

SMART DATA PRICING

REDUCE PEAK-TO-AVERAGE TRAFFIC RATIO



Time

Geography

Devices

Applications

CISCO VISUAL DATA

FEB. 3 2015

2.5 exabytes/month global mobile data in 2014
55% video

7.4 billion connected devices
6% of them account for 40% of traffic

1 kb/s/device 3.5 kb/s/smartphone

Average downlink speed=1.683 Mb/s



CISCO VISUAL DATA 2019

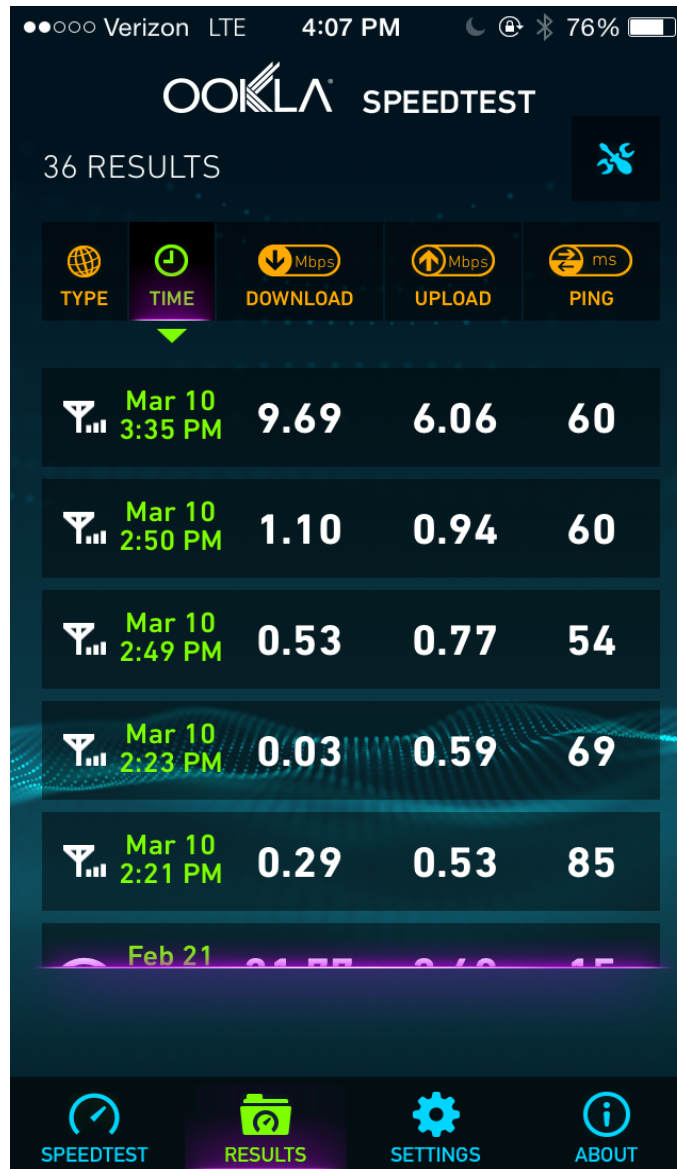
57% annual growth for 5 years

24.3 exabytes/month global mobile data
72% video

11.5 billion connected devices

6.4 kb/s/device

GEOGRAPHIC VARIABILITY



APPLICATION VARIABILITY



Verizon 7:03 PM 86%

Settings Cellular

USE CELLULAR DATA FOR:

	Alarm Clock 124 KB	<input type="checkbox"/>
	Amazon 3.7 MB	<input checked="" type="checkbox"/>
	Amazon Music	<input type="checkbox"/>
	Amtrak 1.8 MB	<input checked="" type="checkbox"/>
	App Store 19.0 MB	<input type="checkbox"/>
	Apple Watch 659 KB	<input type="checkbox"/>
	BarclaysBikes 122 KB	<input checked="" type="checkbox"/>
	BBC News 62.4 MB	<input checked="" type="checkbox"/>
	Bus Checker 12.5 MB	<input checked="" type="checkbox"/>
	Calendar 14.5 MB	<input checked="" type="checkbox"/>
	Chrome 106 MB	<input checked="" type="checkbox"/>

SDP MECHANISMS



Temporal

Congestion pricing

Streamloading (S. Panwar, F. Fund)

Spatial:

Wi-Fi offload

(currently 46% of traffic, $> 1/2$ in 2016)

Infostations

Devices:

Cooperative communications