%
Jordan	9.8	105%
Saudi Arabia	43.6	110%
Pakistan	335.1	126%
Nigeria	289.0	132%
Iraq	63.9	160%
Ethiopia	173.8	165%
Congo	147.5	190%
Afghanistan	73.9	260%
Qatar	2.6	343%

Latin America: Young and Growing

43.5% of LAC population < 25 years old



49% Growth from 2000-2050



Challenges

Urbanization



Water



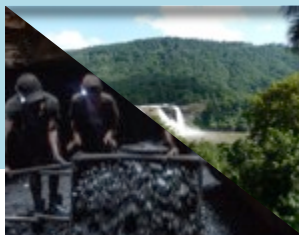
Feeding the World



Climate Change (Rising sea levels)



Managing Natural Resources

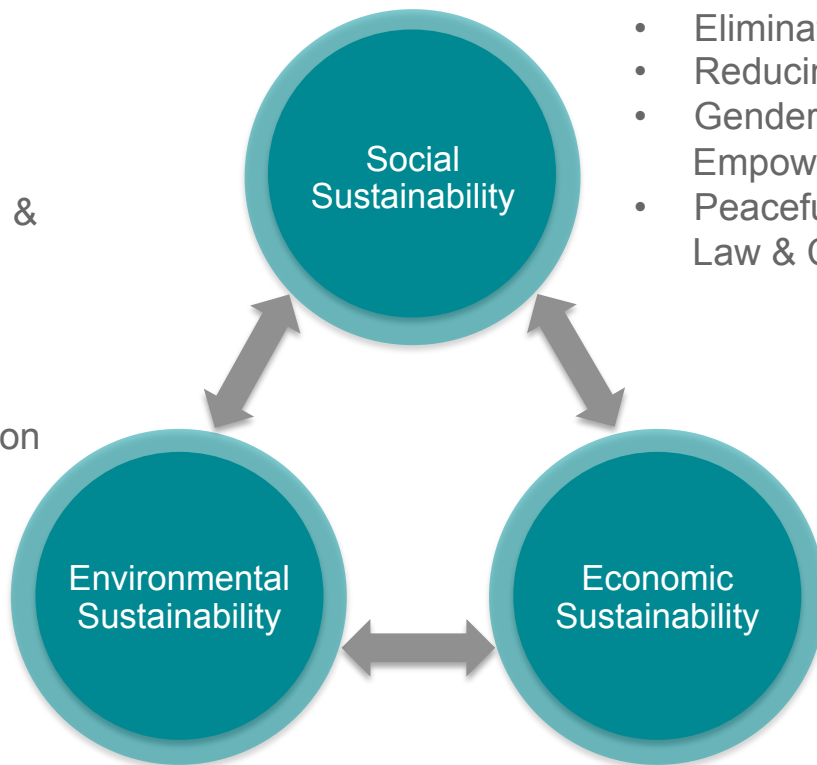


Environmental Pollution



Reimagining Society Through Country Digitization

- Food Security, Nutrition & Agriculture
- Energy
- Water & Sanitation
- Health & Population
- Sustainable Consumption & Production
- Climate Change
- Oceans & Seas
- Ecosystems & Biodiversity



- Eliminating Poverty
- Reducing Inequality
- Gender Equality & Women's Empowerment
- Peaceful Societies, Rule of Law & Capable Institutions

- Economic Growth
- Employment
- Infrastructure
- Industrialization
- Education & Life-Long Learning
- Means of Implementation & Global Partnership

At the Digital Tipping Point

1B 51% 10B

111
MILLION

57%

686
MILLION

LATAM IP Traffic & Service Adoption Drivers

By 2019:



