
# Content Delivery to Mobile Devices – data from a worldwide CDN

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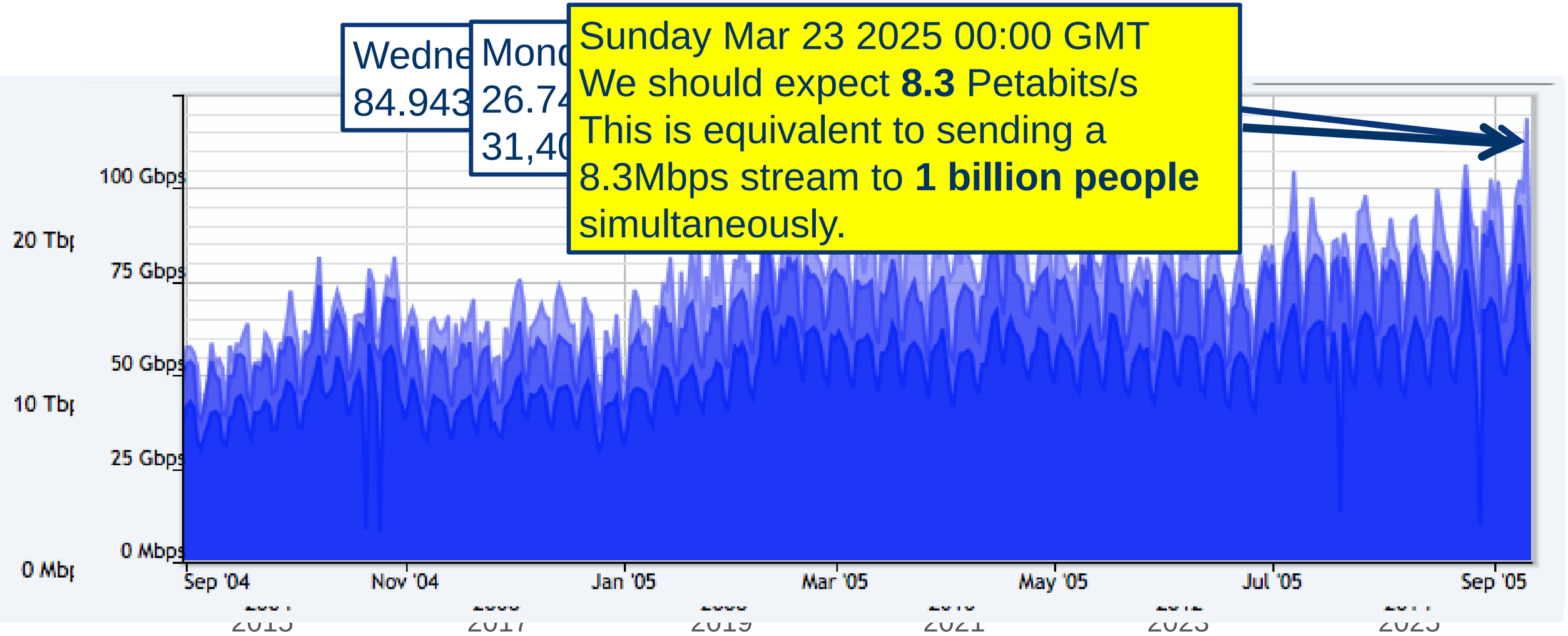
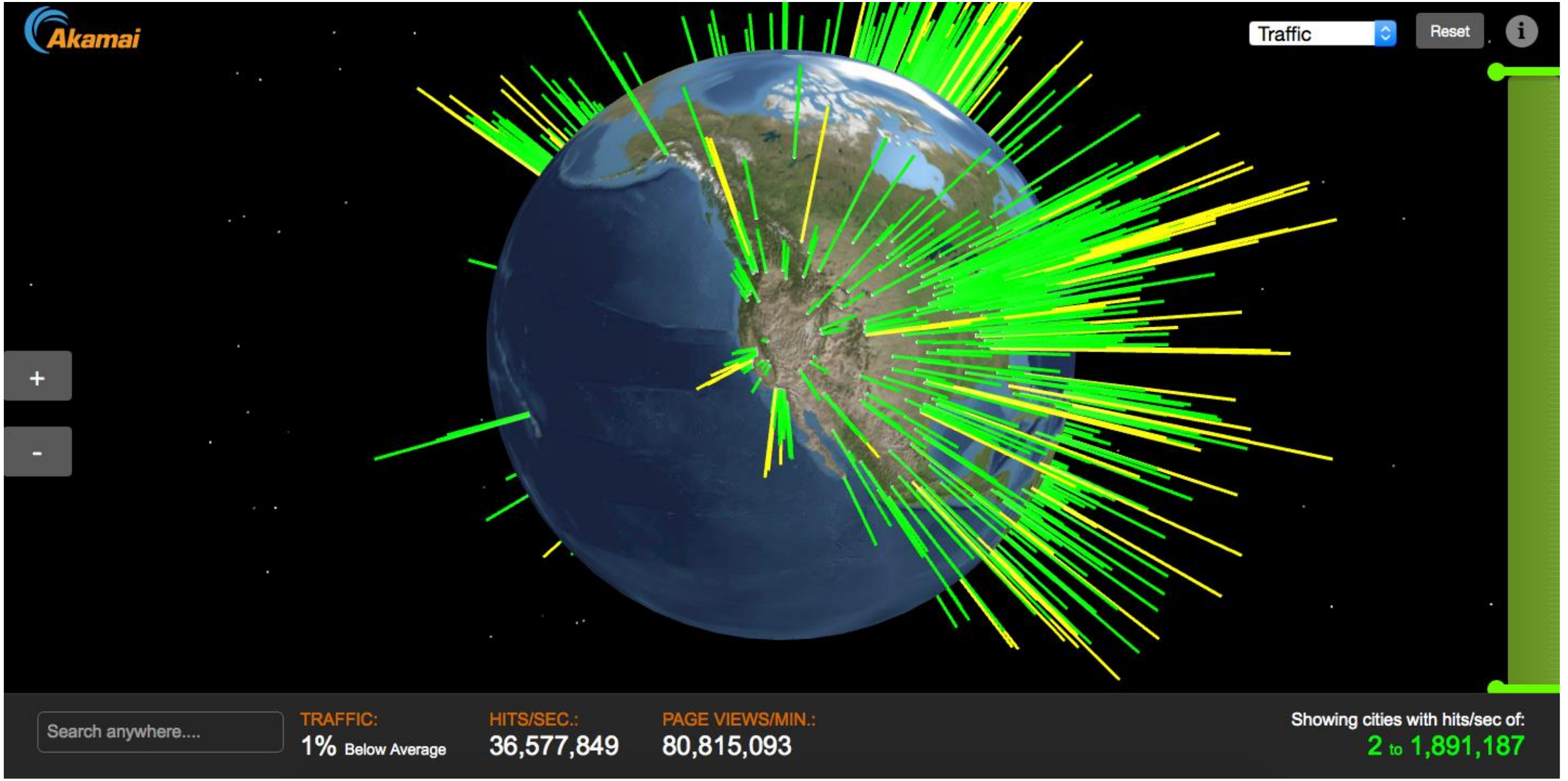
# Bandwidth exactly 10 years ago



