



# Global Bandwidth Market, WAN & Cloud

Coverage, Pricing & Traffic Trends

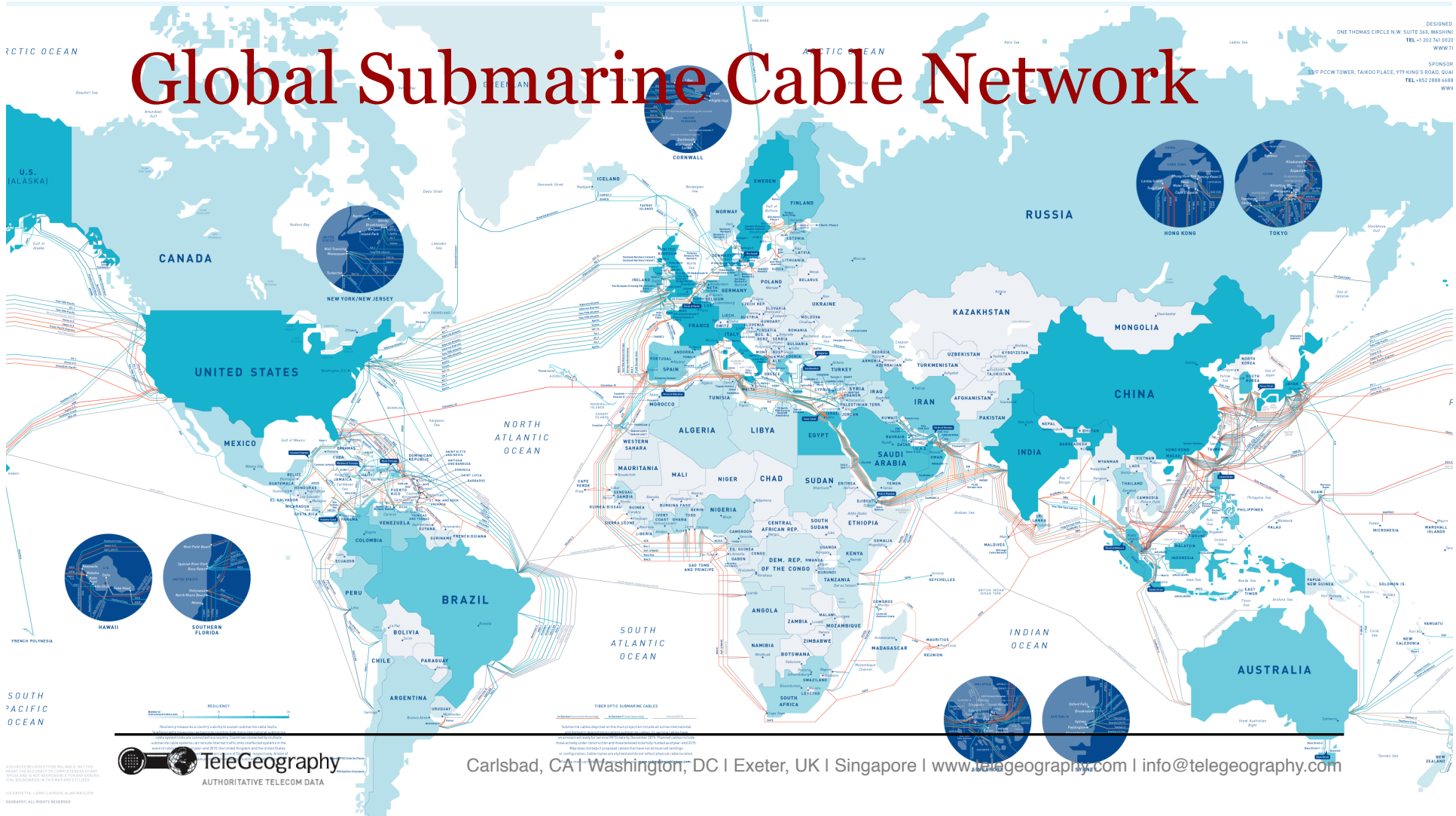
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Senior Analyst, TeleGeography

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# Global Submarine Cable Network



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# Carriers Exchanging Traffic

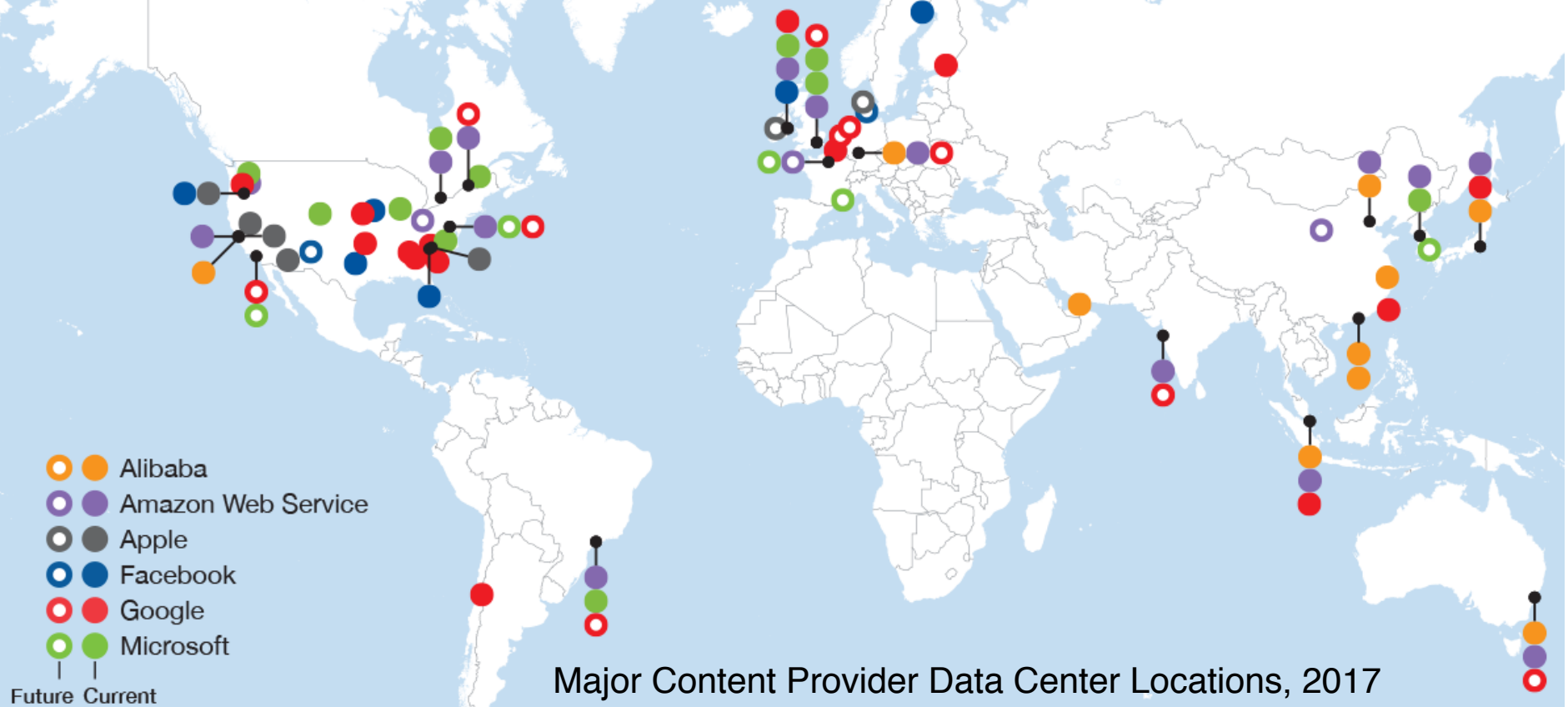
“B-end” links, transit & peering, foreign investments

Gross Floor Space  
(million sq ft)