IP Broadband Growth Drivers

More Internet Users



2014	2019
260 Million	371 Million

More Devices & Connections



2014	2019
1.2 Billion	1.9 Billion

Faster Fixed Broadband Speeds



2014	2019
7.2 Mbps	17 Mbps

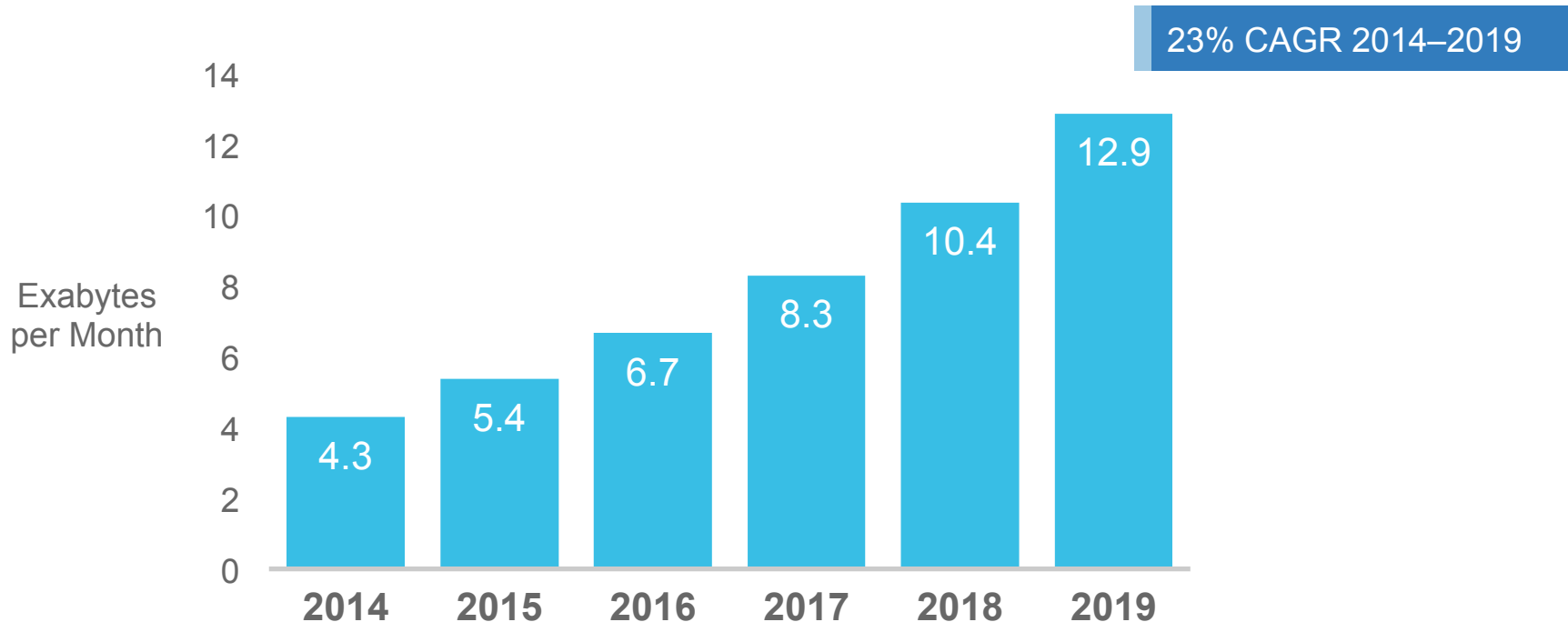
More Video Viewing



2014	2019
61% of Traffic	82% of Traffic

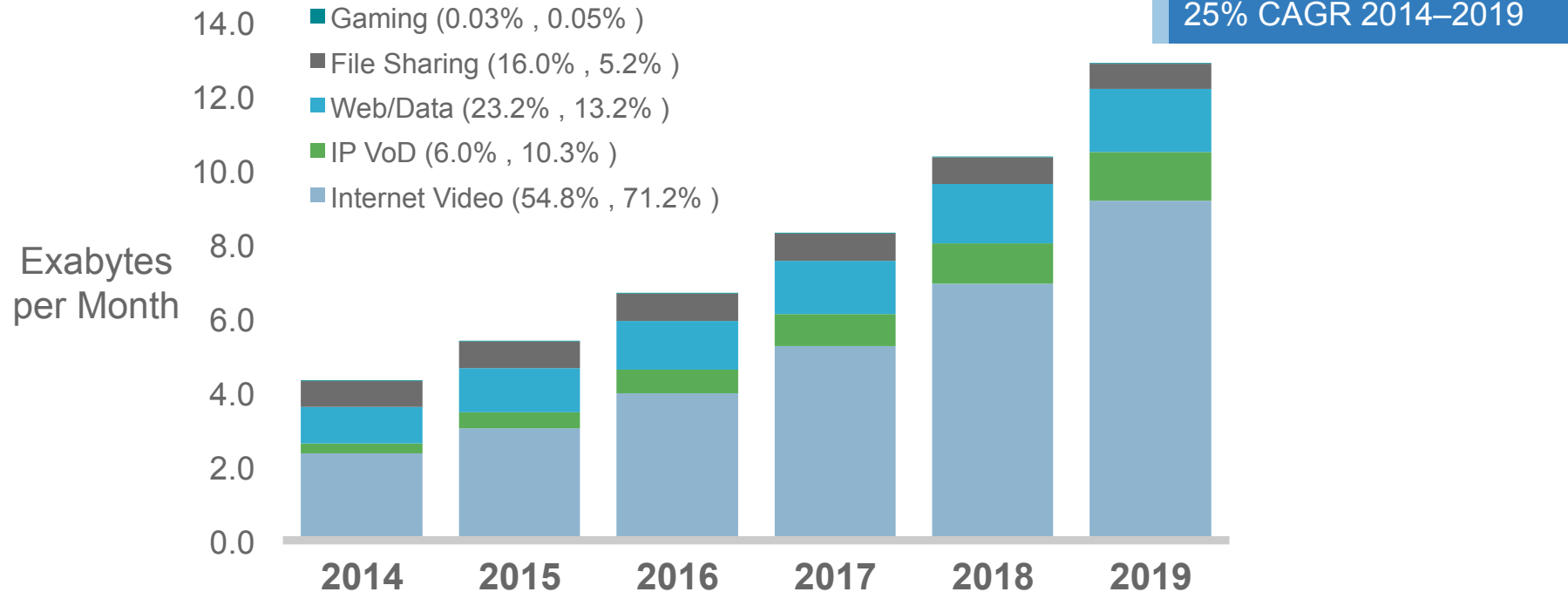
LATAM IP Traffic Growth / Top-Line

LATAM IP Traffic will Increase 3-Fold from 2014–2019



LATAM IP Traffic Growth

IP Video Will Account for 82 Percent of IP Traffic by 2019

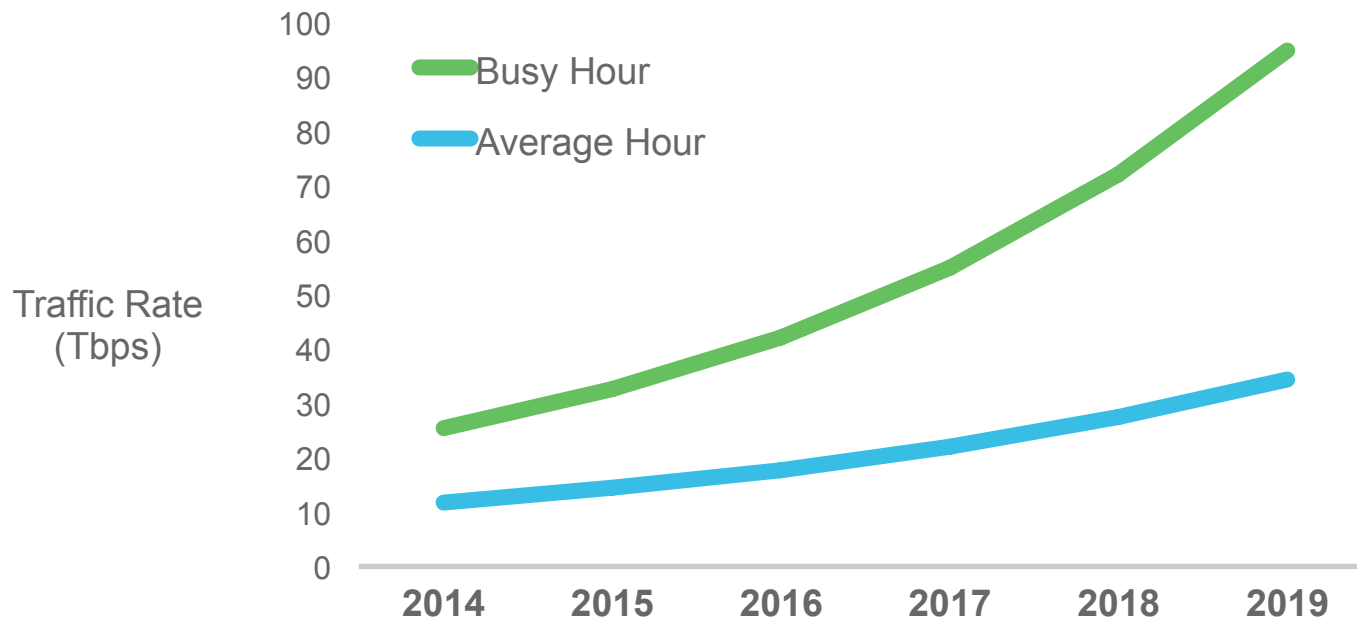


* Figures (n) refer to 2014 and 2019 traffic shares

Source: Cisco VNI Global IP Traffic Forecast, 2014–2019

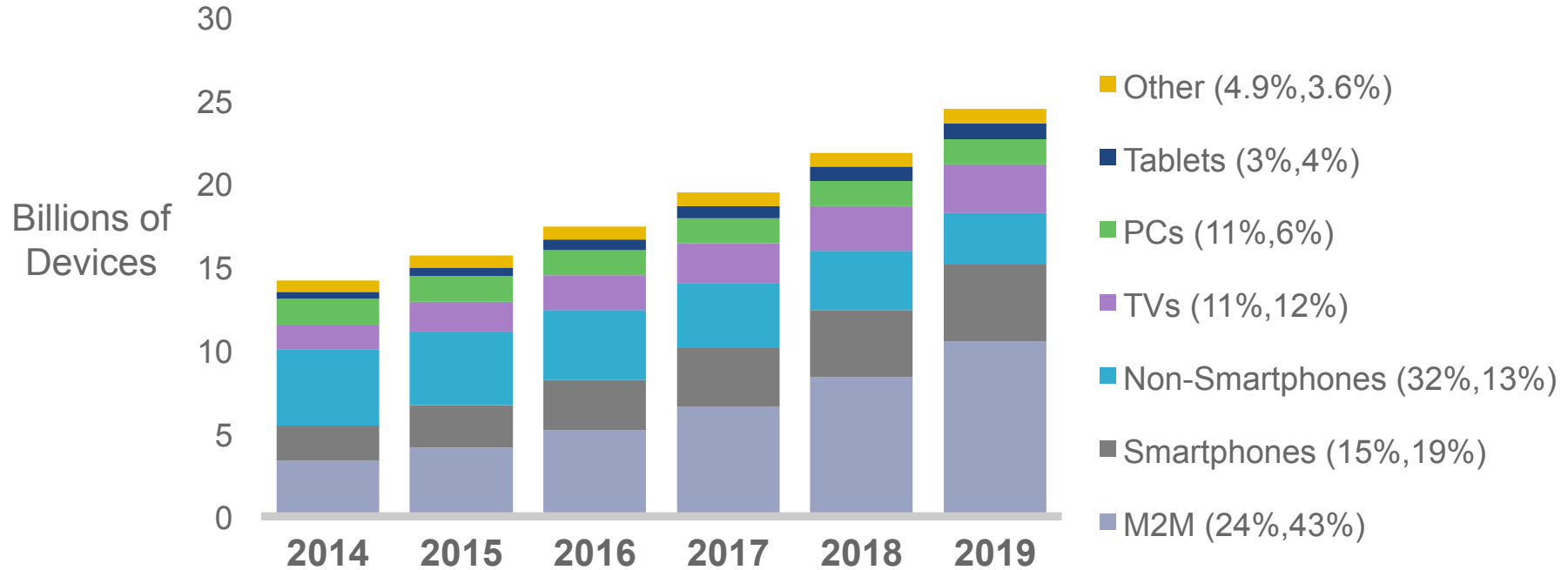
LATAM Busy Hour vs. Average Hour Internet Traffic

Driven by Video, Busy Hour Grows Faster than Average Hour



Global Connected Device Growth by Type

By 2019, M2M Connections Will be More Than 40% of Total Connections

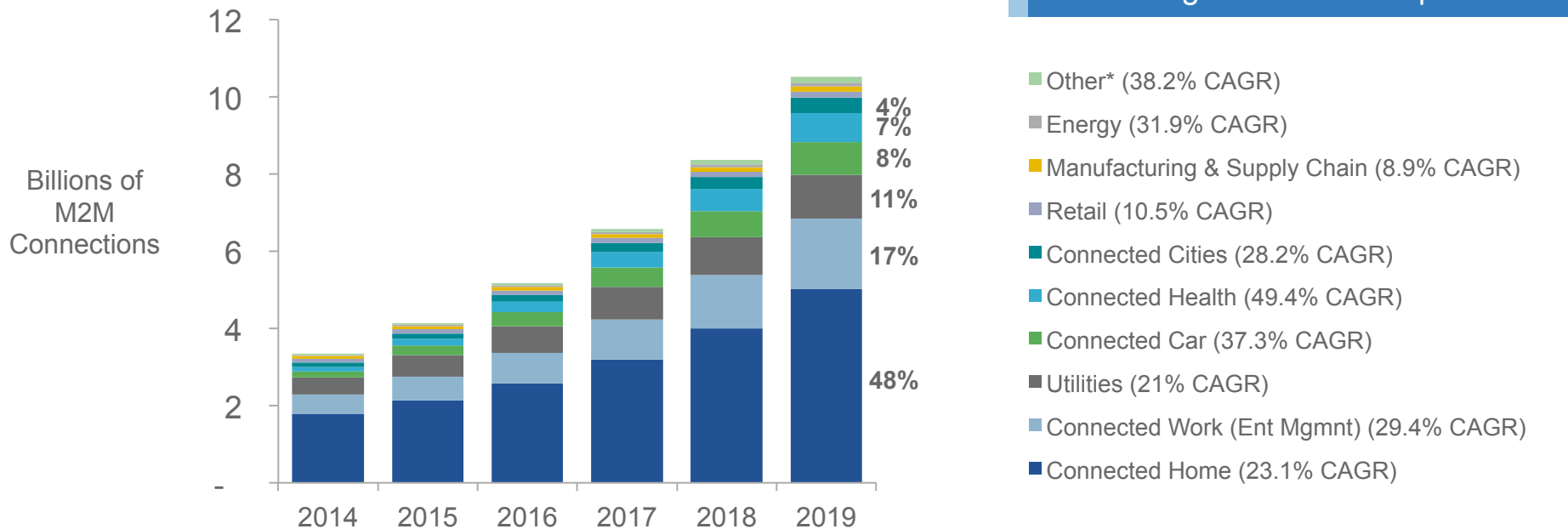


* Figures (n) refer to 2014, 2019 device share

Source: Cisco VNI Global IP Traffic Forecast, 2014–2019

Global M2M Connections / IoE Growth By Vertical

Connected Home Largest; Connected Health Fastest Growth



*Other includes Agriculture, Construction & Emergency Services

Source: Cisco VNI Global IP Traffic Forecast, 2014–2019



Connected Home

- Home automation
- Building security
- Network equipment – printers +
- Network infrastructure – routers +
- White goods
- Tracking applications
- Household information devices



Connected Work

- Office building automation
- Building security
- Office equipment – printers +
- Routers +
- Commercial appliances



Utilities

- Electric vehicle charging
- Smart metering



Connected Car

- Fleet management
- In-vehicle entertainment systems, emergency calling, Internet
- Vehicle diagnostics, navigation
- Stolen vehicle recovery
- Lease, rental, insurance management



Connected Health

- Health monitors
- Assisted living – medicine dispensers +
- Clinical trials
- First responder connectivity
- Telemedicine



Connected Cities

- Environment and public safety – closed-circuit TV, street lighting, waste removal, information +
- Public space advertising
- Public transport
- Road traffic management



Retail

- Retail goods monitoring and payment
- Retail venue access and control
- Slot machines, vending machines



Manufacturing & Supply Chain

- Mining and extraction
- Manufacturing and processing
- Supply chain
- Warehousing and storage



Energy

- New energy sources – monitoring and power generation support apps
- Smart grid and distribution
- Micro-generation– generation of power, by residential, commercial and community users on their own property

