

Int'l Bandwidth and Pricing Trends

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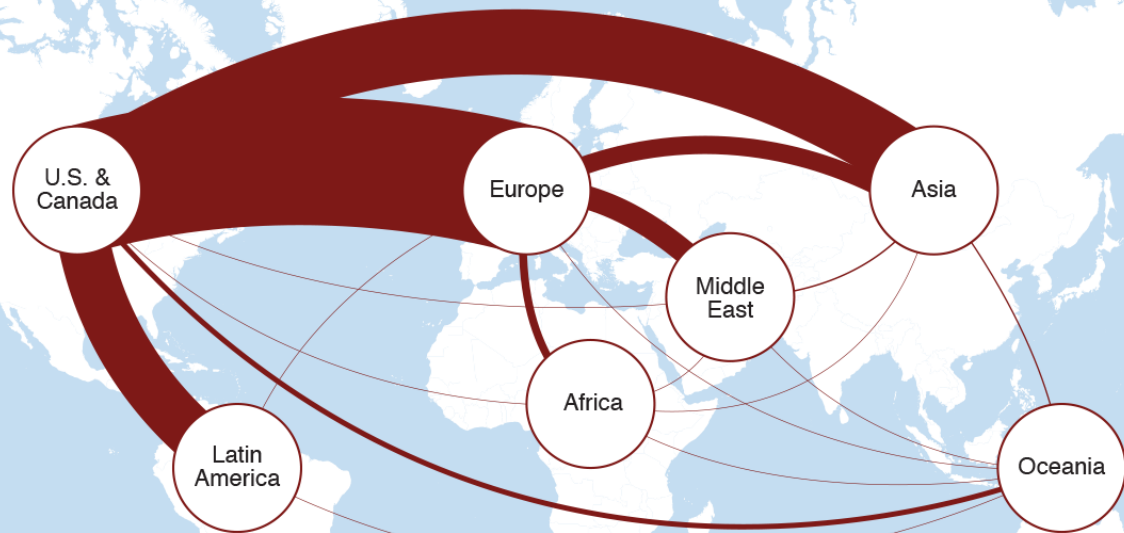
What we'll cover

- Int'l bandwidth – where and how much
- How does Africa fit in the puzzle
- Pricing... how much
- Where's the cloud now
- What's in store for Africa