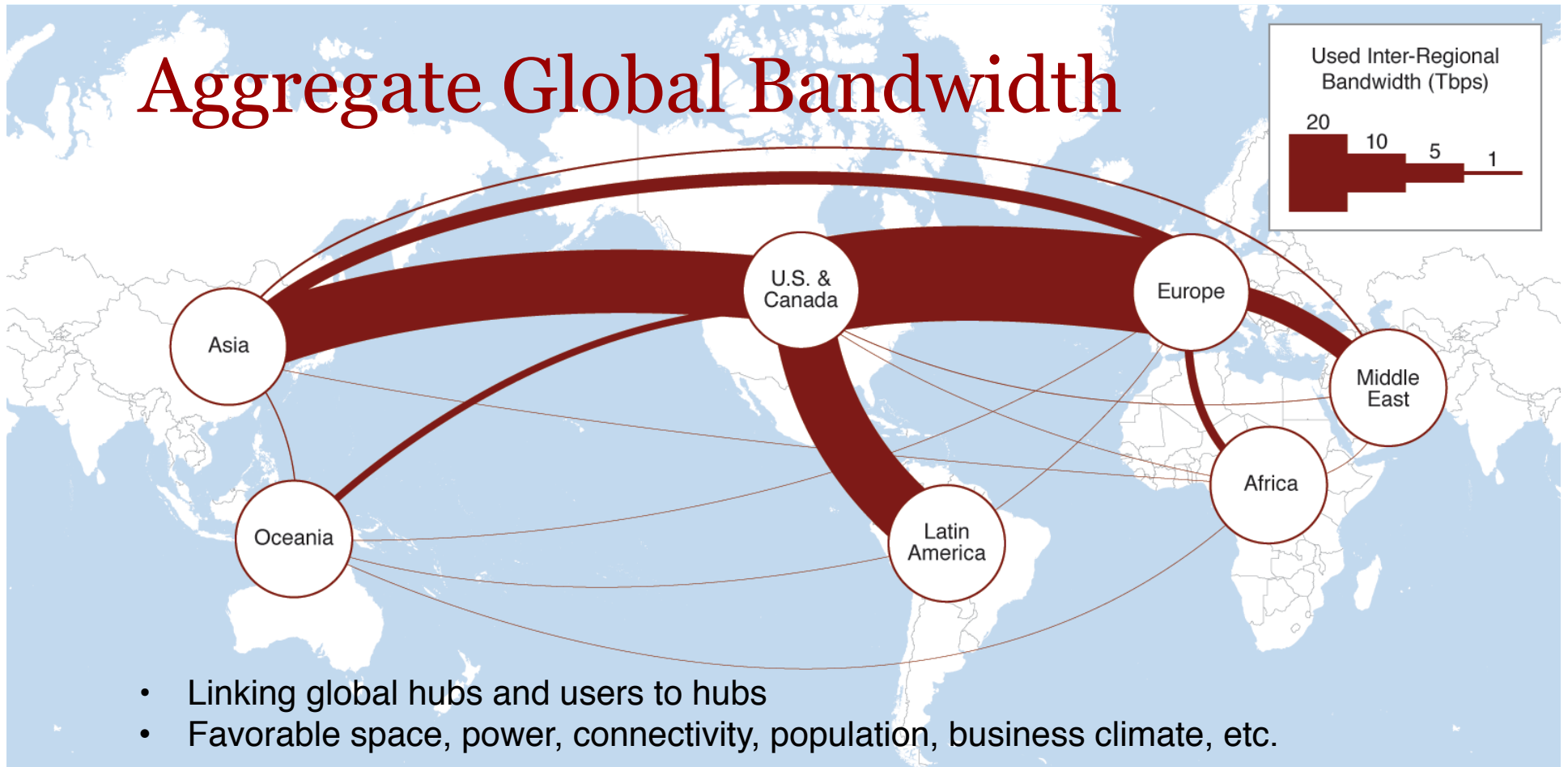
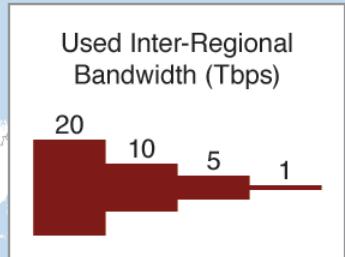
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# Linking Content and Applications



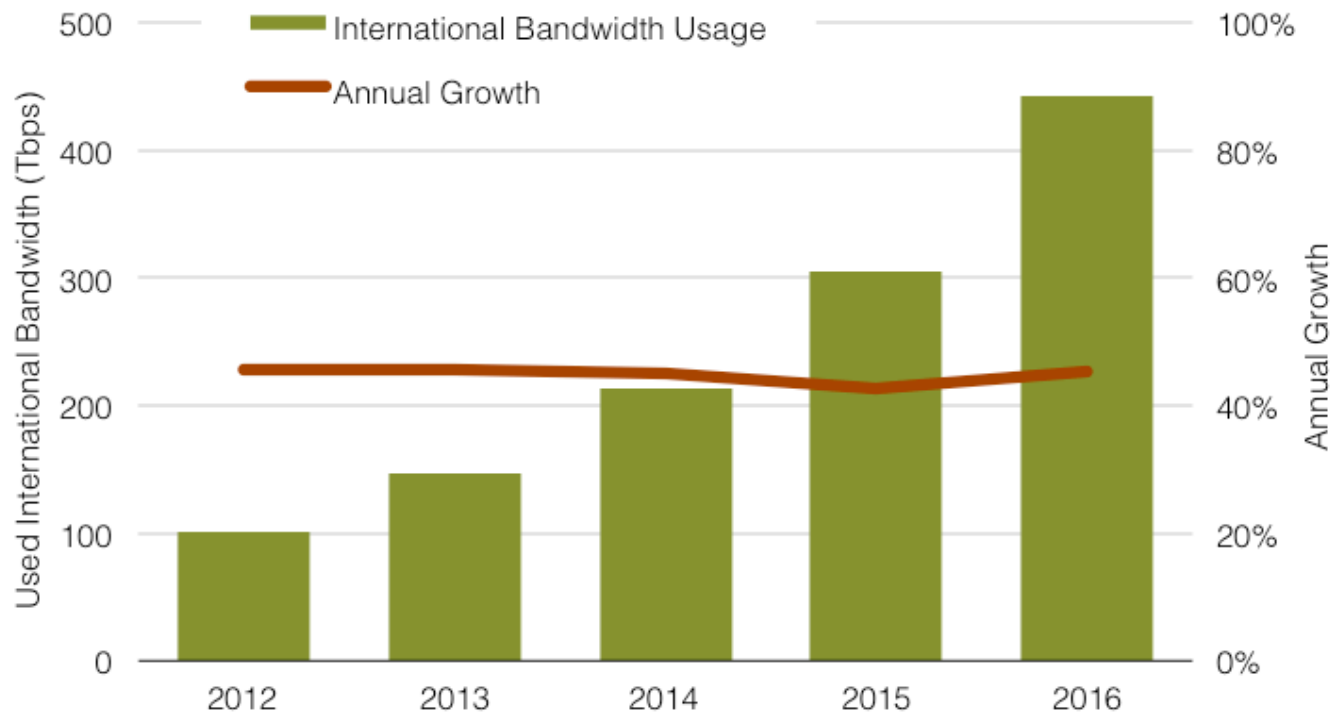
# Aggregate Global Bandwidth



- Linking global hubs and users to hubs
- Favorable space, power, connectivity, population, business climate, etc.