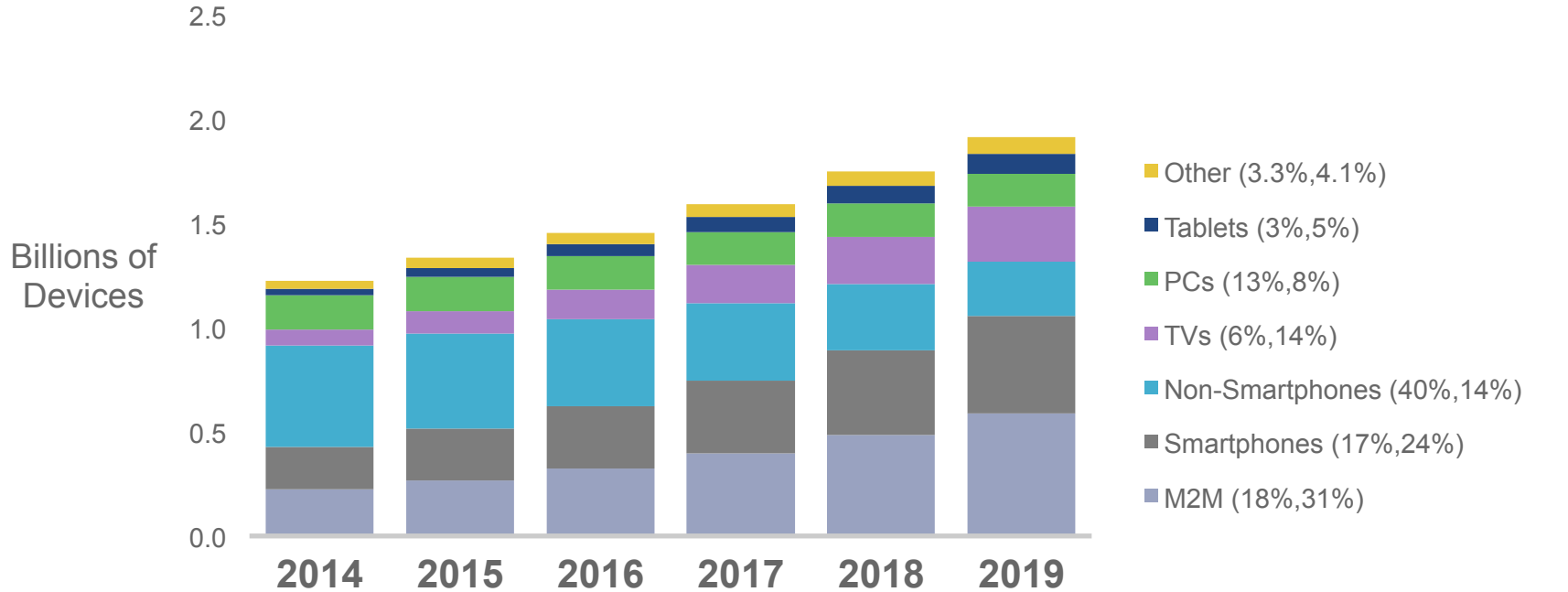


Other

- Agriculture – livestock, soil monitoring, water and resource conservation, temperature control for milk tanks +
- Construction: Site and equipment monitoring
- Emergency services and national security

LATAM Connected Device Growth by Type

By 2019, M2M Connections Will be More Than 30% of Total Connections

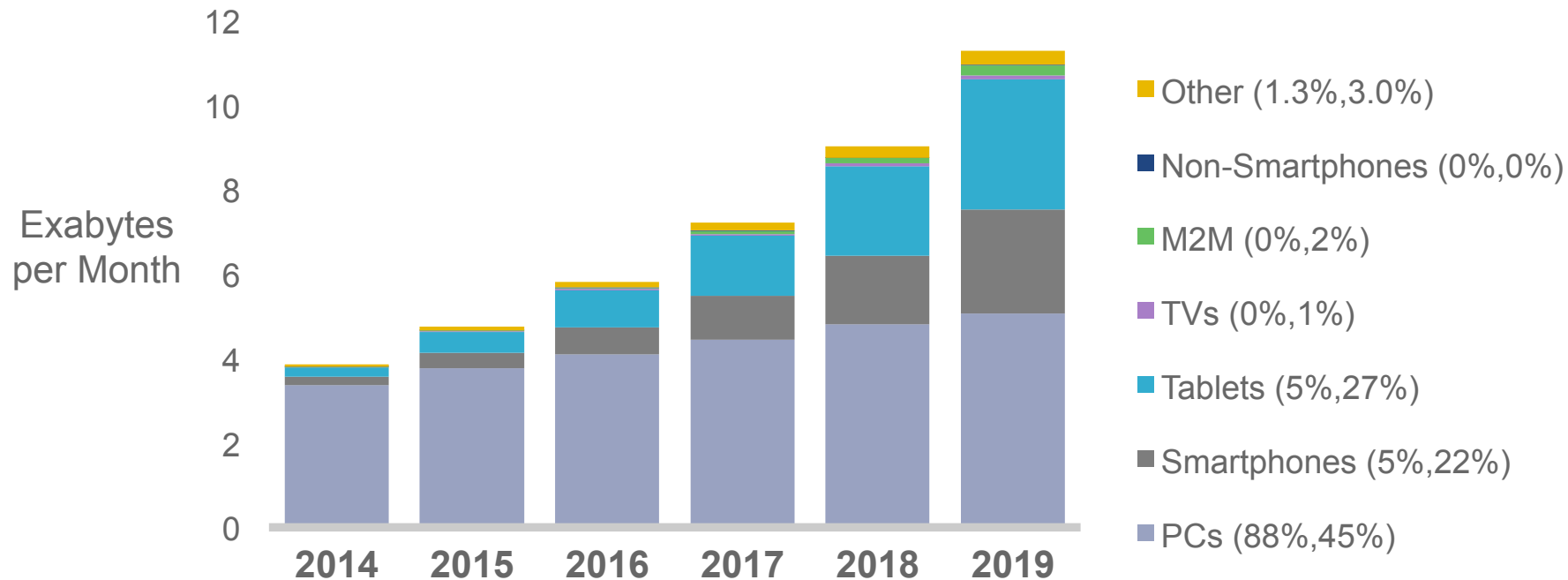


* Figures (n) refer to 2014, 2019 device share

Source: Cisco VNI Global IP Traffic Forecast, 2014–2019

LATAM Internet Traffic by Device Type

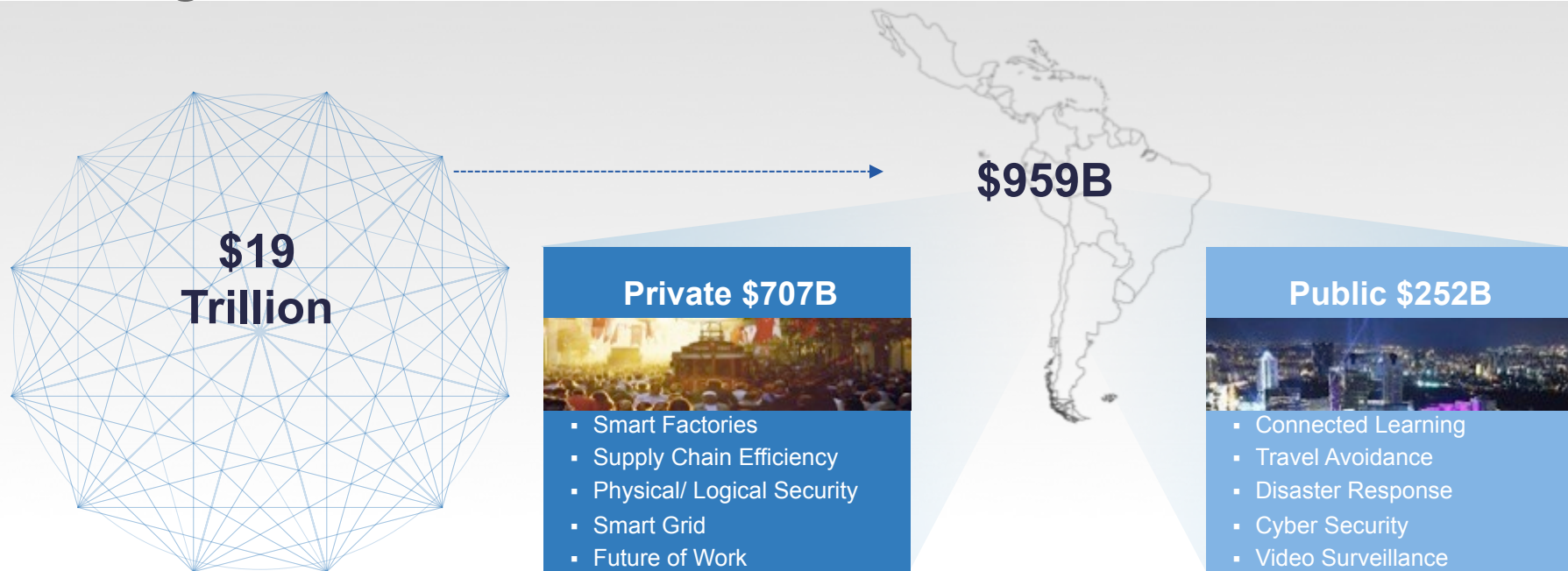
Non-PC Devices Grow From 12% to 55% of LATAM Internet Traffic



* Figures (n) refer to 2014, 2019 device share

Source: Cisco VNI Global IP Traffic Forecast, 2014–2019

Implementing IoE in Latin America & the Caribbean could generate **US\$959B** of value

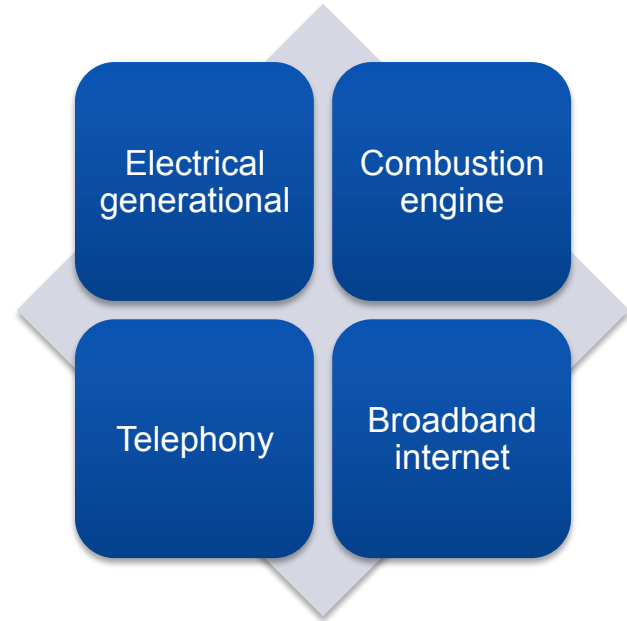


Broadband Internet: General Purpose Technology

General Purpose Technologies:

- Pervasive across sectors
- Continually improving
- Catalyzing new inventions and innovations

“broadband has the characteristics of general-purpose technology – with long-term effects on growth, and contribution to the growth of a number of non-telecom industries, especially high-tech industries.” – *World Bank 2012*



75% Impact of the Internet in Traditional Sectors

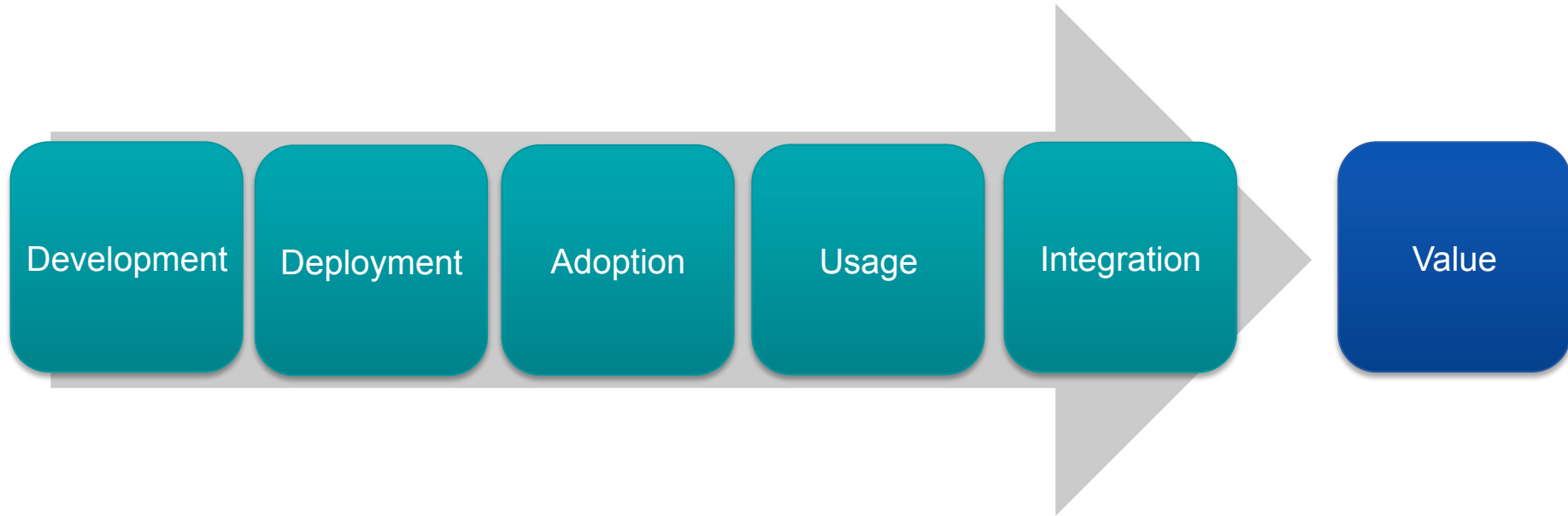
21% of GDP growth of last five years in mature economies

3.4% of total GDP in 13 countries reviewed

75% of Internet's impact is in traditional industries

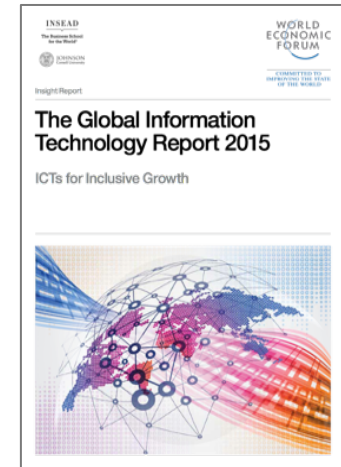
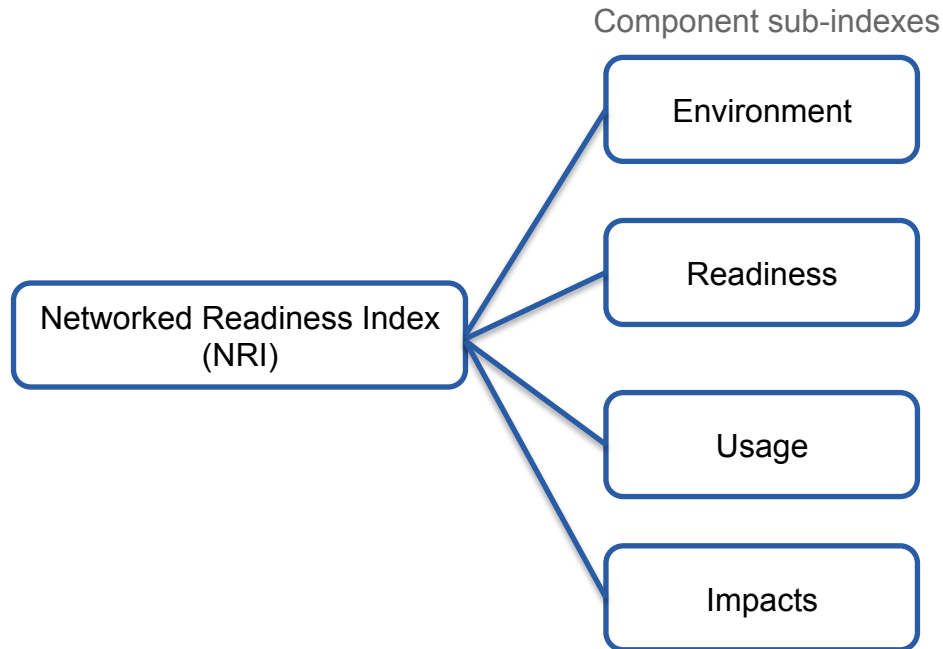
Are We Ready?

Technology to Value

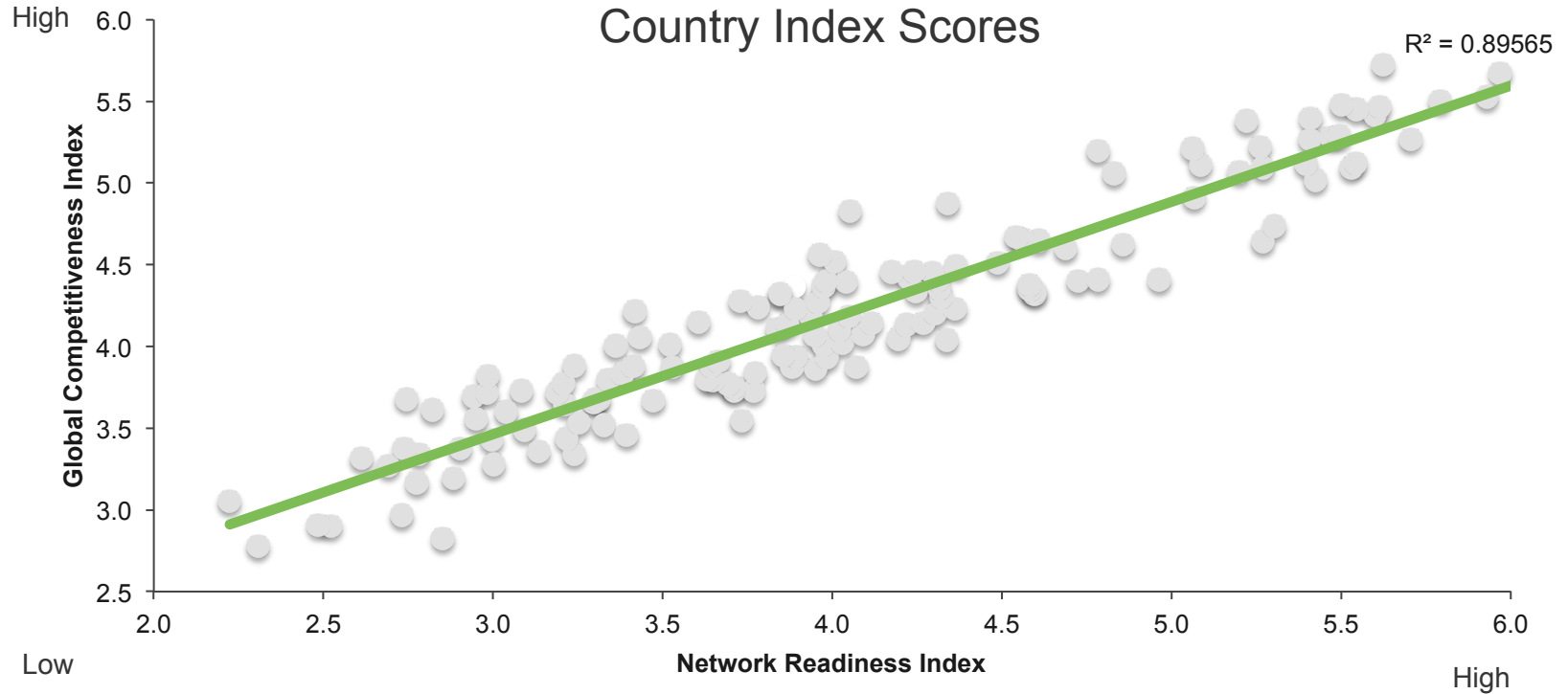


WEF Network Readiness Index (NRI)

- 143 Countries measured on 54 indicators
- Covering demand and supply metrics



Network Readiness and Global Competitiveness



ICT Ecosystem Model

Ecosystem

ICT Policies/ Regulations

- Laws relating to ICT
- Burden of government regulation
- Intellectual property protection

Market Dynamism

- ICT Competition
- Intensity of local competition
- Capacity of innovation

Business Climate

- Procedures to start a business
- Procedures to enforce a contract
- Efficiency of legal framework

Infrastructure

Network Infrastructure

- Households with a PC
- Secure internet server density
- Electricity production
- International Internet Bandwidth