Global view

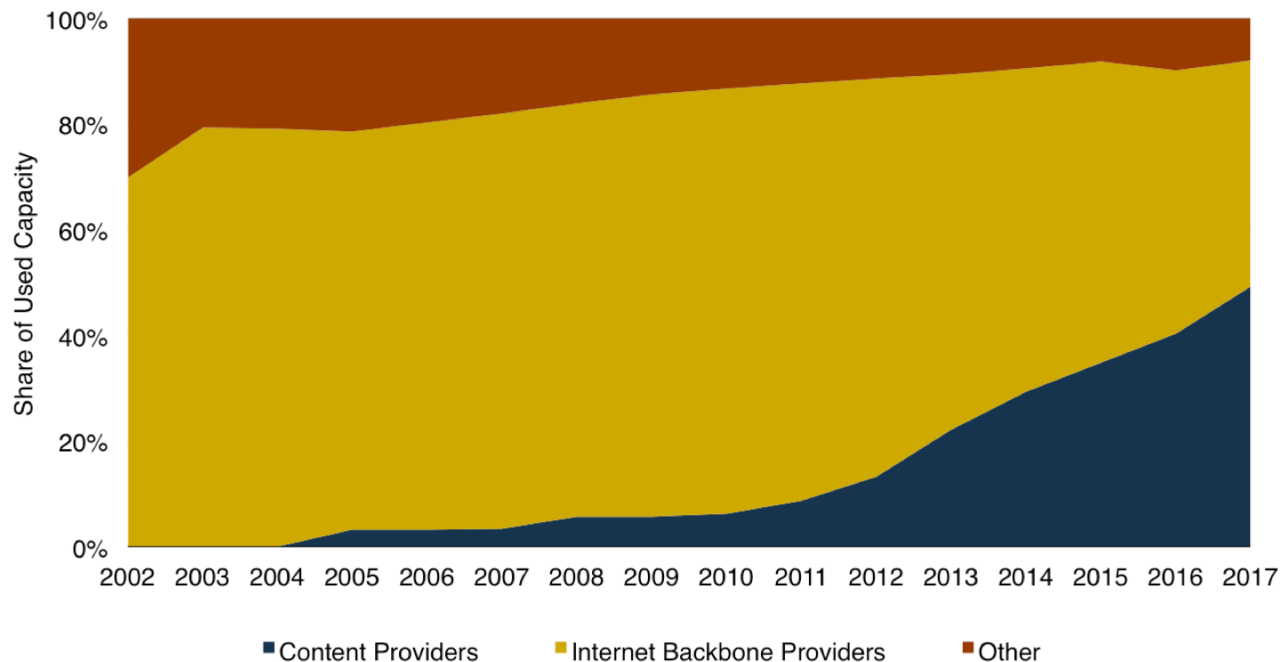
How the world connects

Used Inter-Regional Bandwidth, 2017



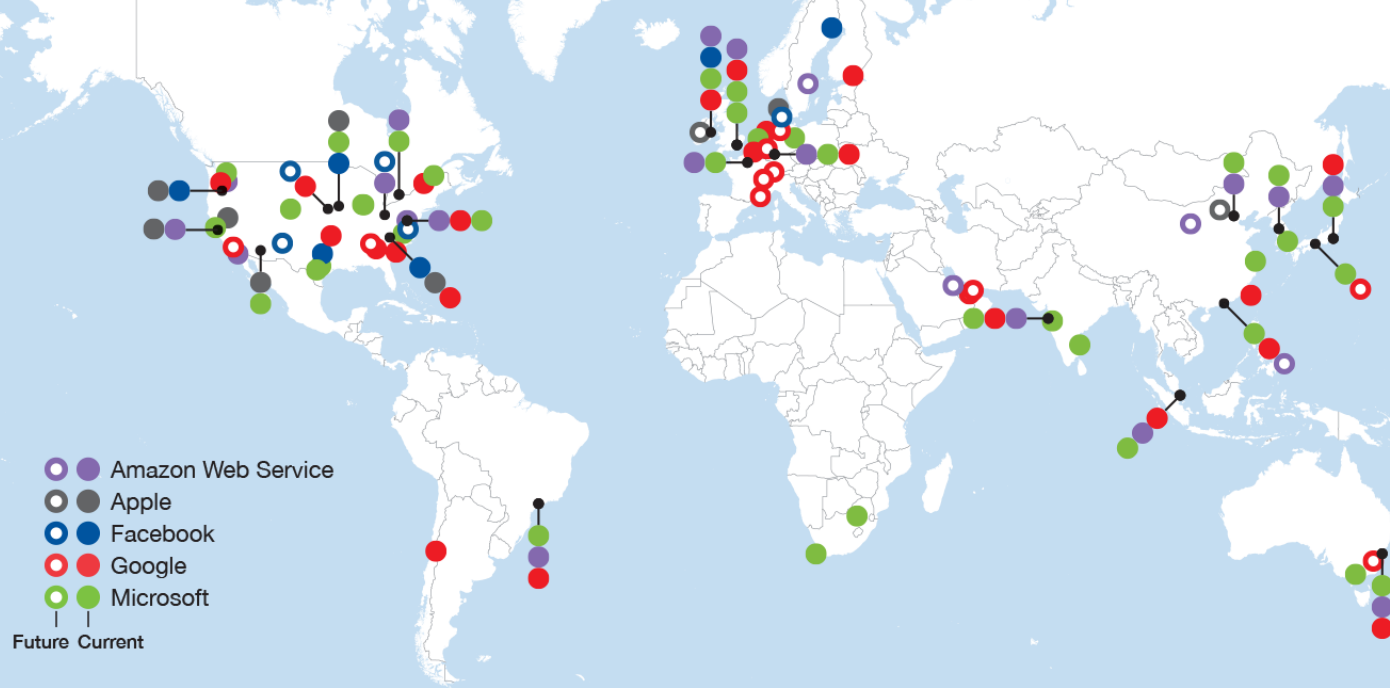
Whose traffic in those pipes

Source of Used International Bandwidth, 2008-2017



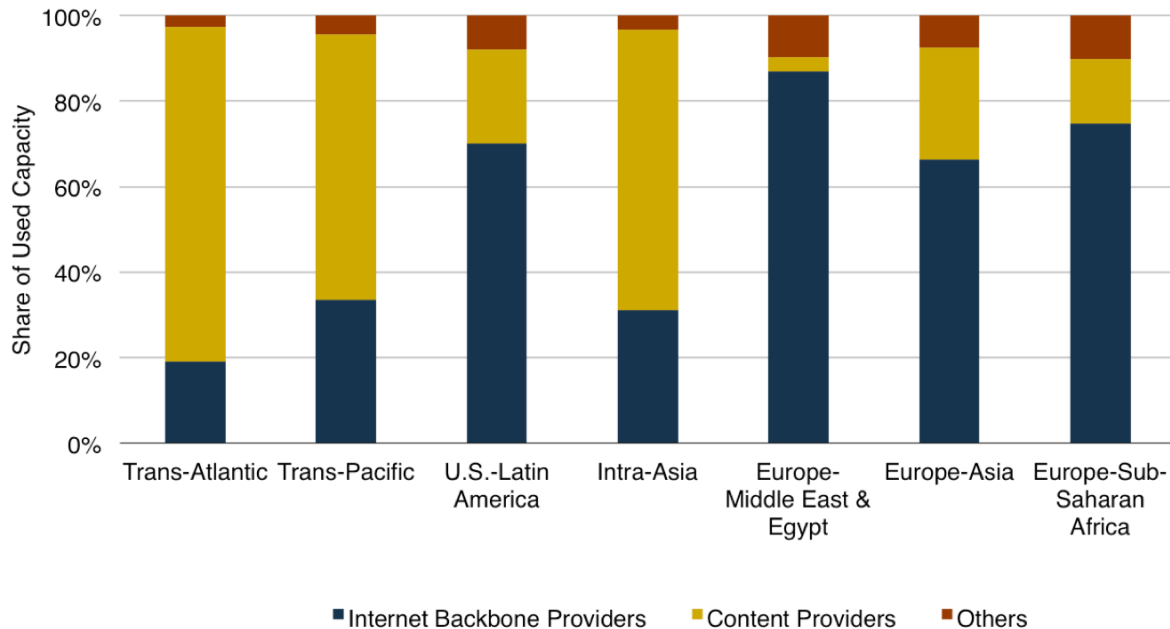
Where content happens

Content Providers Data Centers, Q1 2018