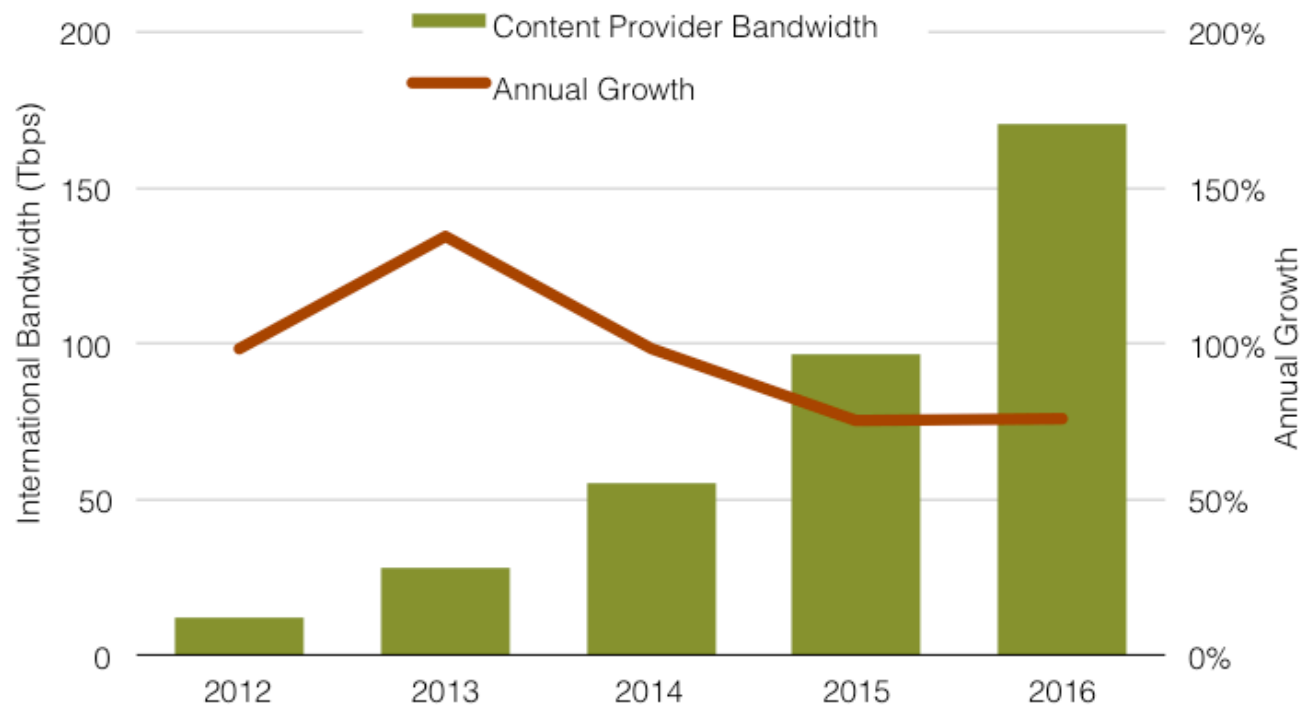
# Aggregate Demand Growth “Flat”

Used International Bandwidth Growth, 2012-16



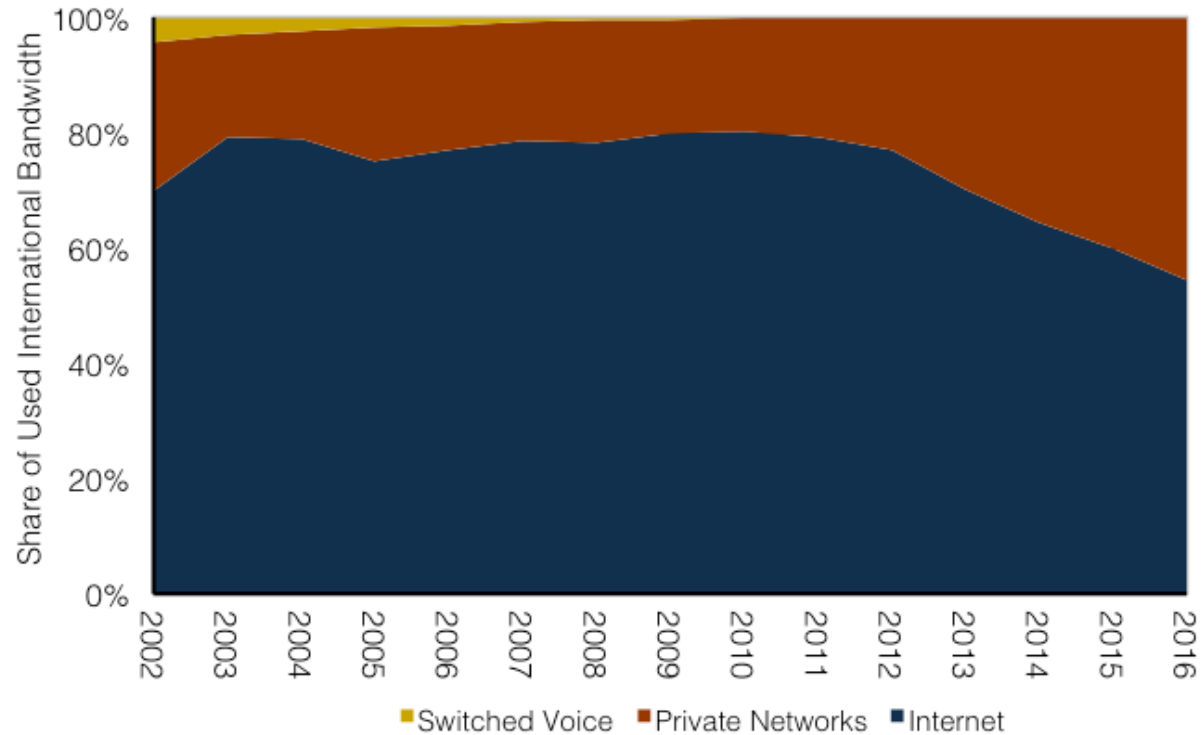
# Content Provider Growth

International Bandwidth Growth, 2012-2016



# Private Networks Gaining Share

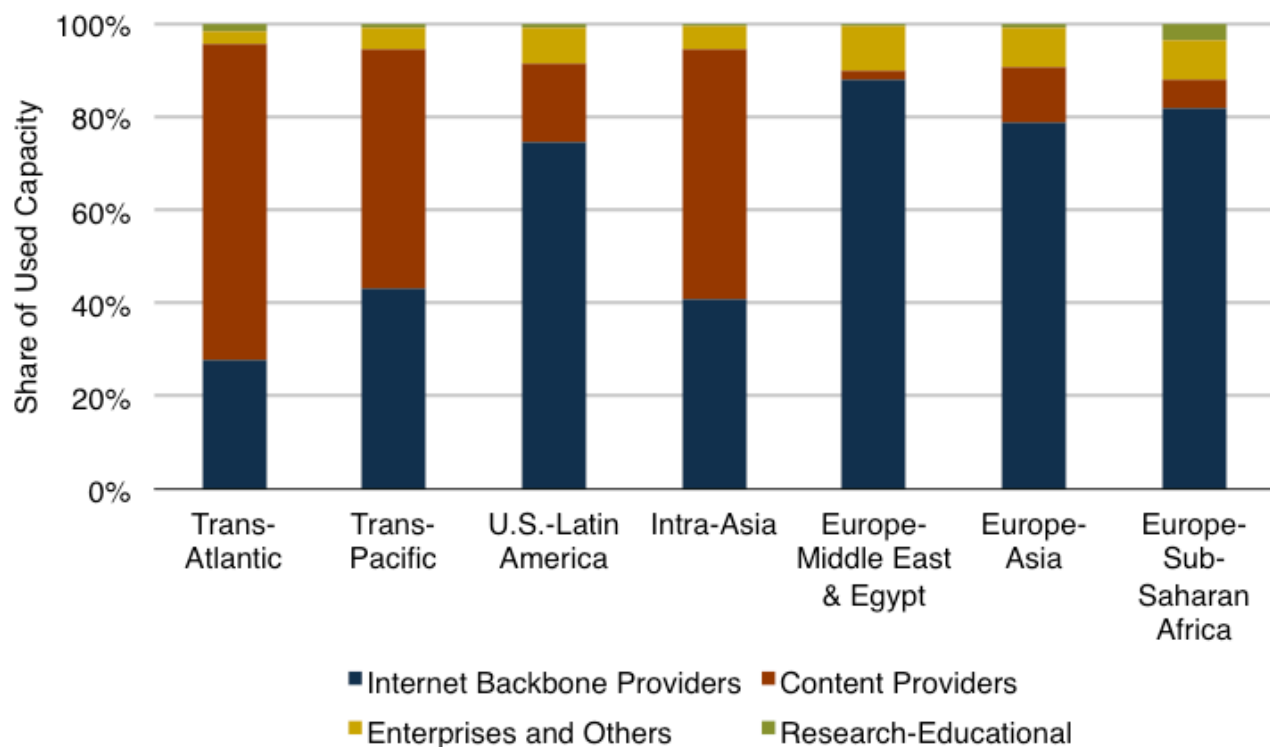
International Internet, Private Network, & Switched Voice Capacity, 2002-16