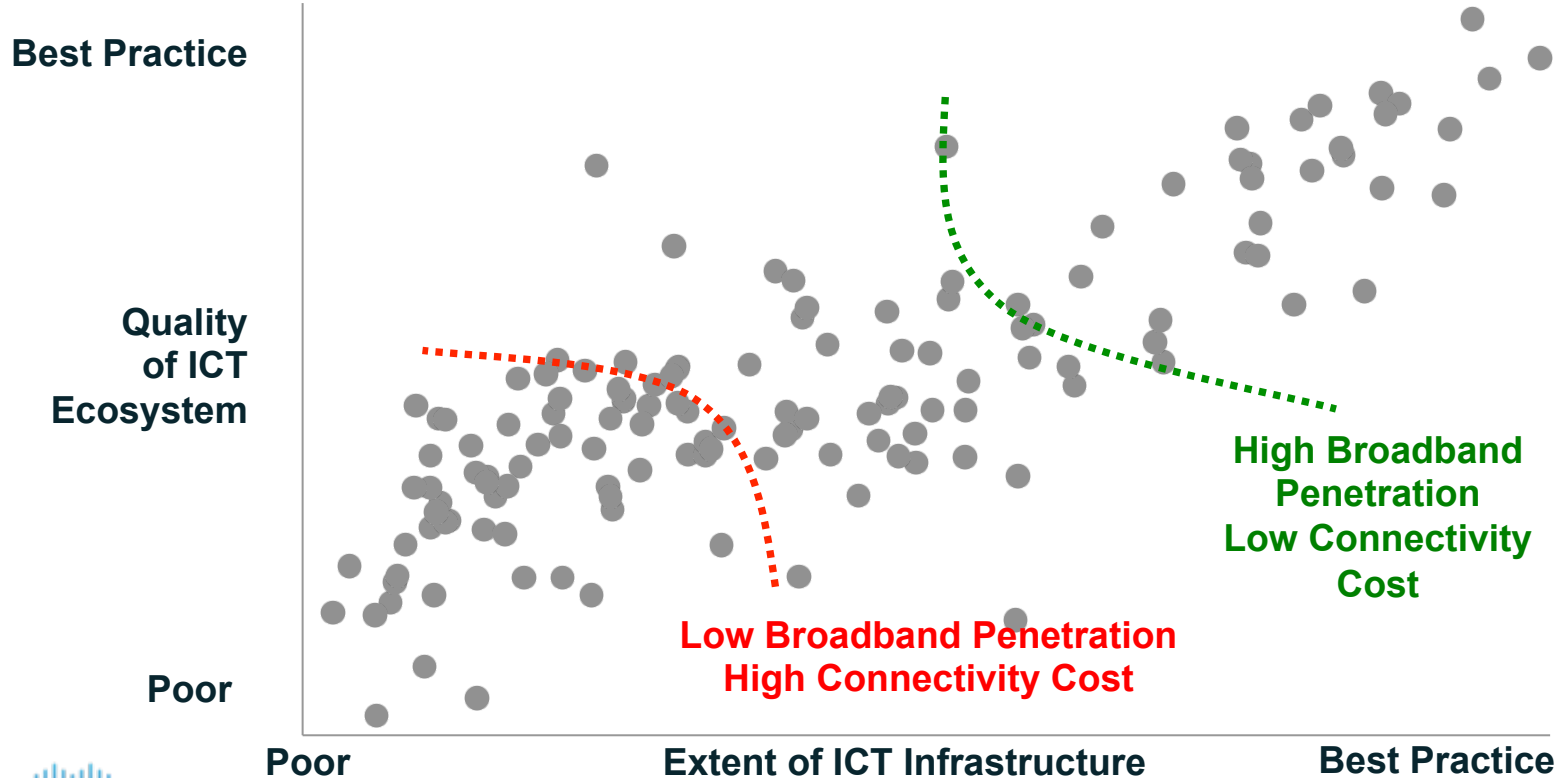
Access

- Internet access in schools
- Individuals using the Internet
- Mobile broadband subscriptions

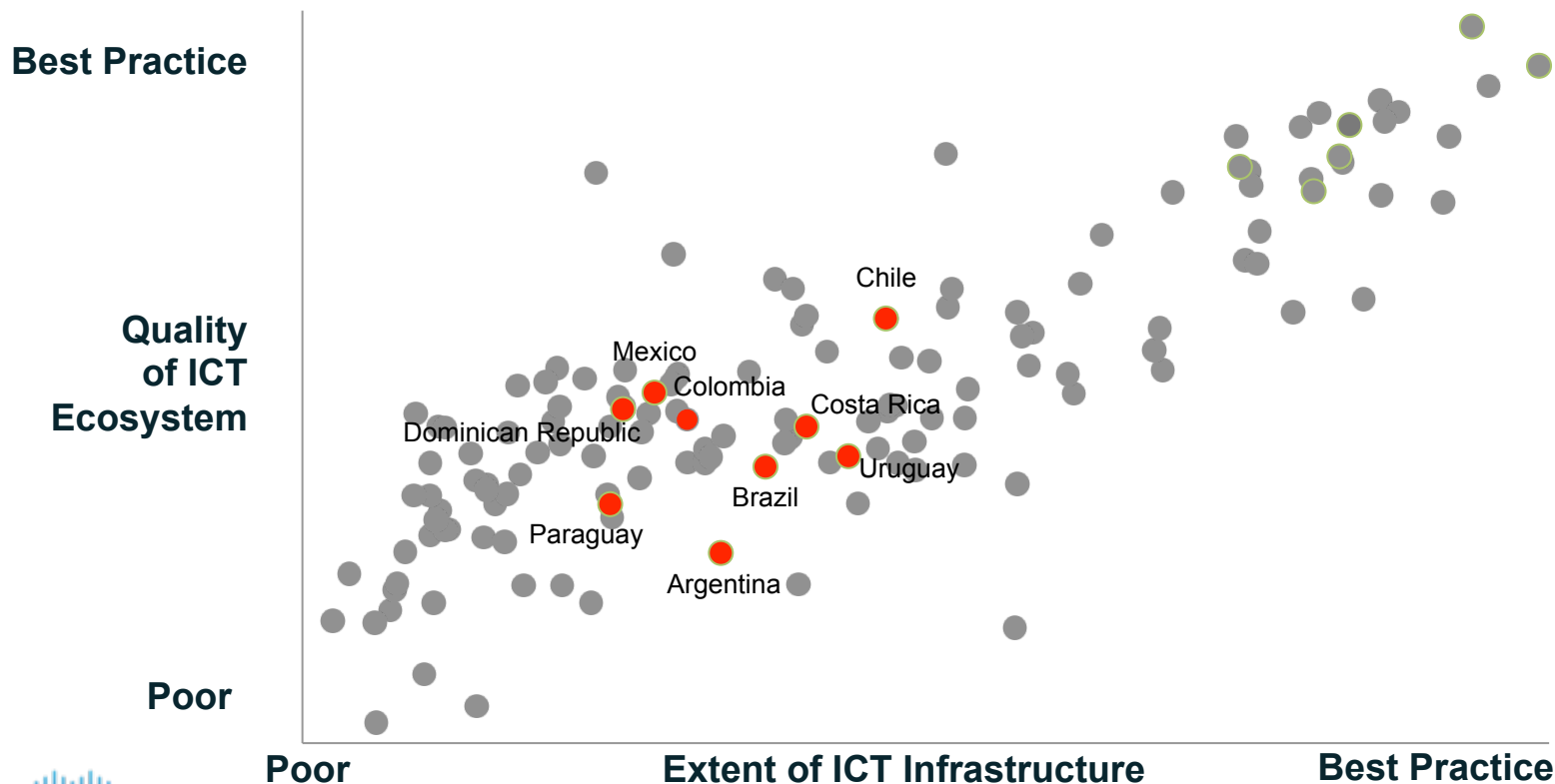
Capabilities

- Quality of math and science education
- ICT use and gov't efficiency
- Business Internet use