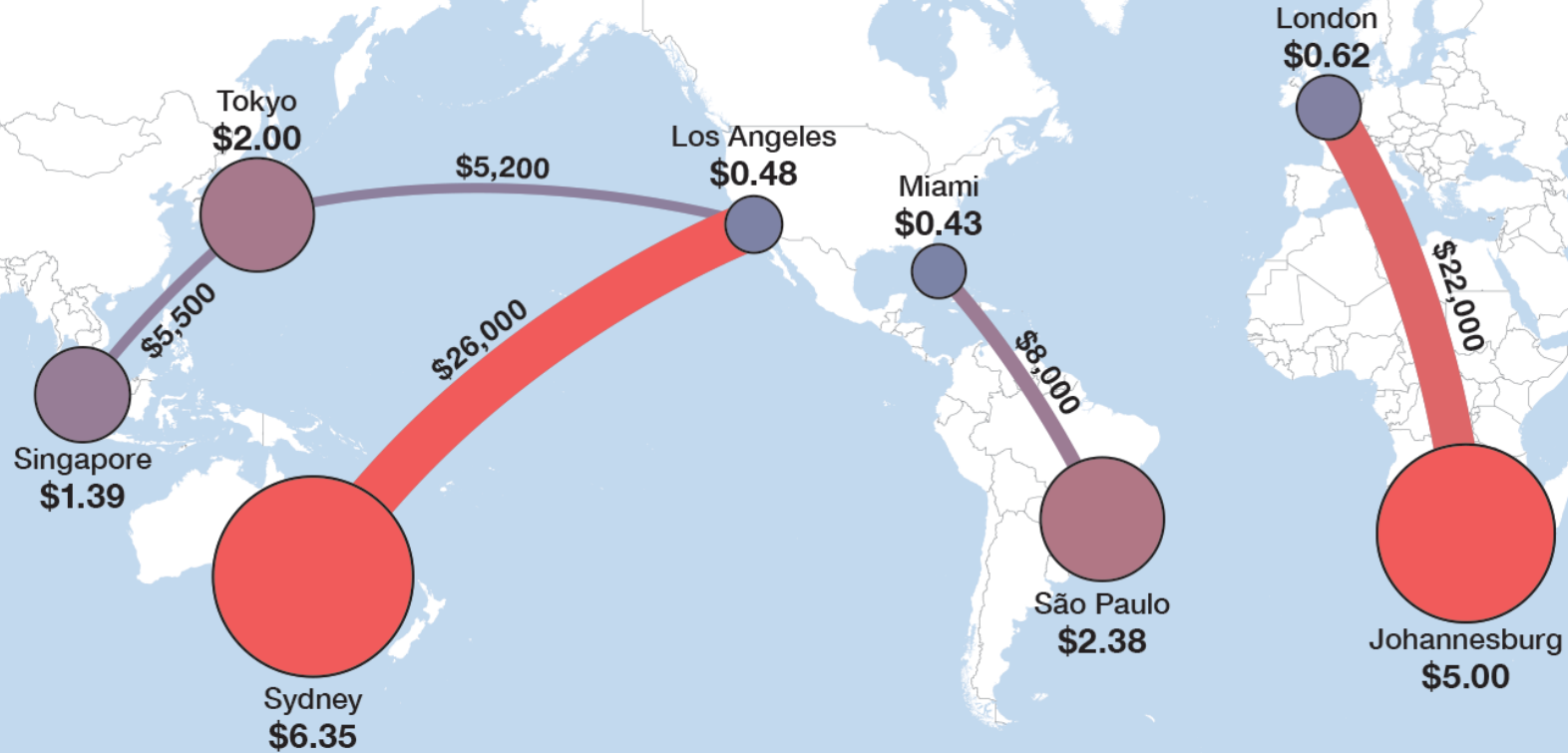
Content share depends where

Share of Used Bandwidth by Category for Major Routes, 2017



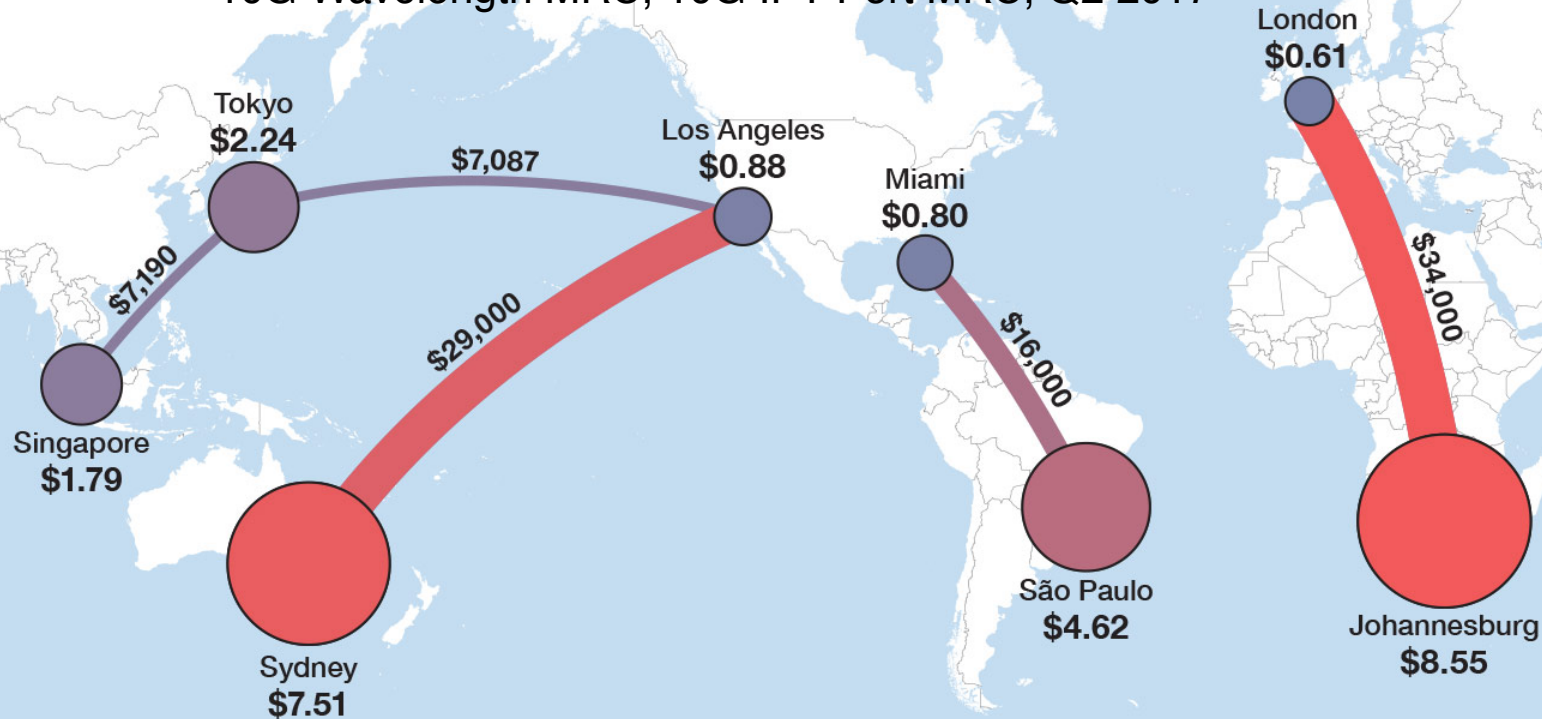
How much where? Prices by geography

10G Wavelength MRC, 10G IPT Port MRC, Q2 2018



How much where? Prices by geography

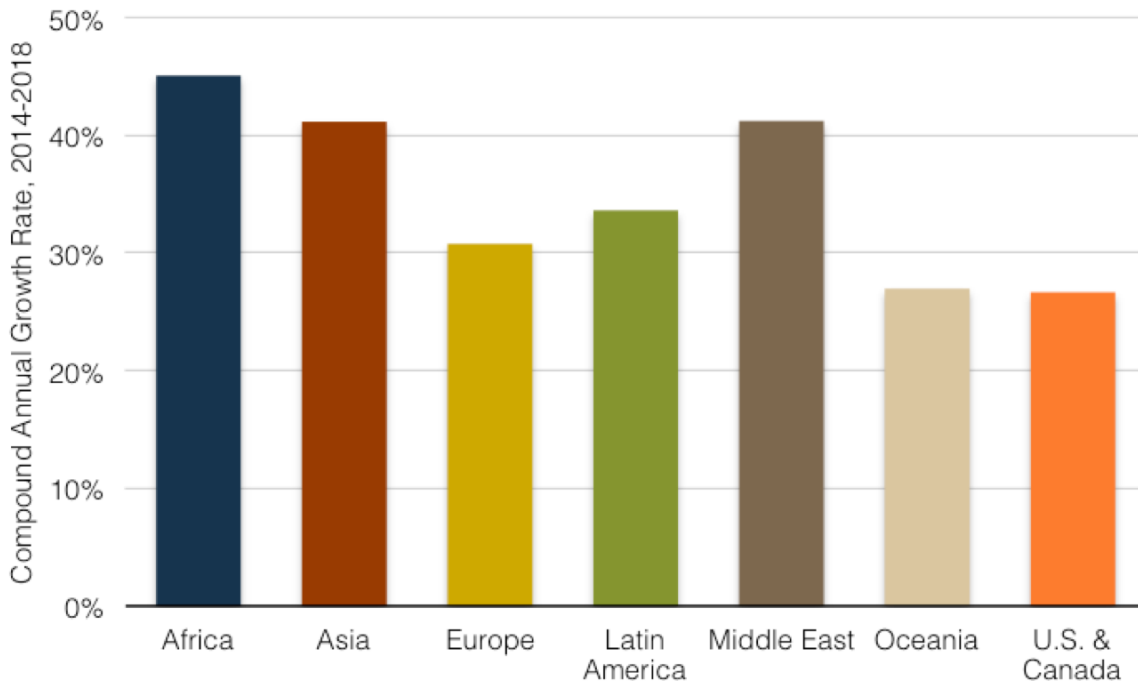
10G Wavelength MRC, 10G IPT Port MRC, Q2 2017