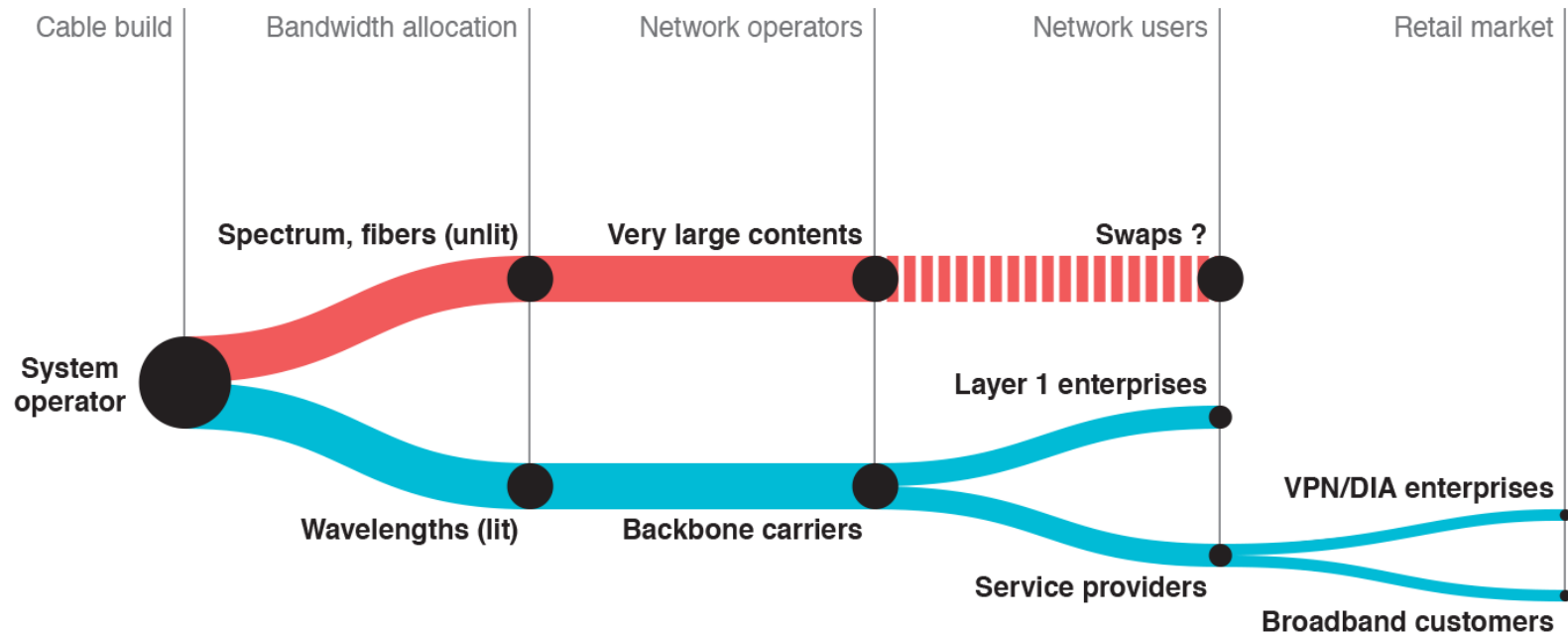


# Private Network Share Varies by Route

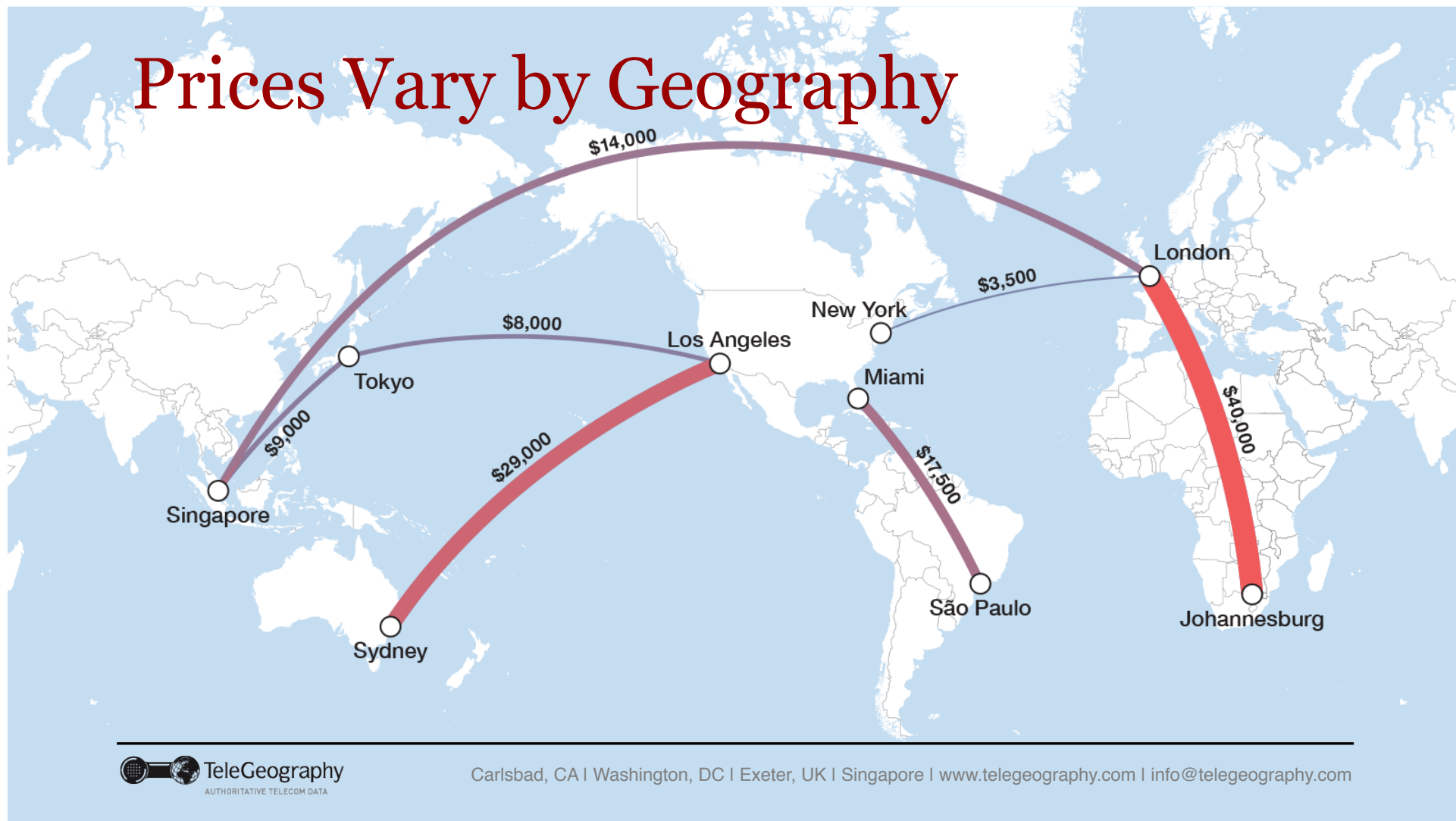
Private Network Bandwidth Share by Route, 2016