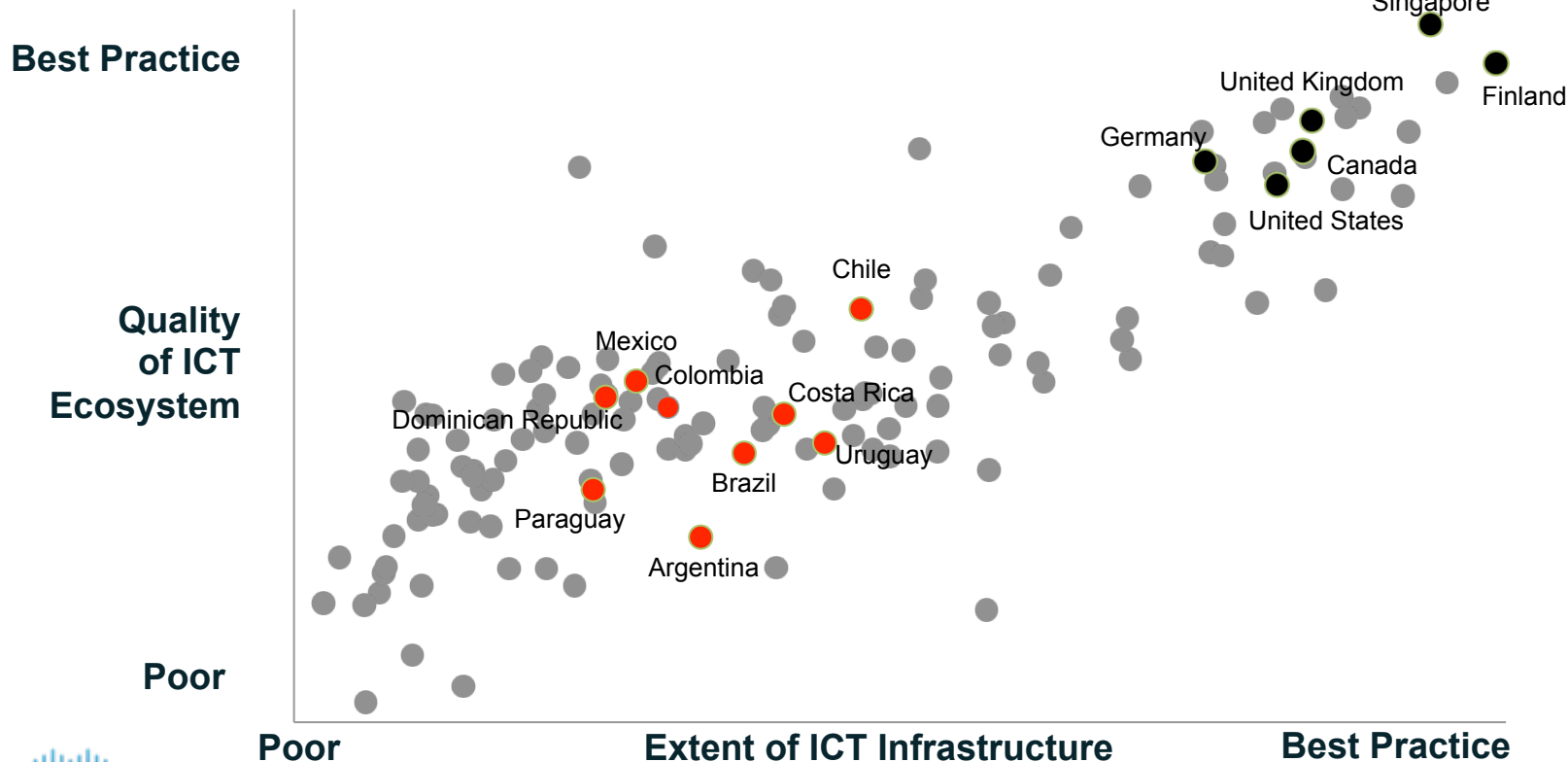
The ICT Ecosystem Map



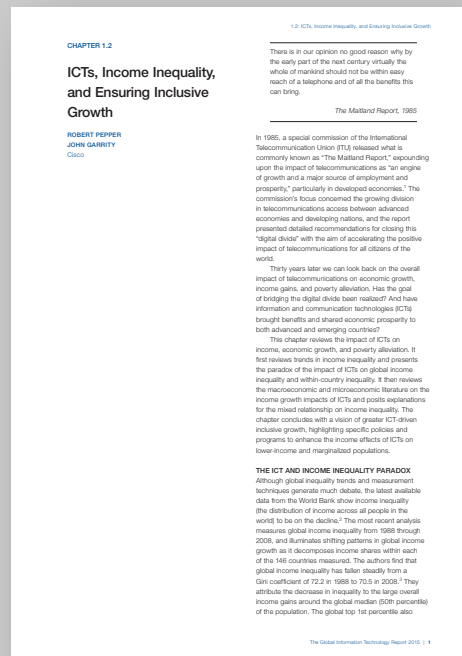
The ICT Ecosystem Map: LAC Countries



The ICT Ecosystem Map: LAC vs. Best Practice Countries



2015 WEF Global IT Report: ICT and the Income Inequality Paradox



ICT and the Income Inequality Paradox

INTERNATIONAL

- ICTs drive economic growth
- ICTs drive income growth
...and...

Income inequality
is on the decline



INTRANATIONAL

- ICTs drive economic growth
- ICTs drive income growth
...but...

Income inequality
is persistent

Recommended Actions for Inclusive Growth

- 1 Expand access to rural & underserved communities
- 2 Connect schools and libraries to broadband Internet service
- 3 Remove excessive taxation on devices and access
- 4 Develop robust ICT training curricula & programs
- 5 Focus on closing the gender gaps in ICTs

IP Talent Shortage: A Global Phenomenon

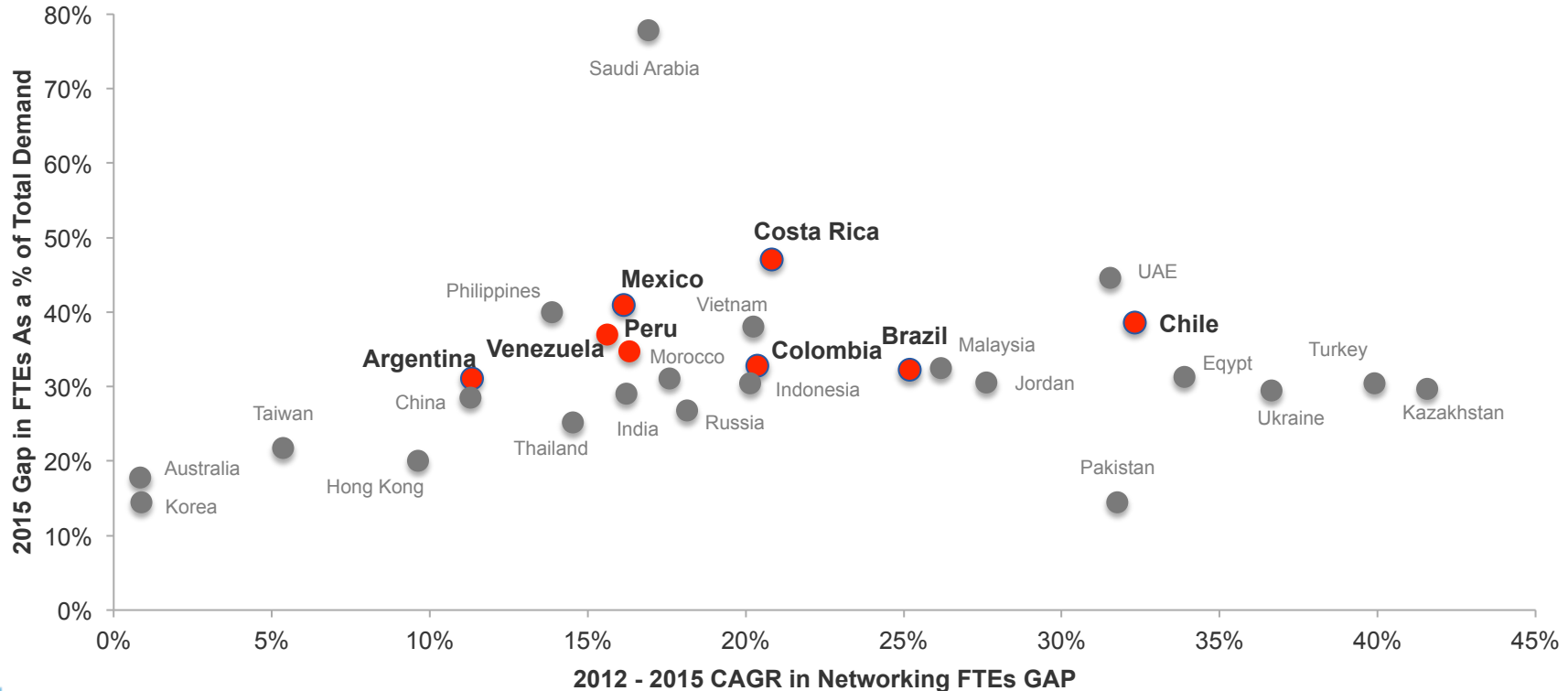
The shortage of skilled IP networking professionals is at least
1.2 million people in 2015...



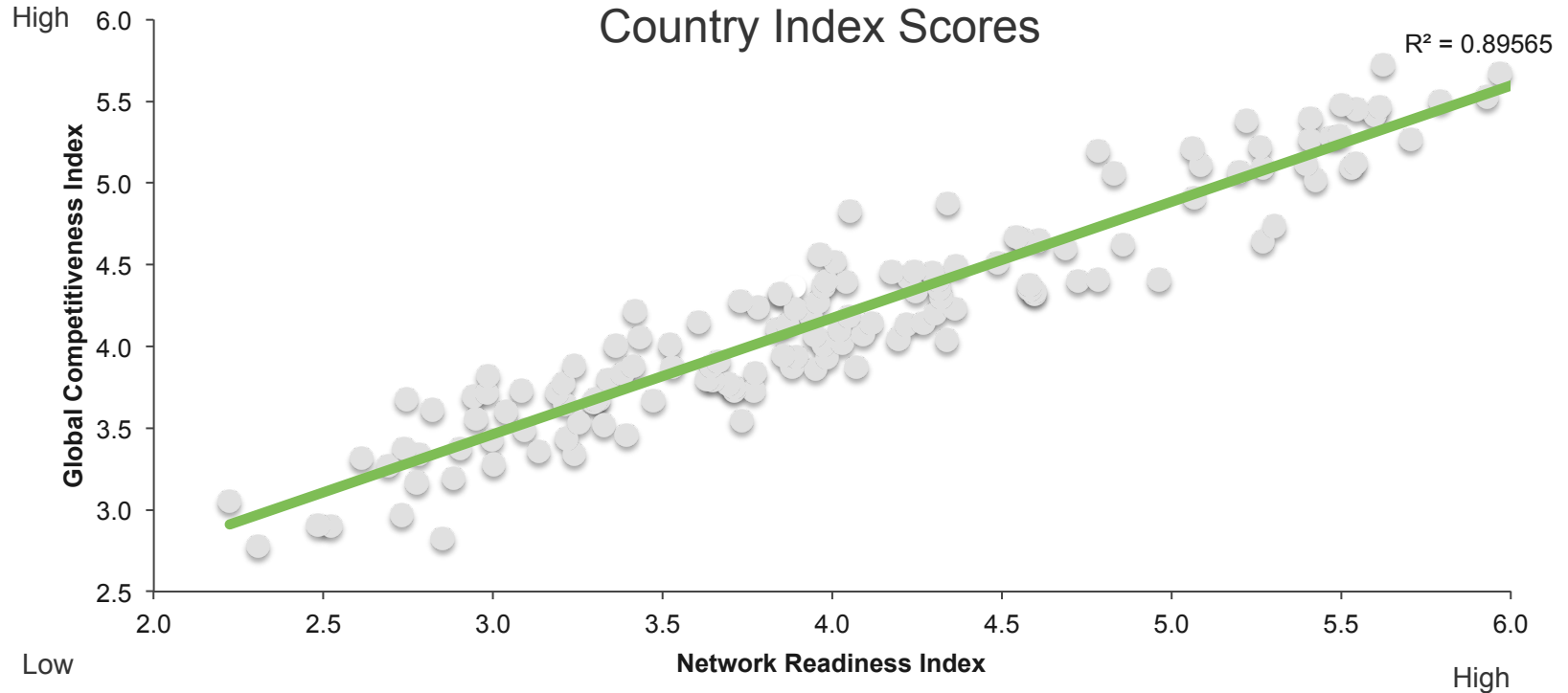
...and that is only in the 29 countries
we most recently analyzed

