Why We Need More Submarine Cables (and Why We Don't)

Alan Mauldin TeleGeography PTC – NANOG On The Road January 15, 2017

Surging investment in new cables





Activity is widespread

Cable Construction Costs by Region, 2015-2018



Why we need more submarine cables

#1 – Bandwidth demand remains rapid

Used International Bandwidth, 2011-2015



#2 – The Cloud is not everywhere



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#3 – Unpredictable demand from new applications

Pokemon Go's Impact on Google's Cloud Platform



#4 – Supply exhaustion looming for older cables

Lit and Potential Trans-Pacific Capacity 2016-2024



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#5 – Route diversity

	Repairs per Year	Outage (days/year)
Philippines-Taiwan	2.7	42.8
Singapore-Hong Kong	2.6	45.5
Hong Kong-Tokyo	2.1	37.8
Mumbai-Singapore	1.0	26.6
Tokyo-Los Angeles	0.5	8.4

Source: Palmer-Felgate, A., and Booi, P., How Resilient is the Global Submarine Cable Network? SubOptic 2016 #OralWE2A-5

Not all routes are created equal

Number of Cables by Route



Not all cables are created equal

Potential Capacity by Route



totals. China-U.S. Cable Network excluded given its decommissioning YE2016.

#6 – New cables still needed for remote areas

Cables	Country
Quintillion Subsea Cable Network	Northern Alaska, USA
Greenland Nord	Northwest Greenland
Tui-Samoa	Fiji, Samoa
SEA-US Branch	Palau
Solomons Oceanic Cable Network	Solomon Islands

Why we don't need more submarine cables

#1 -Netflix [No]

- Netflix does account for a large amount of end-user traffic.
 - Netflix accounts for 37% of North American downstream traffic and 20% in the UK and Ireland (Source: Sandvine).
- Netflix is expanding rapidly.
 - Available in over ~190 countries at the end of 2016.

Open Connect delivers 100% of Netflix traffic

Open Connect Cache Locations



Source: Netflix

ISP Locations
Internet Exchange Point (circles are sized by volume)

#2 - Bandwidth prices will eventually rise/ stabilize [Not likely]



Keep dreaming

Years with Price Increases by Route, 2008-2015



Keep dreaming

Years with <15% Erosion by Route, 2008-2015



#3 – Internet of Things will be huge! [Not exactly]

M2M Devices vs. Humanity, 2020



Source: Cisco Visual Networking Index

Lots of devices, not much traffic



Lots of M2M devices, not much traffic





Source: Cisco Visual Networking Index



Number of Cable Faults Due to Fish Bites



Source: International Submarine Cable Protection Committee

Thank You

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