Africa

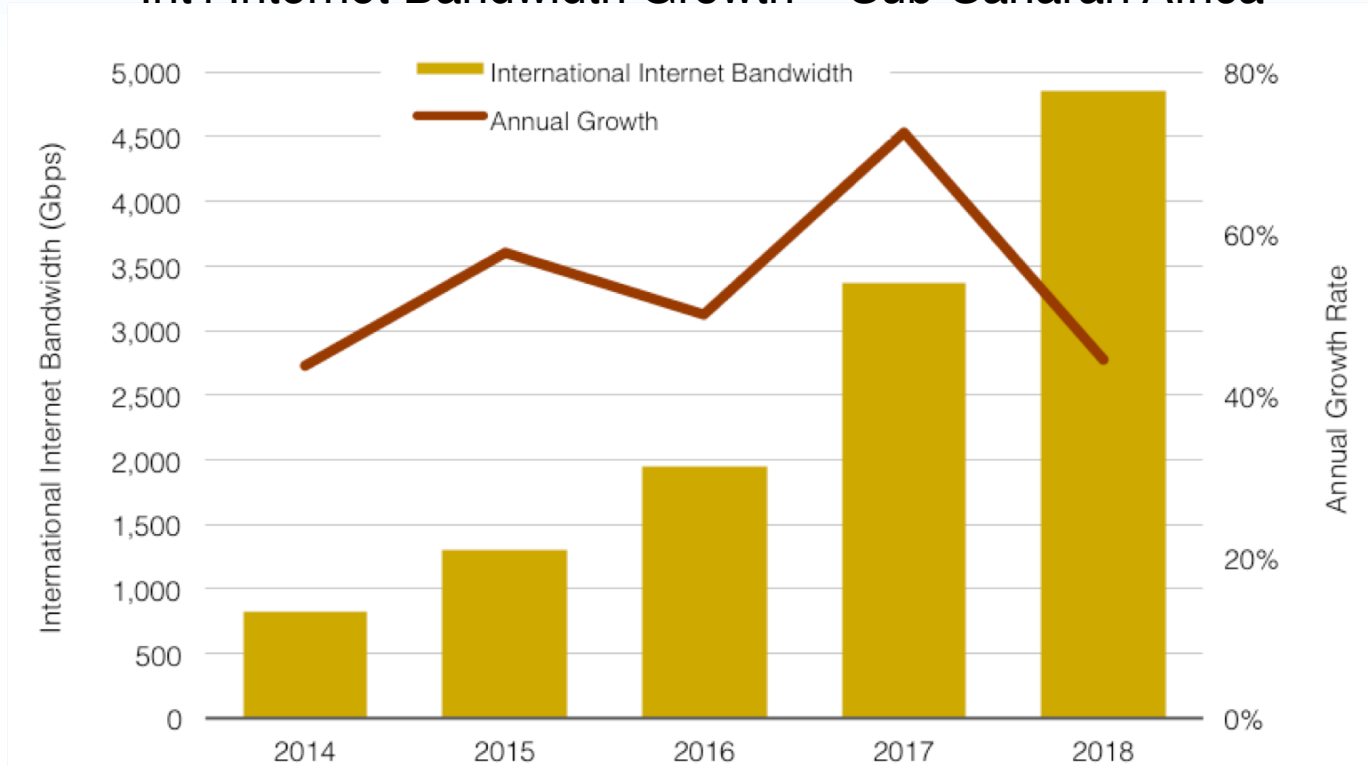
Africa is out in front for growth

International Internet Bandwidth Growth by Region, 2014-2018



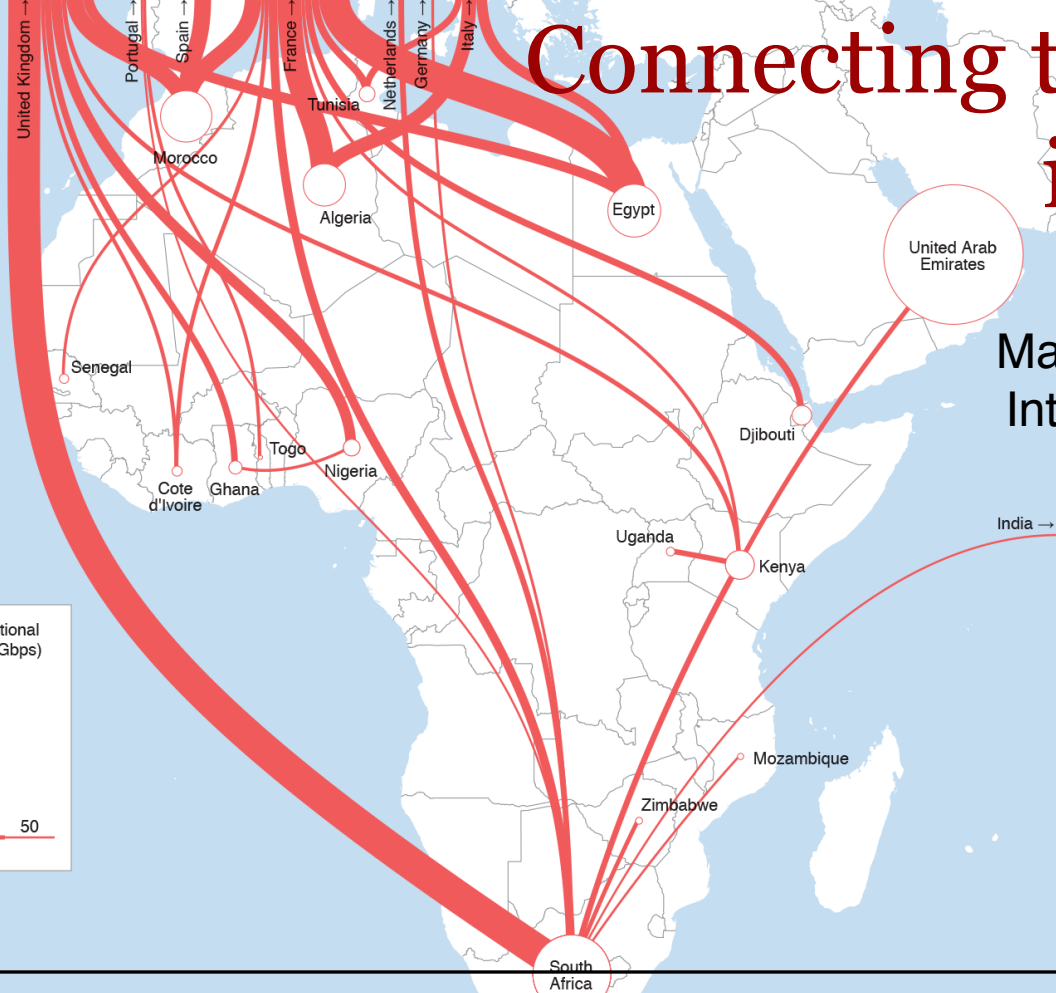
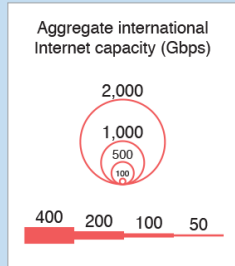
Sub-Saharan Africa