# Cable bandwidth distribution

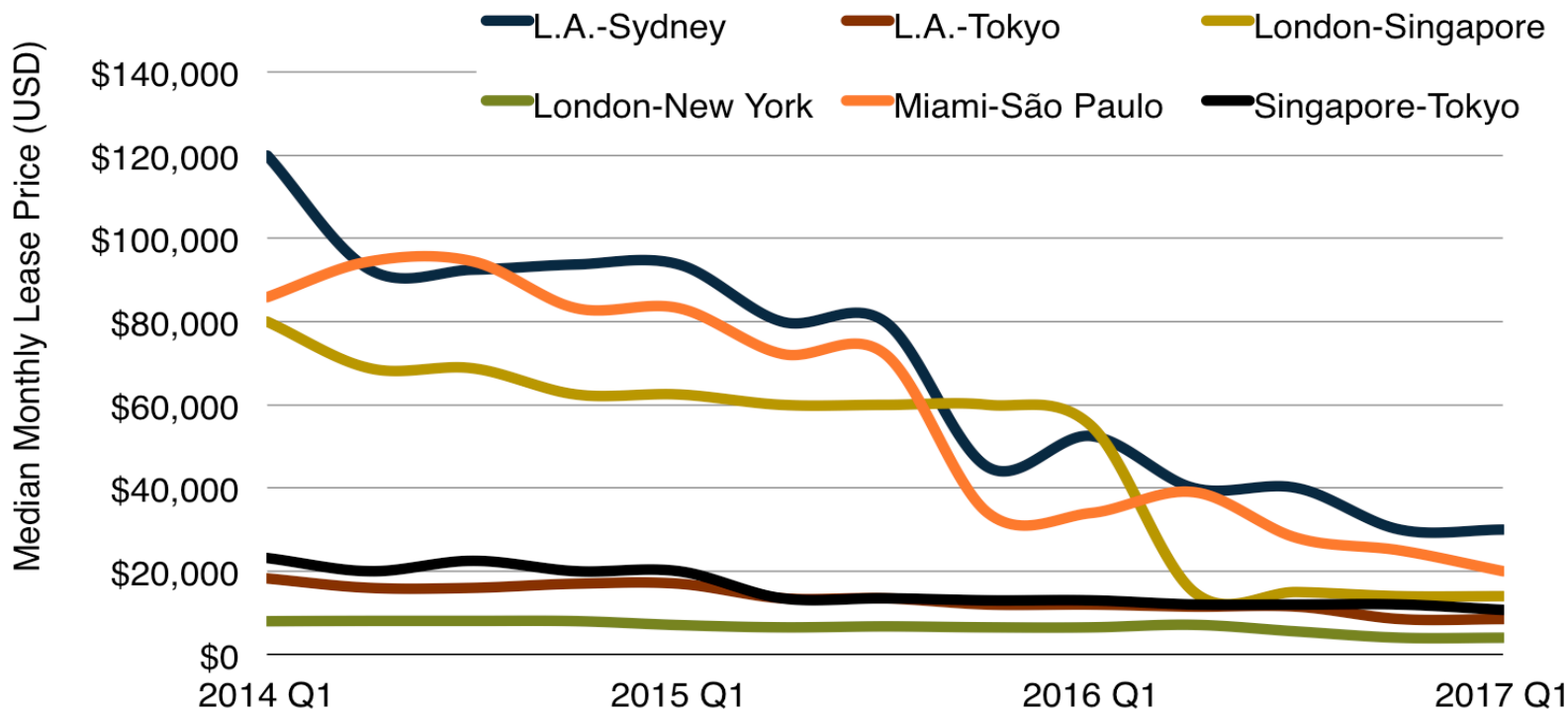


# Prices Vary by Geography



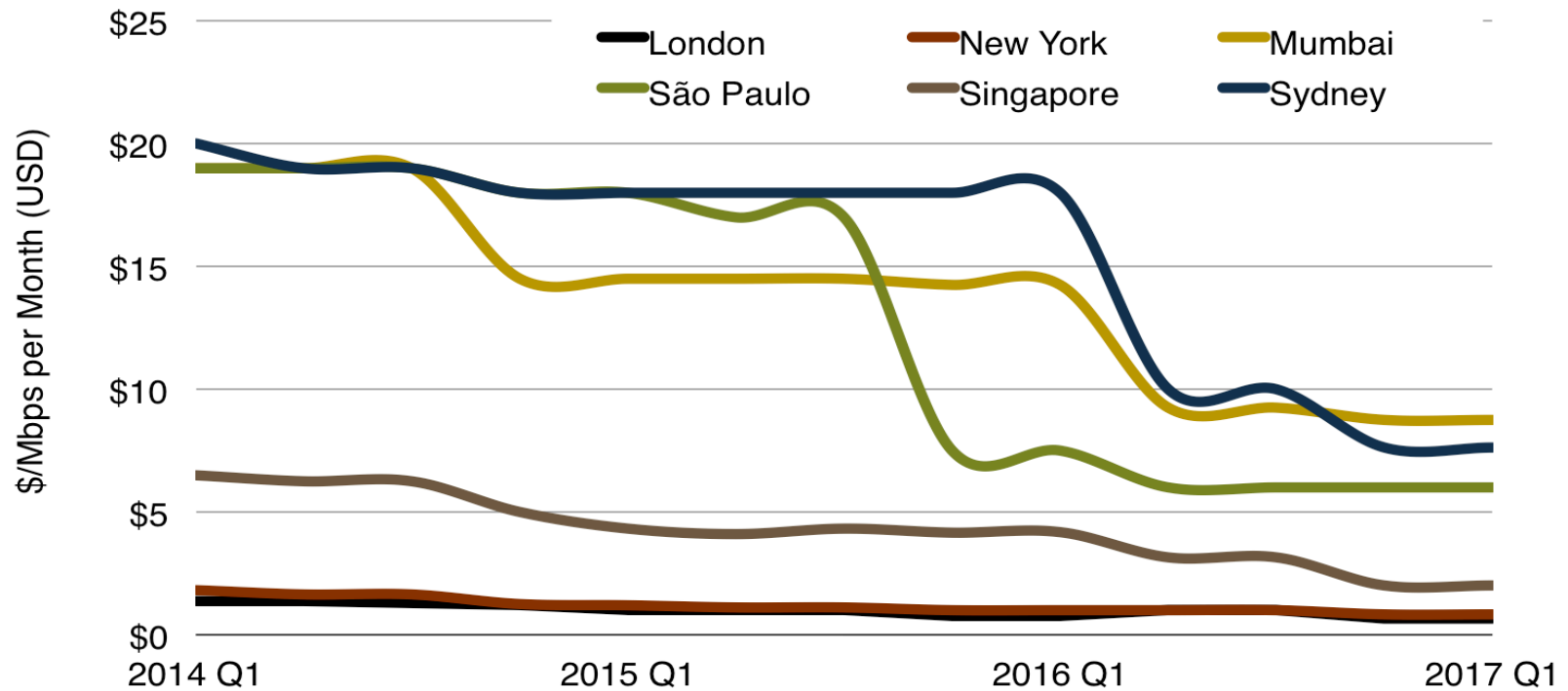
# Transport Prices Decline

Median 10 Gbps Wavelength Monthly Lease Prices, 2014-17



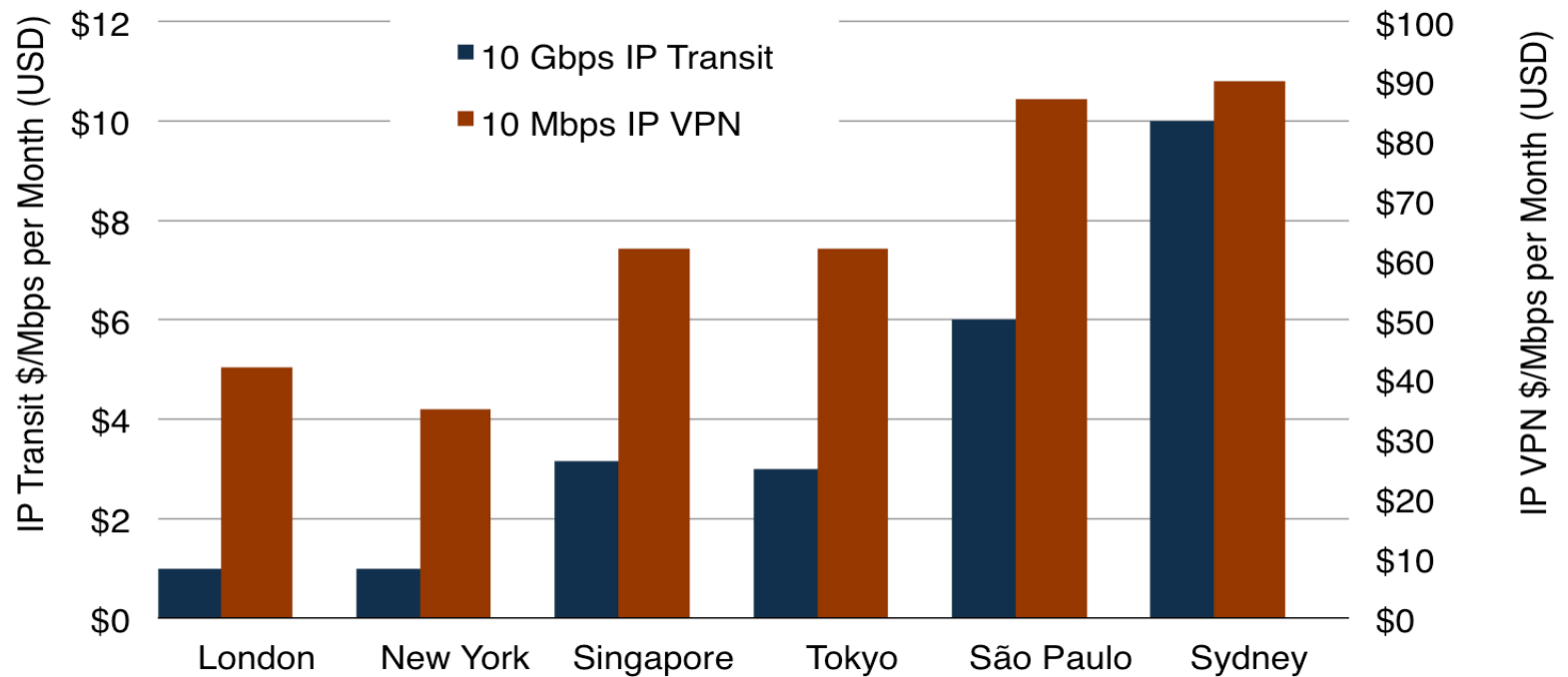