Country Comparisons of Networking Employment Gaps

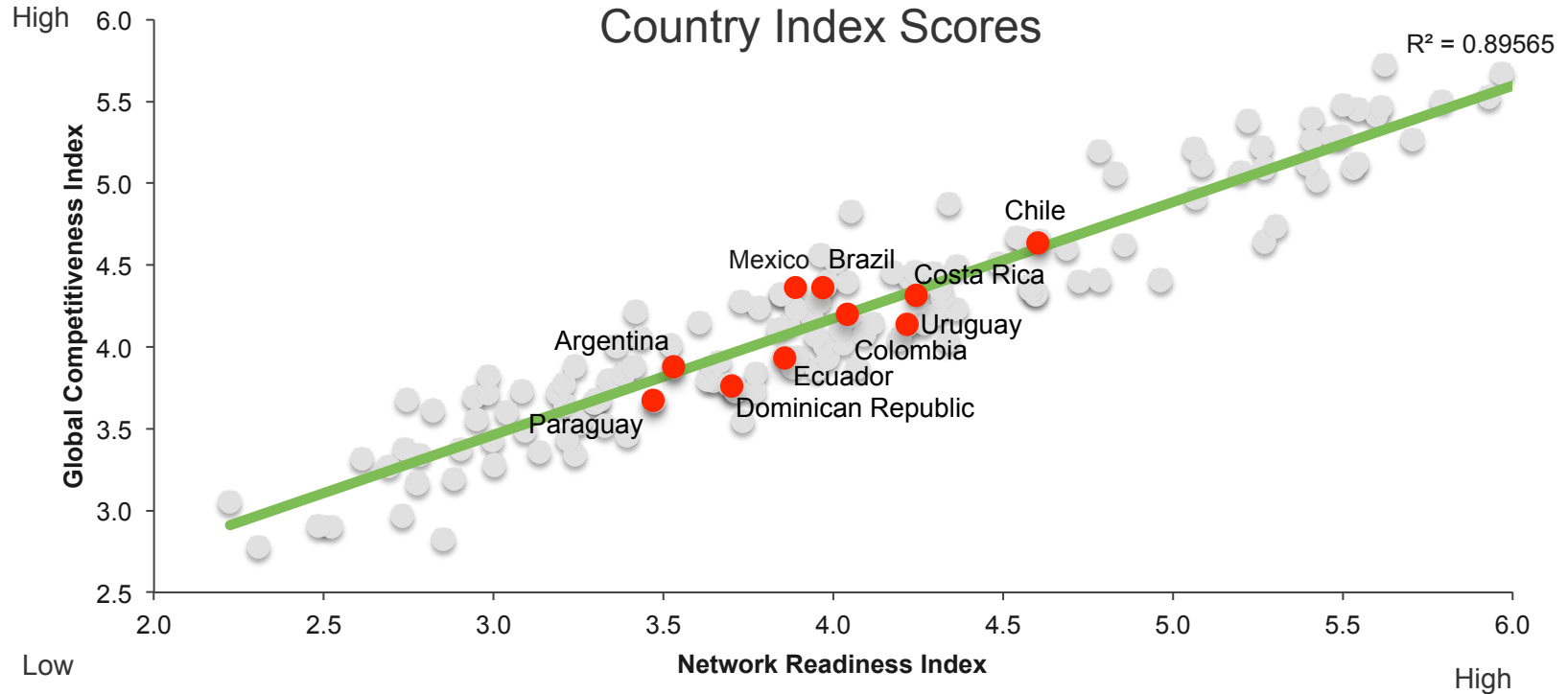
2015 LAC Gap: 296,163 FTEs



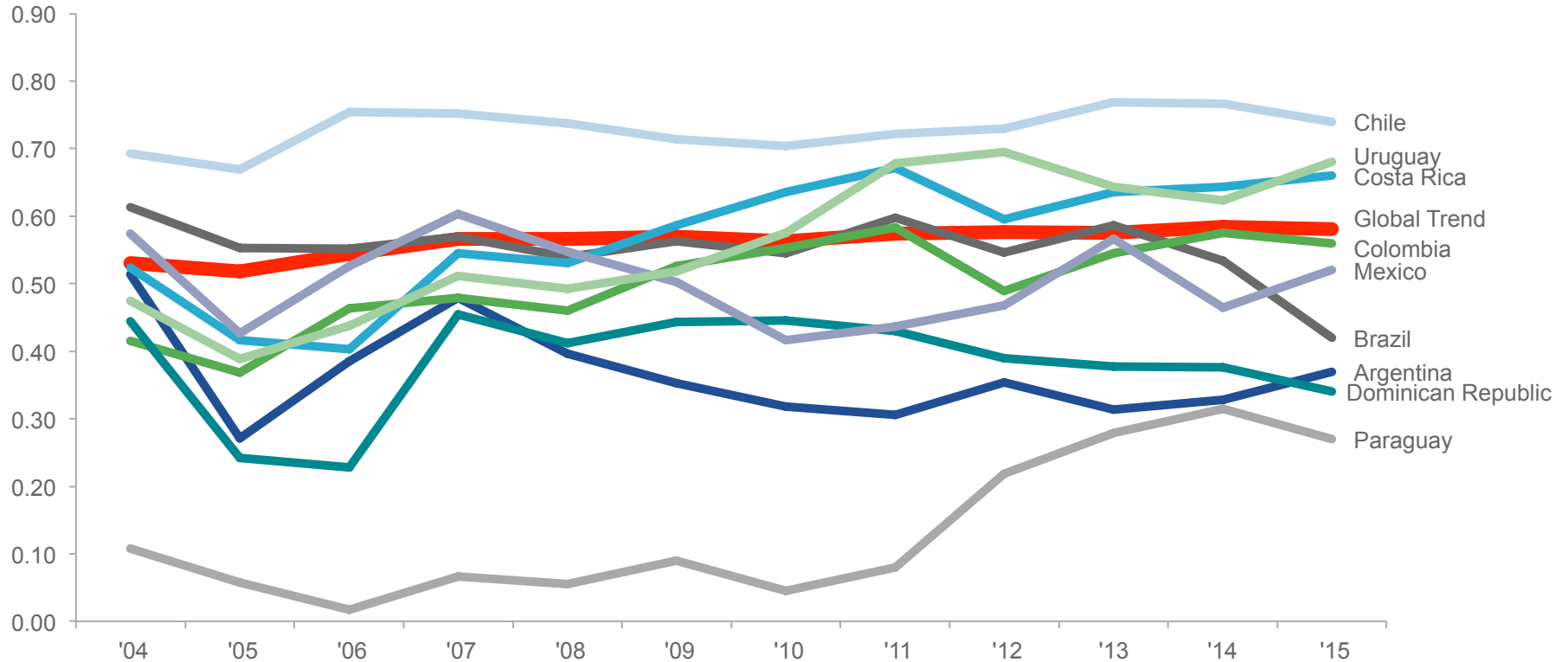
Network Readiness and Global Competitiveness



Network Readiness and Global Competitiveness



NRI Scores Over Time



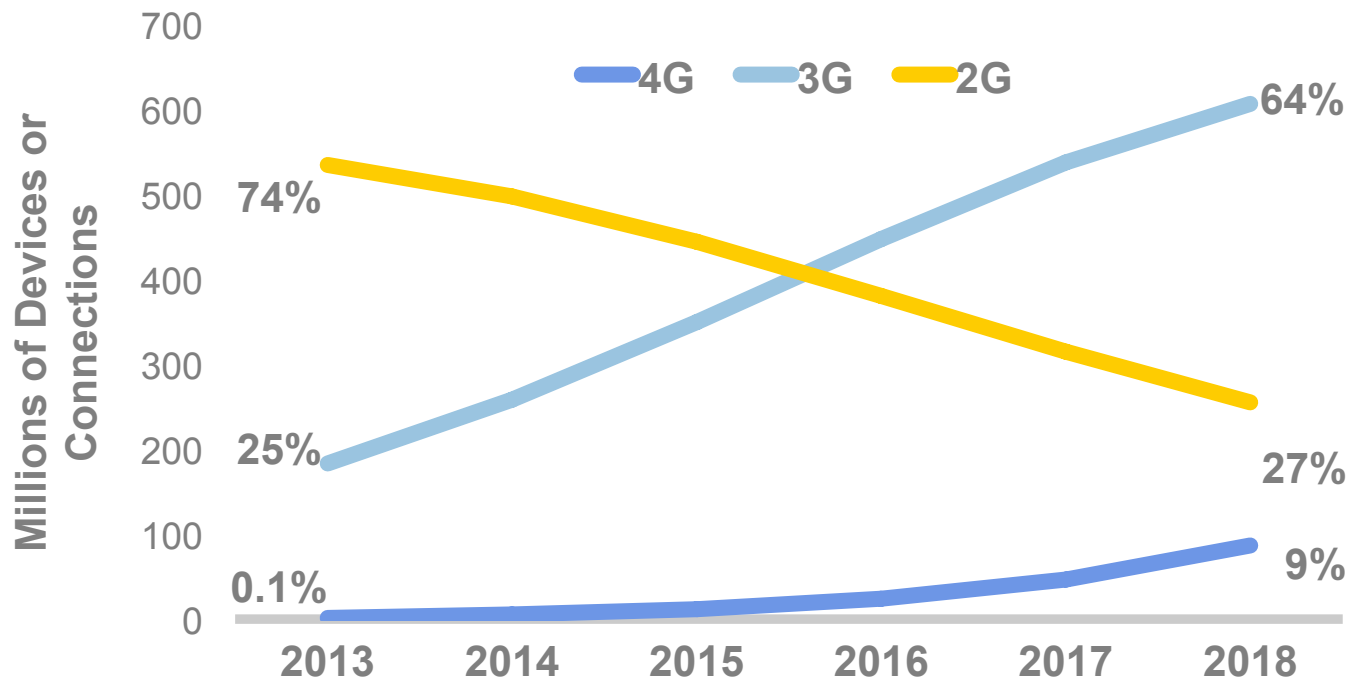
LAC NRI Scores & Rank 2014 - 2015

Country	2014 Score	2015 Score	2014 Rank	2015 Rank
Chile	4.61	4.60	35th	38th
Uruguay	4.22	4.48	56th	46th
Costa Rica	4.25	4.40	53rd	49th
Colombia	4.05	4.14	63rd	64th
Mexico	3.89	4.03	79th	69th
Brazil	3.98	3.85	69th	84th
Argentina	3.53	3.72	100th	91st
Dominican Rep.	3.69	3.6	93rd	95th
Paraguay	3.47	3.42	102nd	105th