Int'l Internet Bandwidth Growth – Sub-Saharan Africa



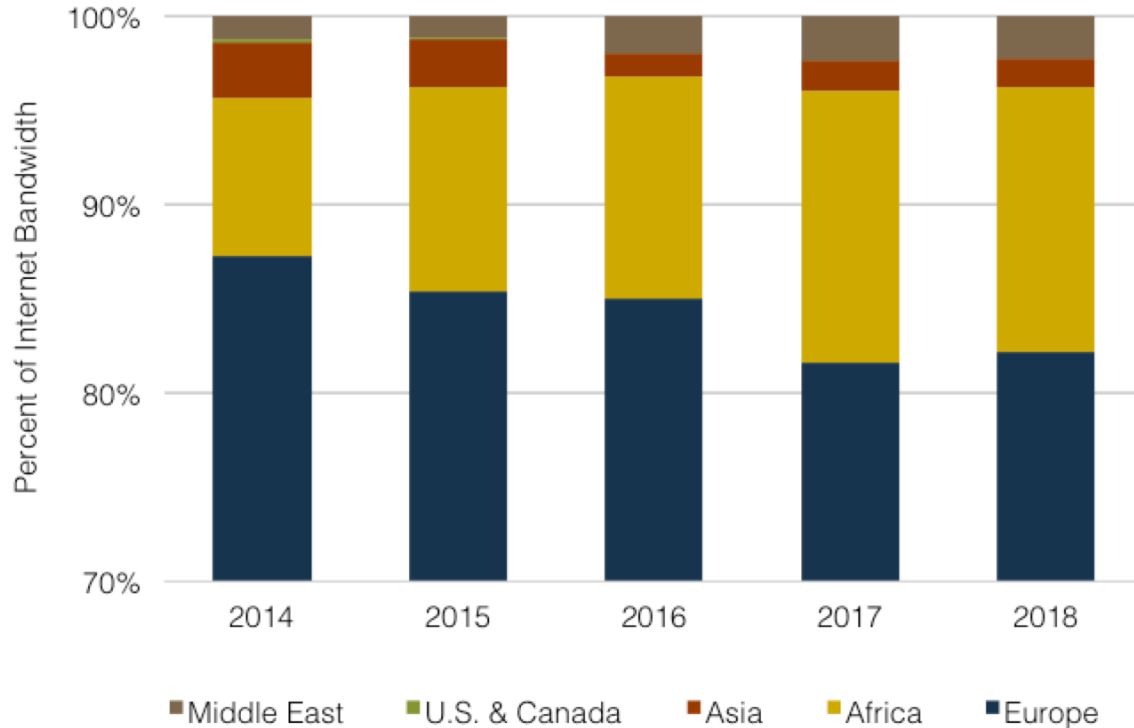
Connecting to content in Europe

Major International Internet Routes in Africa, 2018

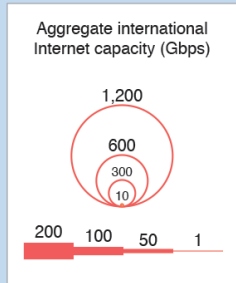


Intra-Africa connectivity

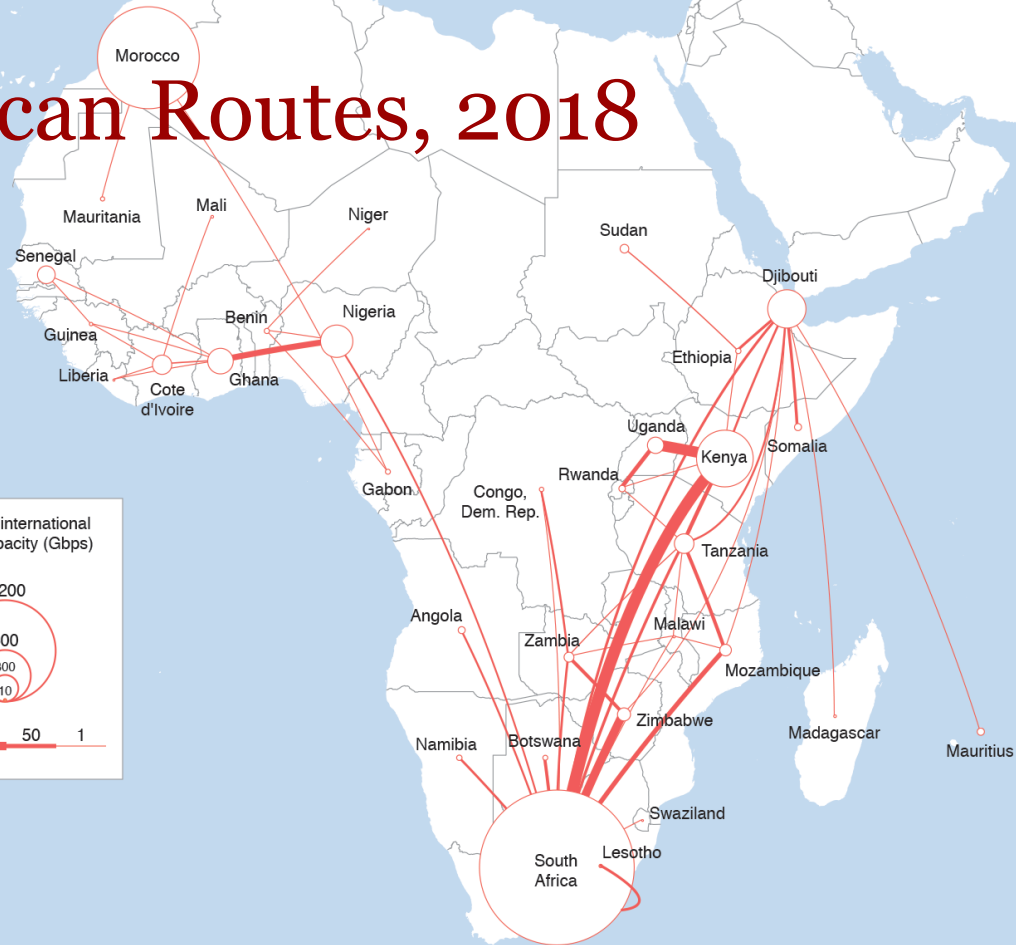
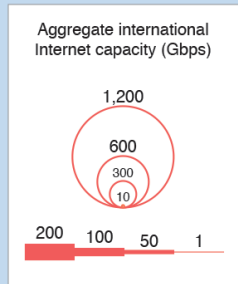
Share of Africa Int'l Internet Bandwidth by Region, 2014-2018