# Transit Prices Follow

Median 10 GigE IP Transit Port Prices, 2014-17

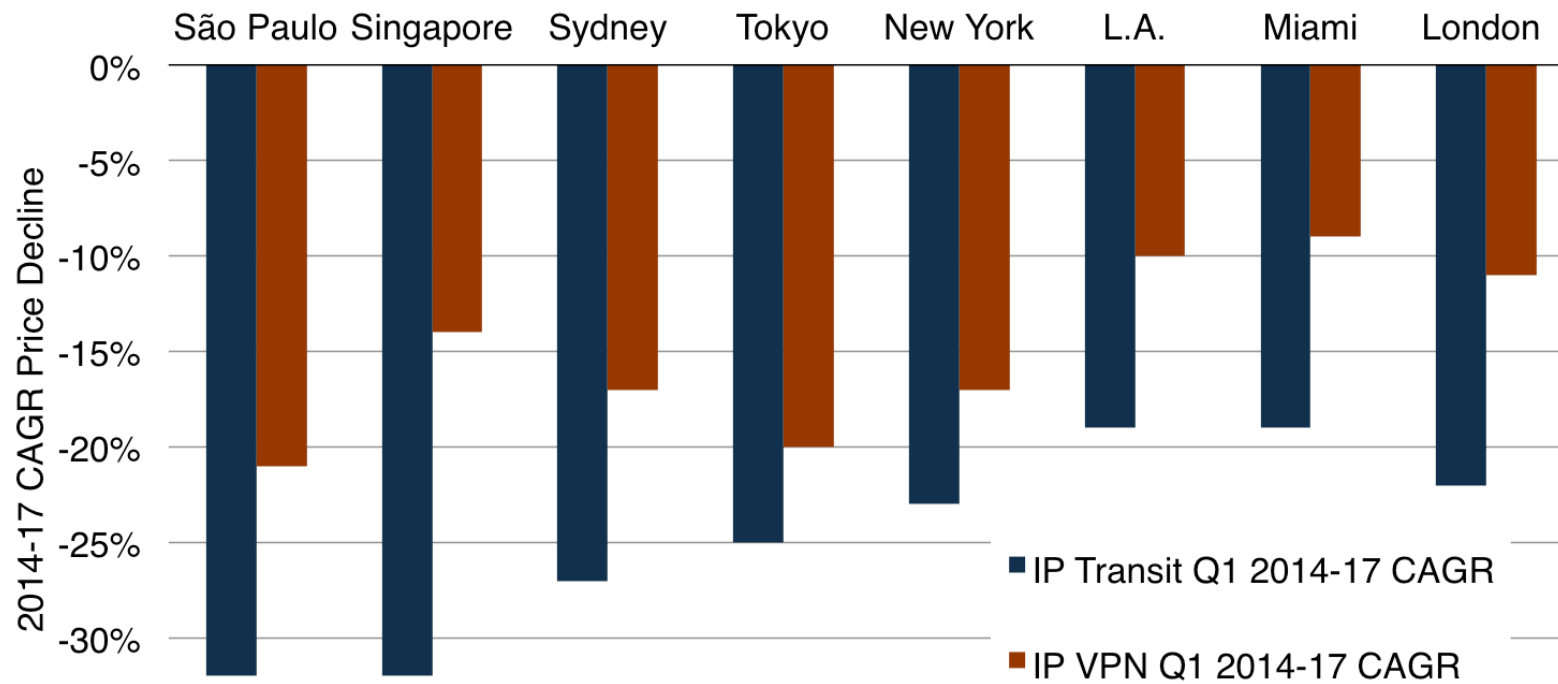


# Enterprise Prices Map to Wholesale

Median 10 GigE IP Transit & 10 Mbps IP VPN Port Prices, 2017

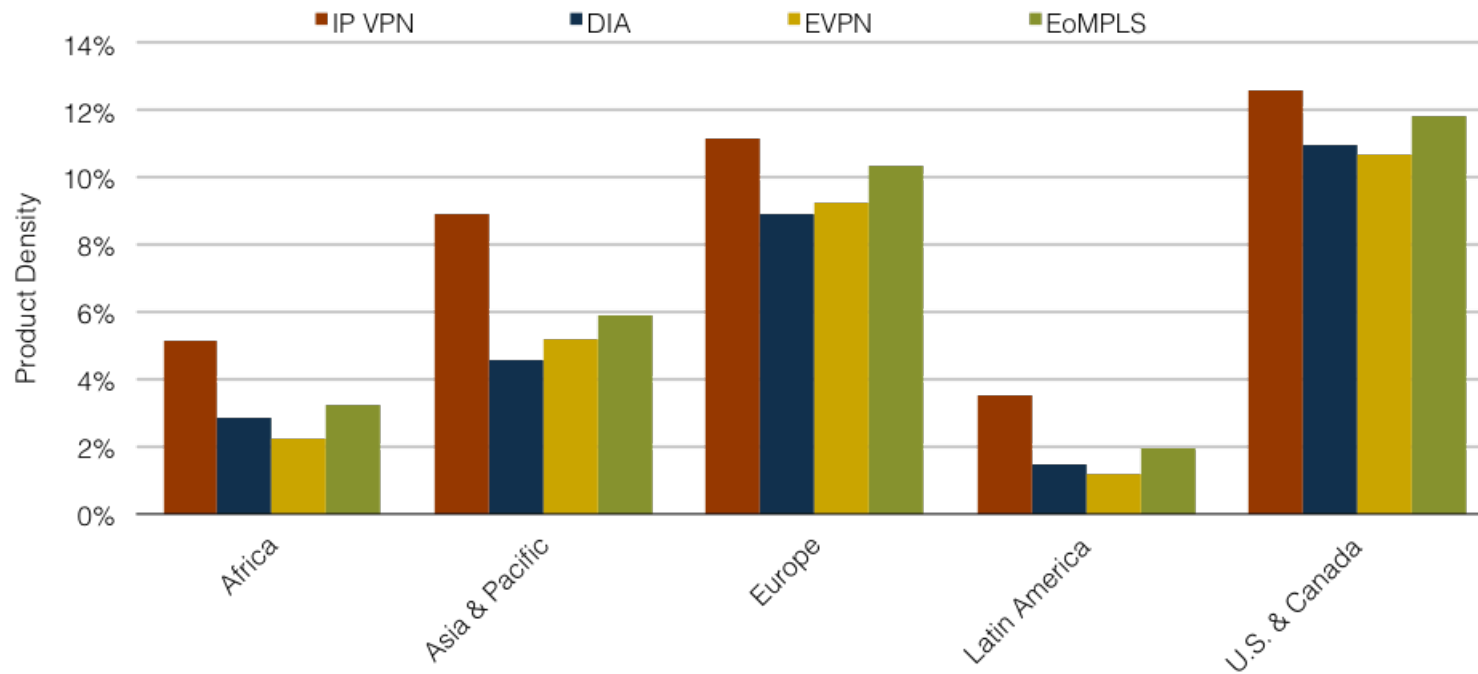


# And Exhibit Similar Trends



# Product Density by Region

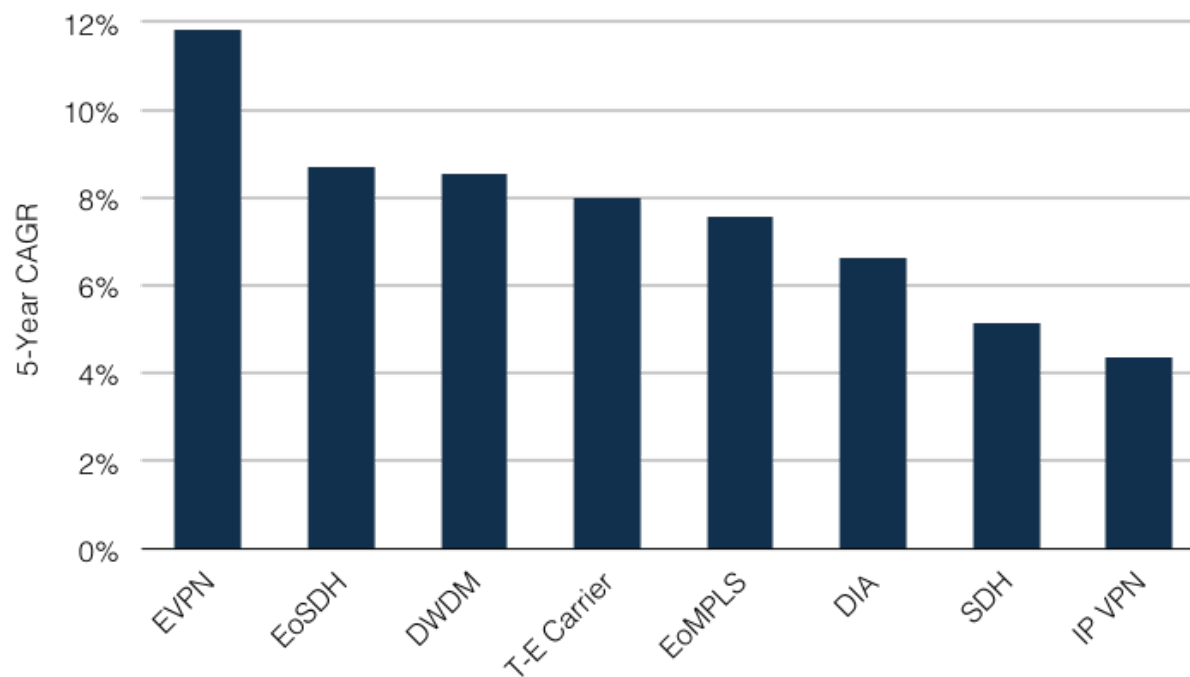