LAST YEAR

Latin America Connections by Network Type

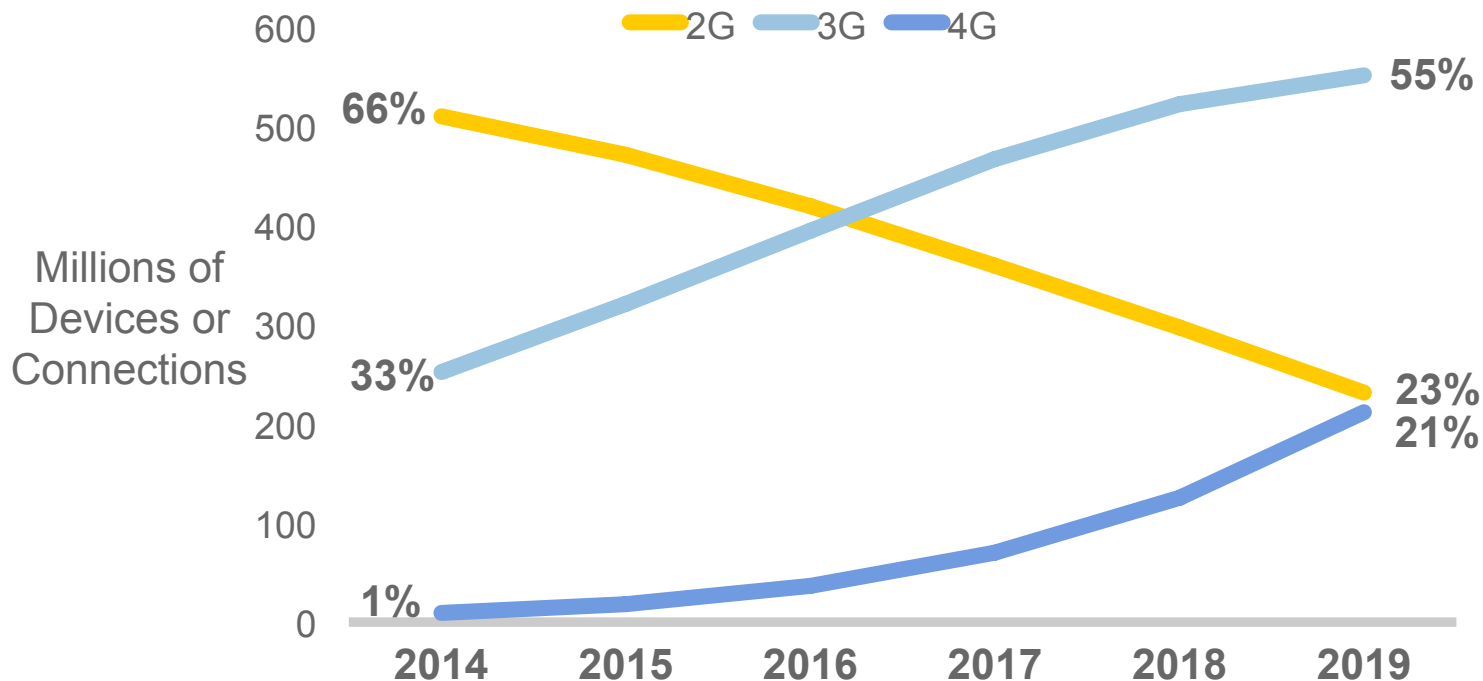
2G, 3G, and 4G Technology Connection Share



Source: Cisco VNI Global Mobile Data Traffic Forecast, 2013–2018

Latin America Connections by Network Type

2G, 3G, and 4G Technology Connection Share

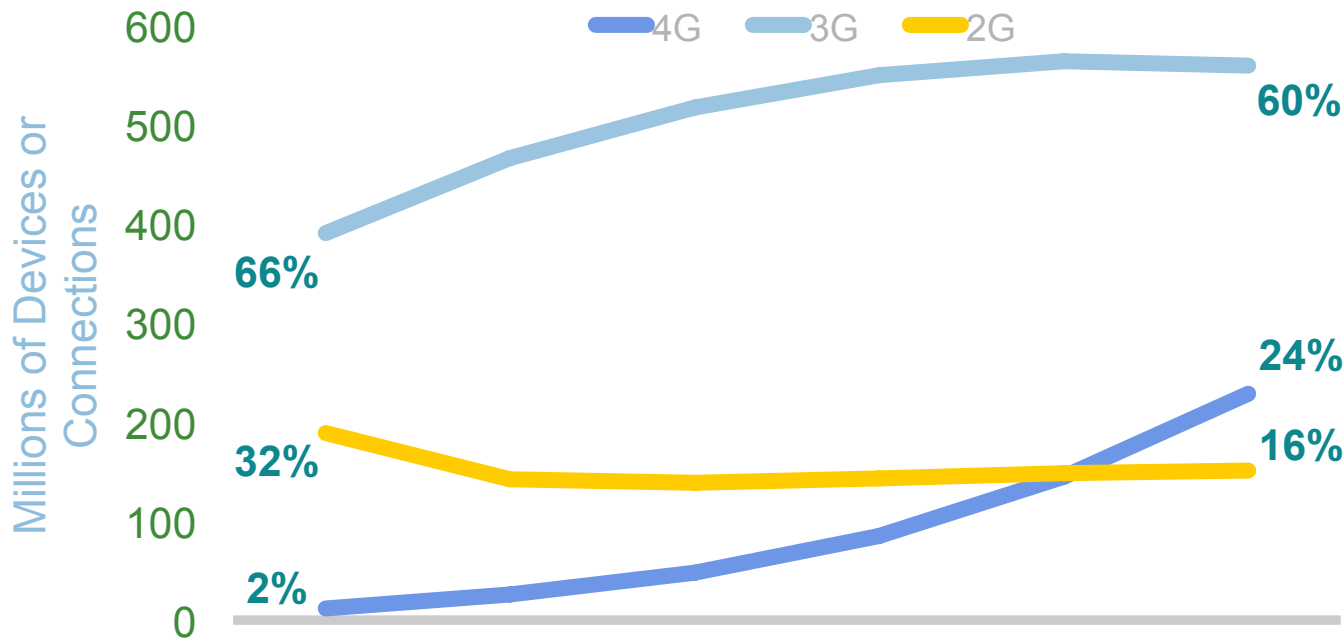


Source: Cisco VNI Global Mobile Data Traffic Forecast, 2014–2019

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Western Europe Connections by Network Type

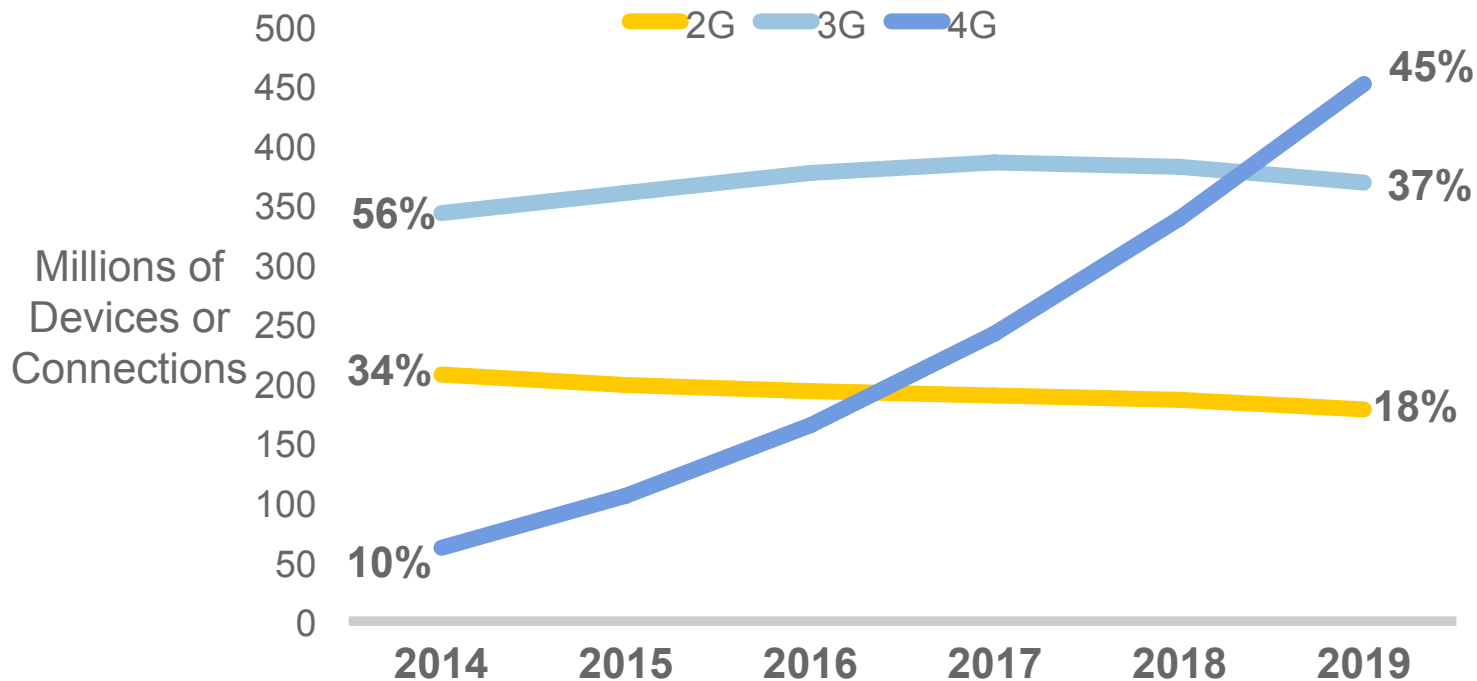
2G, 3G, and 4G Technology Connection Share



Source: Cisco VNI Global Mobile Data Traffic Forecast, 2013–2018

W. Europe Connections by Network Type

2G, 3G, and 4G Technology Connection Share



Source: Cisco VNI Global Mobile Data Traffic Forecast, 2014–2019

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Improving Slowly Is Not An Option