Intra-African Routes, 2017



Intra-African Routes, 2018



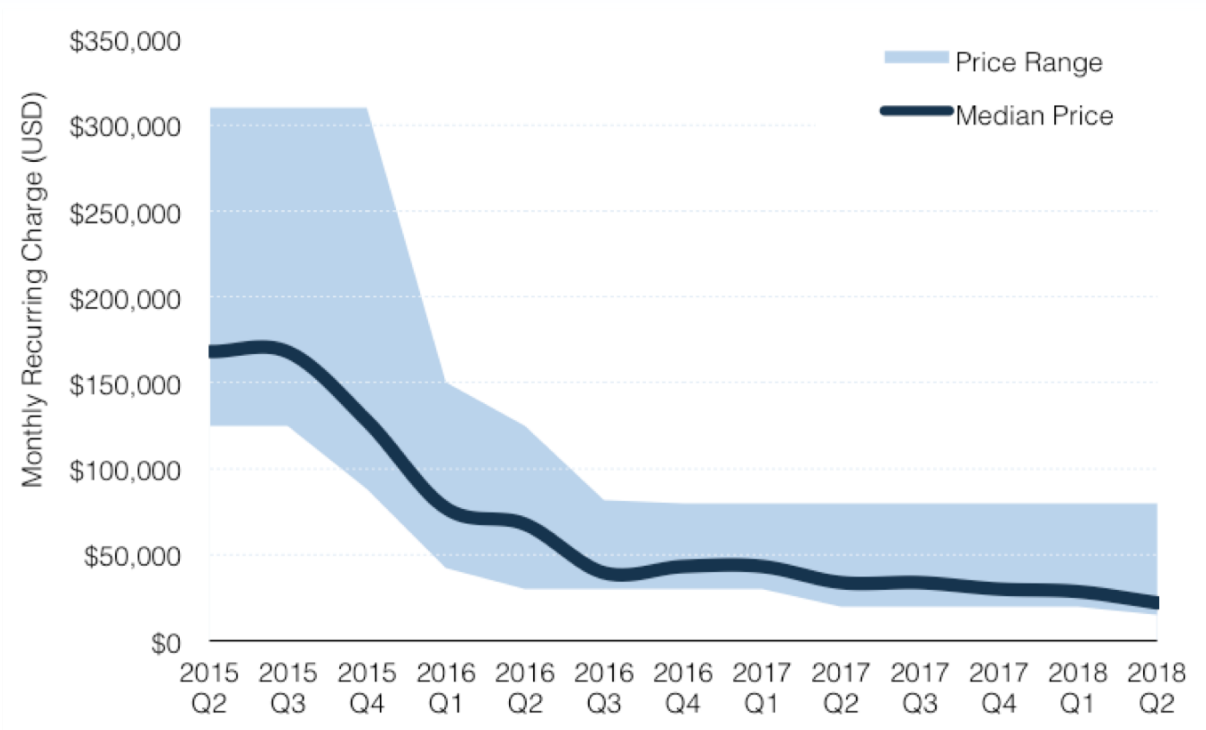
Pricing

Caution

- TeleGeography has collected pricing data anonymously from operators around the world since 2002. We also confer with buyers to validate market price levels.
- The prices shown on subsequent slides are weighted **median** prices for a **single** unit for a **one-year** term.
 - A broad range of prices exists for all routes/cities.
 - Substantial discounts exist for higher volumes and longer terms.
 - Discounts also exist depending on who you are (carrier or content/cloud provider) and the broader commercial relationship.