IP VPN, DIA, EVPN, EoMPLS density in key global business markets 2016



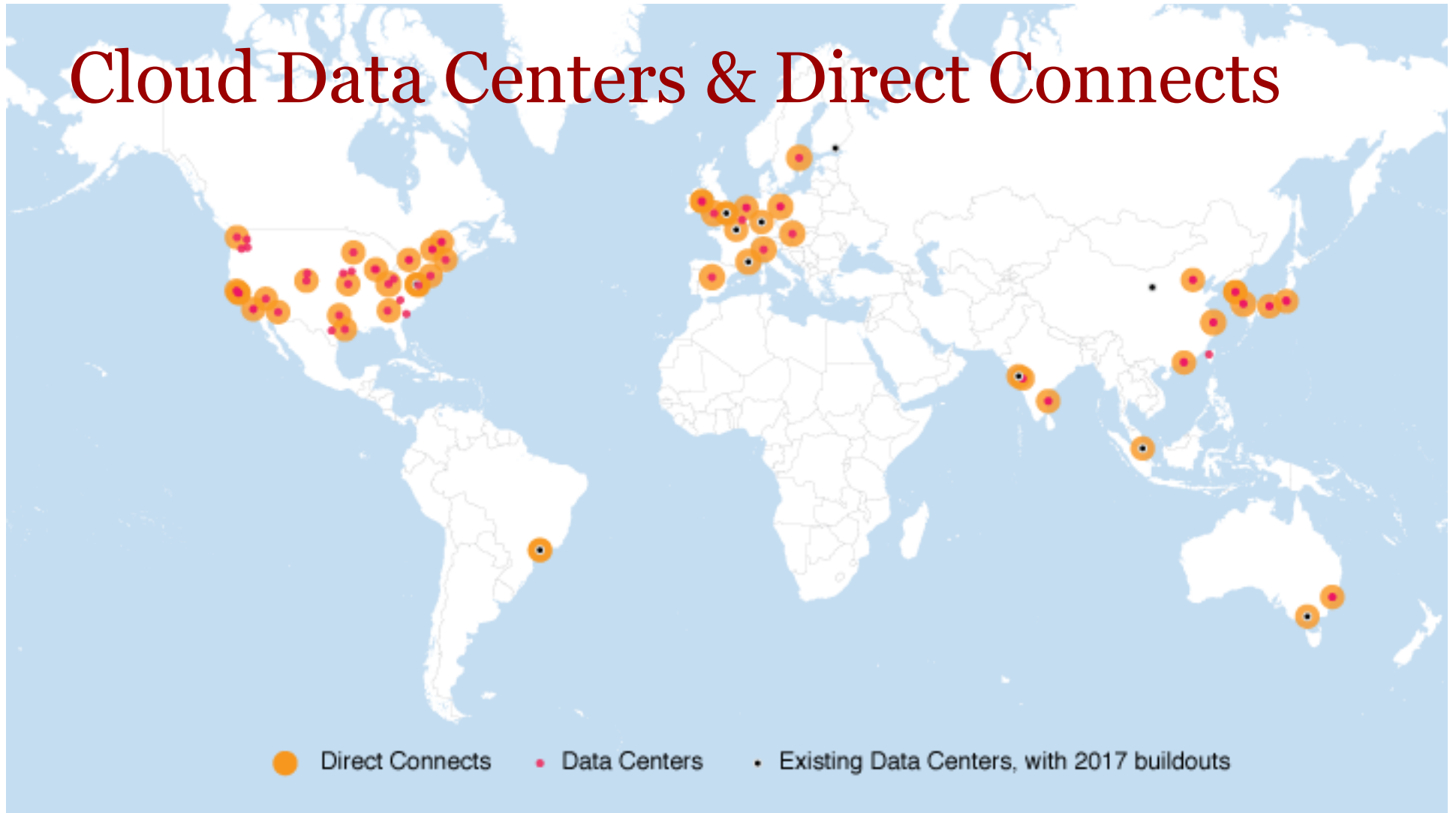


# Growth in Product Offerings

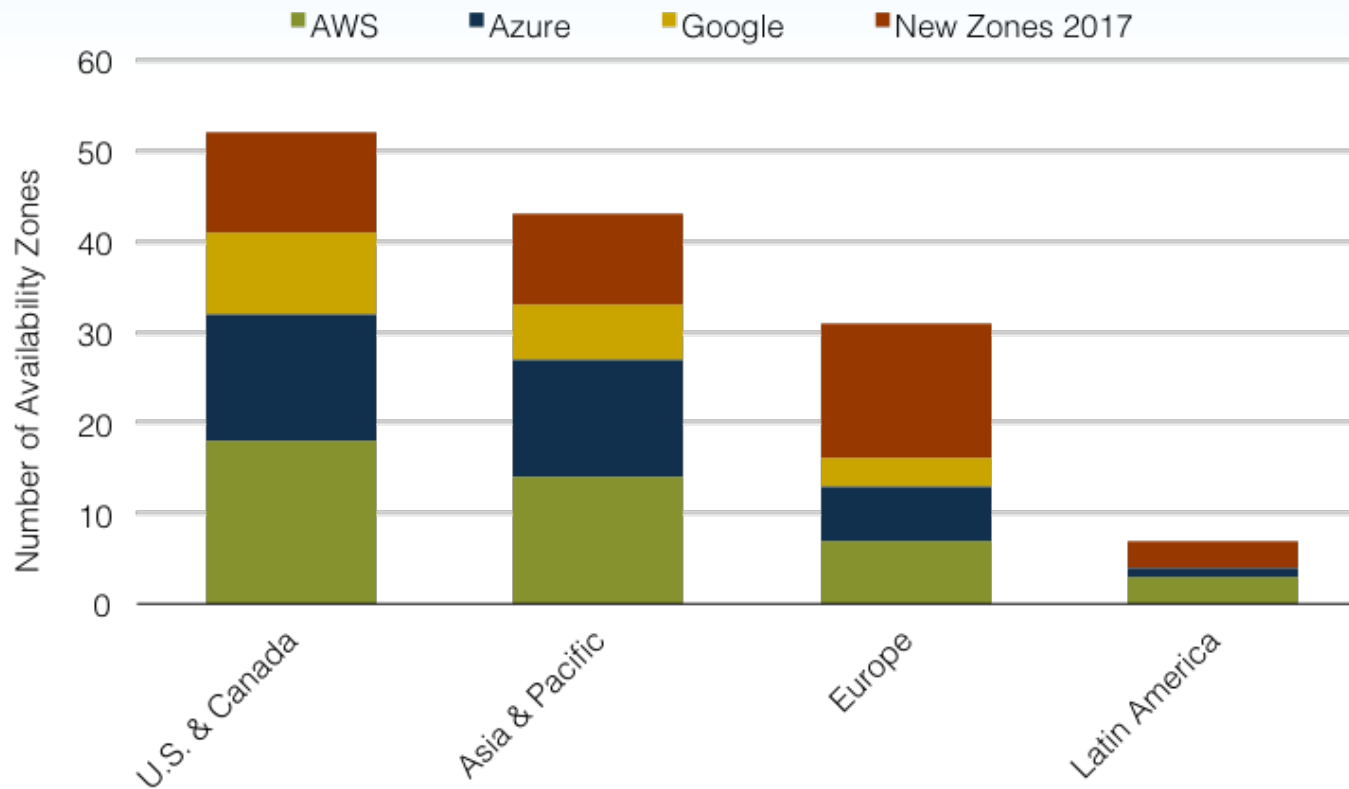
Global CAGR of Product Offerings in Key Global Markets, 2011-16