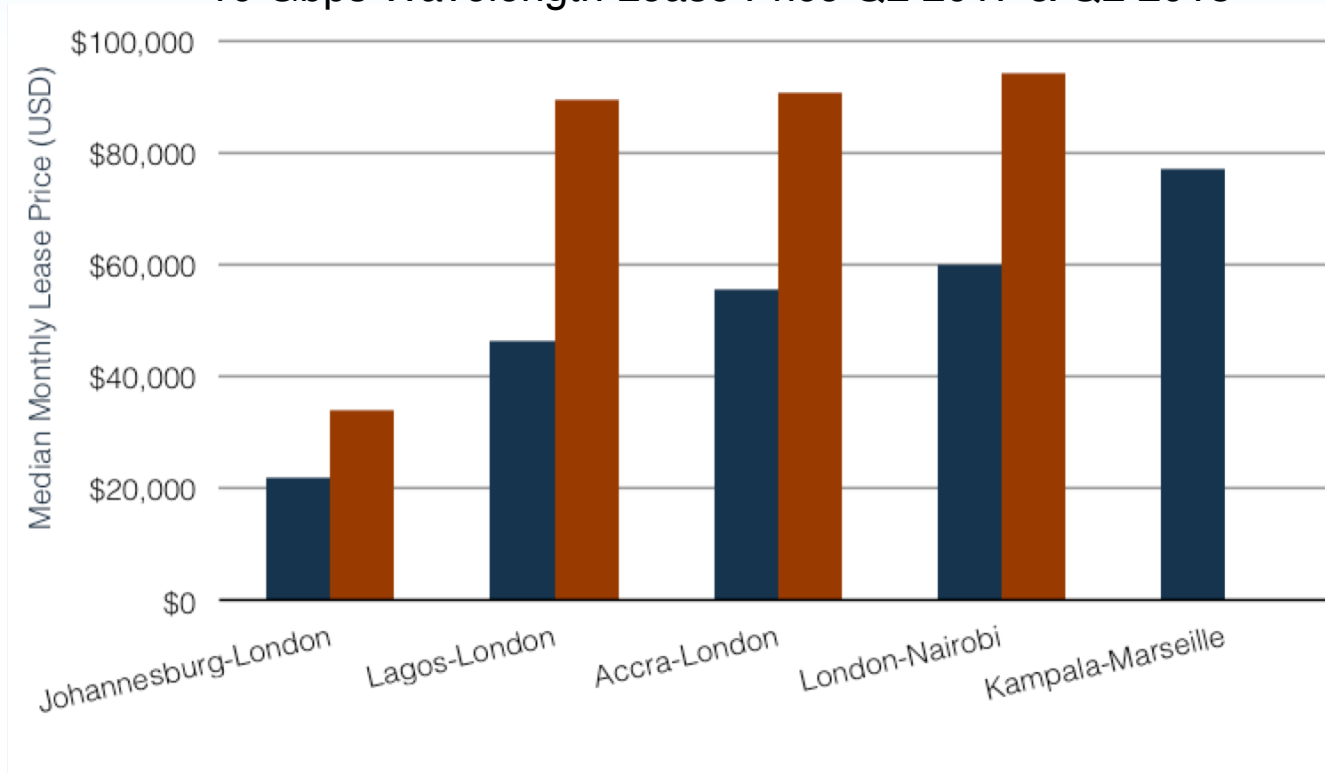
Transport prices still dropping

10 Gbps Wavelength Johannesburg-London, 2015-2018



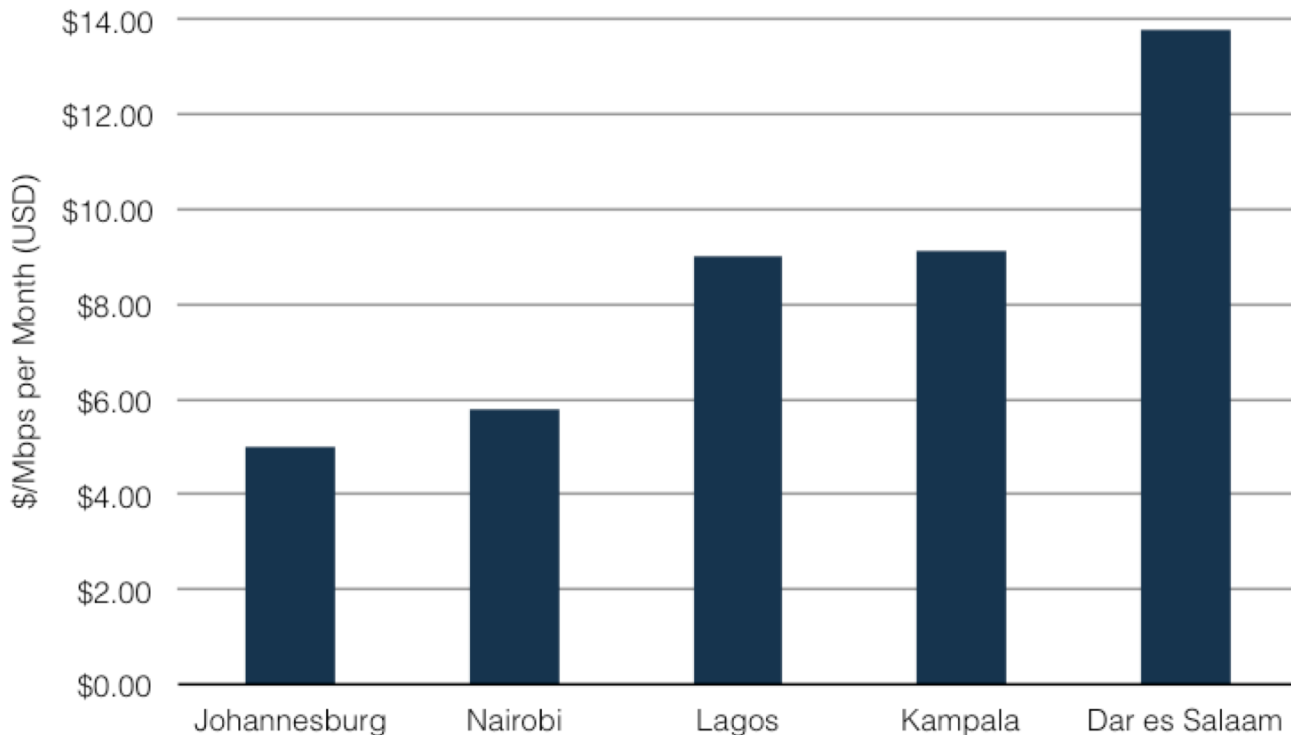
Prices vary by region

10 Gbps Wavelength Lease Price Q2 2017 & Q2 2018



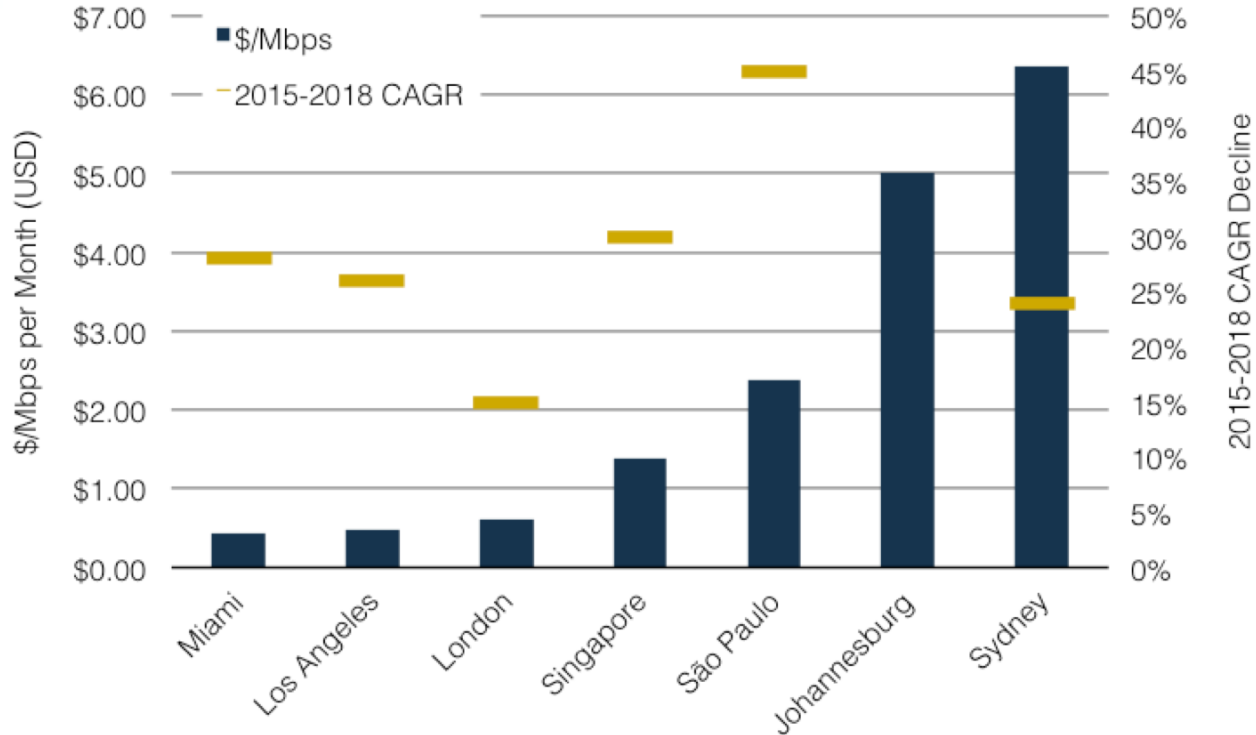
Transit prices follow transport prices

Weighted Median 10 GigE IP Transit Port Prices, Q2 2018



Global IPT prices

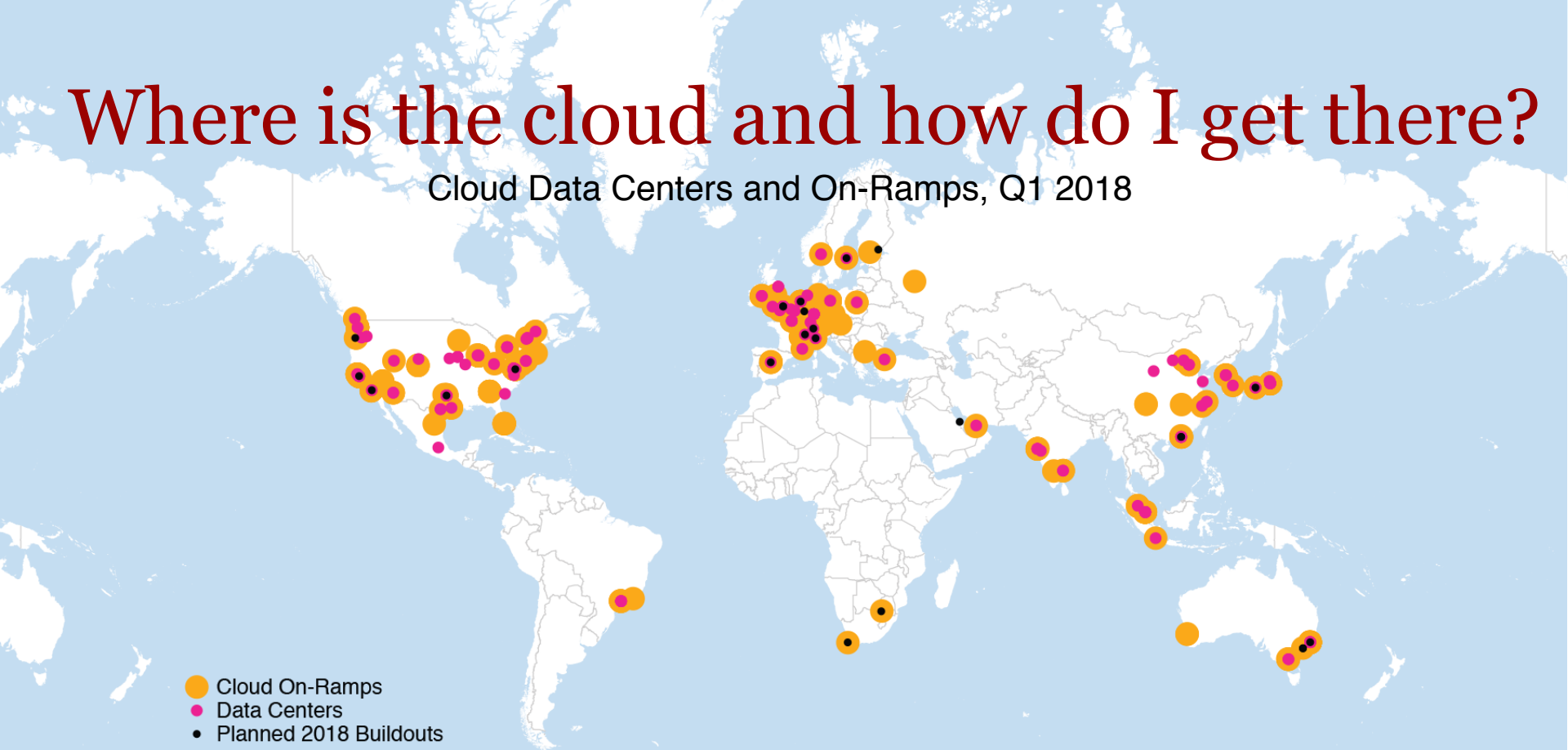
Weighted Median 10 GigE IP Transit Port Prices, Q2 2018



What's next?

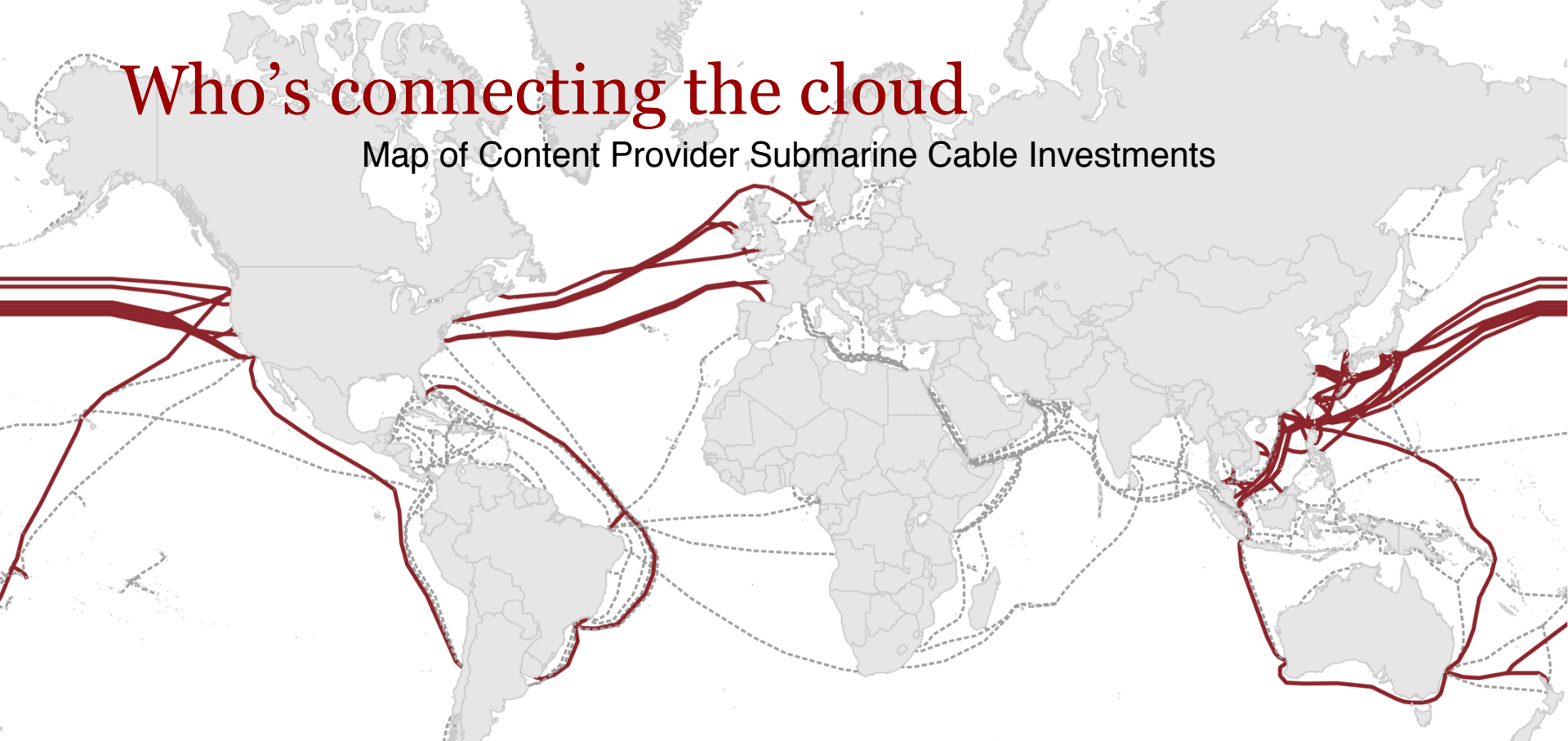
Where is the cloud and how do I get there?

Cloud Data Centers and On-Ramps, Q1 2018

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- Cloud On-Ramps
 - Data Centers
 - Planned 2018 Buildouts

Who's connecting the cloud

Map of Content Provider Submarine Cable Investments



Note: Map shows in service and planned cables with a ready-for-service (RFS) data in 2012 or later. Submarine cables in red are those in which at least one content provider is publicly known to be an investor. Content providers also have capacity on other cables.

Content provider cable investments

Provider	Cable	RFS	Provider	Cable	RFS	
Google	Unity	2010	Amazon	Hawaiki	2018	
	Southeast Japan Cable (SJC)	2013		JUPITER	2020	
	FASTER	2016		Bay to Bay Express	2020	
	Monet	2017				
	Tannat	2018		Facebook	AEConnect	2016
	Junior	2018			Asia Pacific Gateway (APG)	2016
	Pacific Light Cable Network (PLCN)	2019			MAREA	2018
	INDIGO-West	2019			Pacific Light Cable Network (PLCN)	2019
	INDIGO-Central	2019			HAVFRUE	2019
	HAVFRUE	2019			JUPITER	2020
Curie	2019		Southeast Asia-Japan 2 (SJC-2)	2020		
Hong Kong-Guam	2019		Hong Kong-Americas (HKA)	2020		
Dunant	2020		Bay to Bay Express	2020		
			Microsoft	Hibernia Express	2015	
				AEConnect	2016	
				New Cross Pacific	2018	
				MAREA	2018	

Note: Only publicly disclosed content provider investments shown.

Outlook

- Content provider traffic growing on U.S.-Latam, Eur-Africa routes
- Prices continue to drop faster in Africa
- Intra-African traffic poised for jump in growth?

Thank You!

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