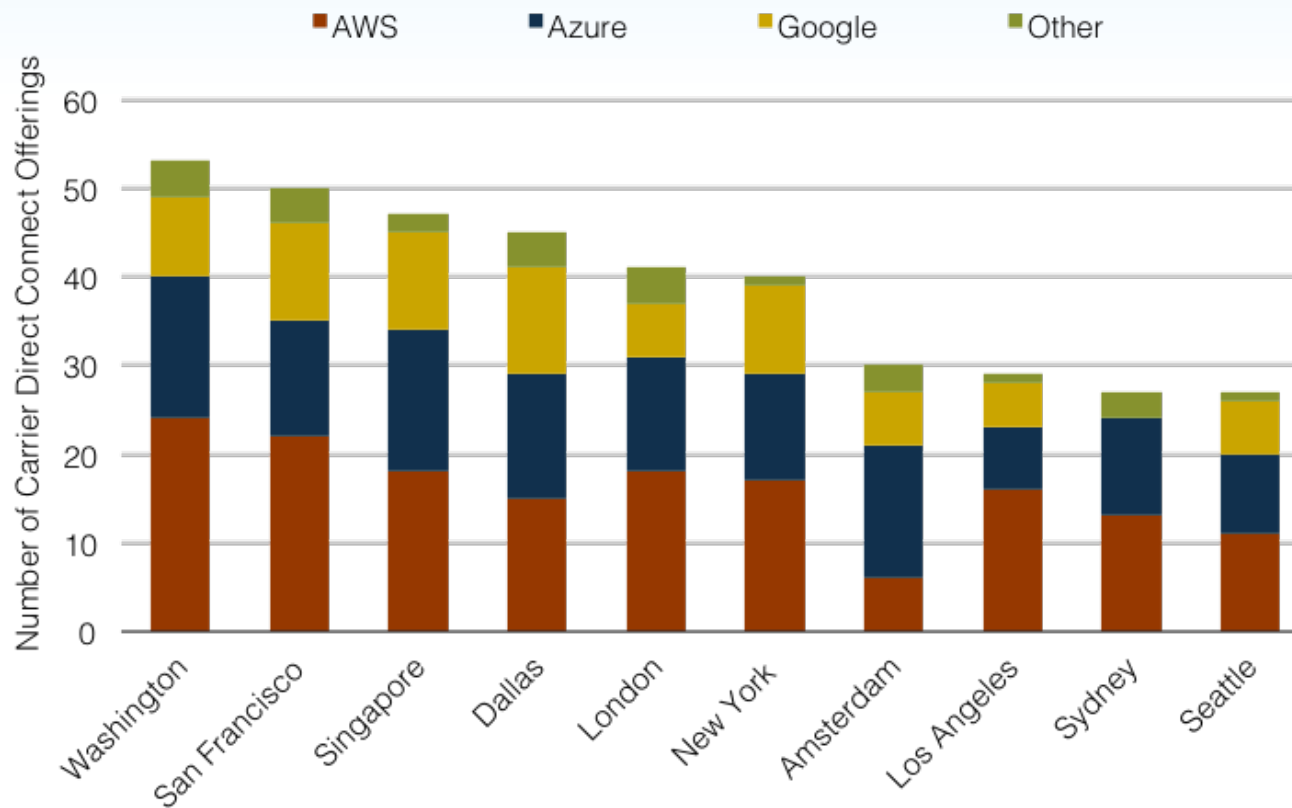
# Cloud Data Centers & Direct Connects



# Cloud Provider Zones & Regions

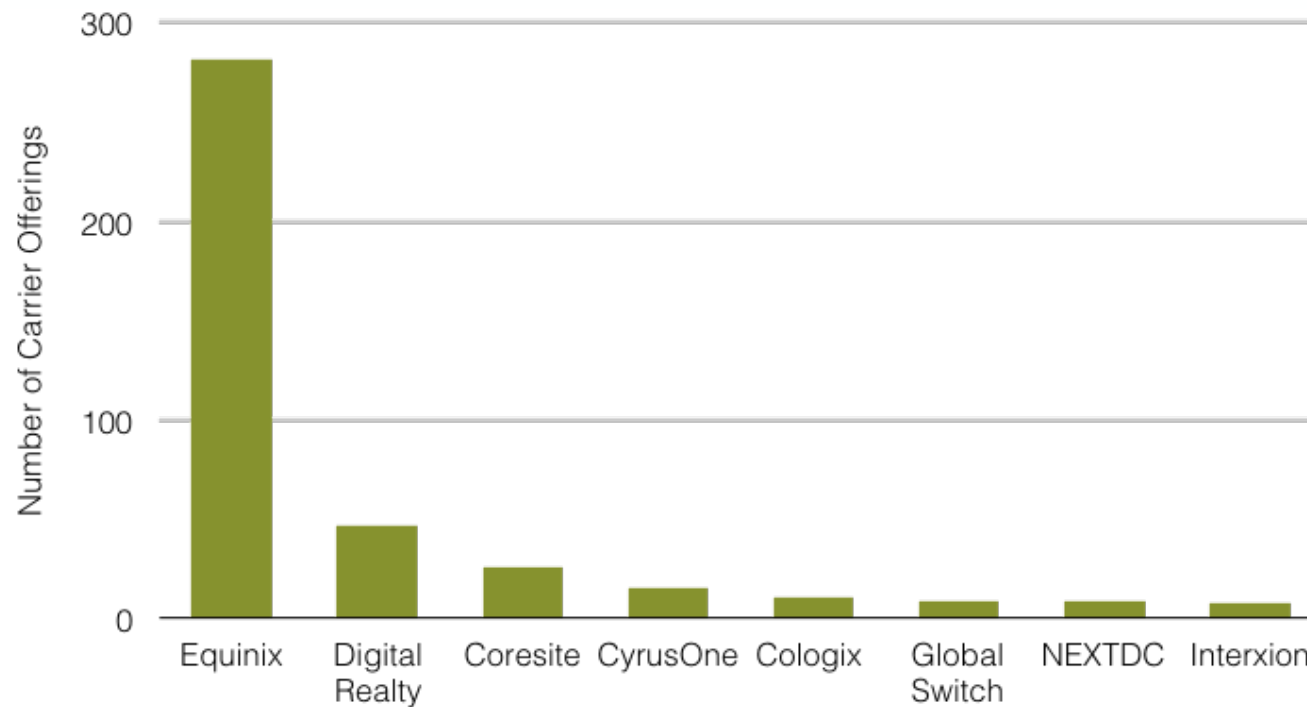


# Direct Connect Offerings by City



# Colo Facilities Connecting WANs to the Cloud

Total Carrier Direct Connect Offerings to Cloud Providers, 2016



# Summary

- Global network of primary hubs
- Demand growth is as reliable as price erosion
- Enterprise WAN costs predicated on wholesale prices
- Content Provider growing faster than the internet
- Cloud Data Centers rapidly expanding in same markets



**Thank You!**

Questions?

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