# Data source



# Methodology

1. Use mobile identification data and ASN information to declare a request to be “cellular”
2. We do not include mobile devices connected via WiFi.
3. Require 25,000 unique IP’s to qualify for inclusion as a region or country
4. In the first quarter of 2015, 62 countries/regions around the world qualified for inclusion in the mobile section, up from 50 in the fourth quarter of 2014.

# Variation across the world – Q1 - 2015

1. United Kingdom once again had the fastest average mobile connection speed at 20.4 Mbps, a 28% increase from the previous quarter.
2. Denmark was again in second place, at 10.0 Mbps, roughly half the speed of the United Kingdom.
3. Vietnam had the lowest average connection speed, at 1.3 Mbps.

| Country/Region | Q1 2015 Avg. Mbps | Q1 2015 Peak Mbps | % Above 4 Mbps |
|---|---|---|---|
| **AFRICA** | | | |
| Egypt | 2.6 | 15.8 | 9.6% |
| Morocco | 4.8 | 51.6 | 55% |
| South Africa | 2.5 | 10.4 | 17% |
| **ASIA PACIFIC** | | | |
| Australia | 7.6 | 149.3 | 96% |
| China | 4.7 | 15.8 | 56% |
| Hong Kong | 6.5 | 32.5 | 64% |
| India | 2.8 | 15.9 | 19% |
| Indonesia | 1.7 | 8.2 | 3.0% |
| Iran | 1.8 | 10.5 | 0.6% |
| Israel | 5.5 | 90.1 | 72% |
| Japan | 7.7 | 126.0 | 75% |
| Kazakhstan | 2.3 | 12.4 | 0.7% |
| Malaysia | 2.7 | 22.1 | 12% |
| Nepal | 4.0 | 8.4 | 41% |
| New Caledonia | 1.7 | 15.4 | 3.6% |
| New Zealand | 7.0 | 86.4 | 74% |
| Oman | 3.0 | 22.5 | 4.2% |
| Pakistan | 1.9 | 12.2 | 7.2% |
| Singapore | 7.5 | 116.4 | 82% |
| South Korea | 8.8 | 50.1 | 63% |
| Sri Lanka | 3.4 | 32.1 | 15% |
| Syrian Arab Republic | 2.2 | 14.7 | 6.3% |
| Taiwan | 5.1 | 38.0 | 62% |
| Thailand | 2.5 | 105.4 | 2.0% |
| United Arab Emirates | 4.8 | 77.4 | 91% |
| Vietnam | 1.3 | 22.7 | 0.4% |
| **EUROPE** | | | |
| Austria | 6.3 | 27.4 | 72% |
| Belgium | 5.8 | 36.7 | 80% |
| Croatia | 2.9 | 12.0 | 3.7% |
| Czech Republic | 5.5 | 20.4 | 63% |

| Country/Region | Q1 2015 Avg. Mbps | Q1 2015 Peak Mbps | % Above 4 Mbps |
|---|---|---|---|
| Denmark | 10.0 | 48.0 | 98% |
| France | 7.9 | 48.0 | 76% |
| Germany | 5.7 | 69.4 | 35% |
| Hungary | 3.7 | 24.6 | 26% |
| Iceland | 5.0 | 31.7 | 70% |
| Ireland | 7.4 | 44.5 | 72% |
| Italy | 6.1 | 53.7 | 72% |
| Lithuania | 4.7 | 27.4 | 54% |
| Moldova | 5.1 | 28.2 | 44% |
| Netherlands | 5.5 | 27.5 | 60% |
| Norway | 6.9 | 29.3 | 86% |
| Poland | 5.6 | 31.1 | 76% |
| Russia | 7.5 | 50.5 | 70% |
| Slovakia | 8.4 | 40.8 | 85% |
| Slovenia | 5.6 | 23.2 | 77% |
| Spain | 7.7 | 57.1 | 76% |
| Sweden | 8.9 | 44.6 | 97% |
| Turkey | 7.7 | 51.6 | 43% |
| Ukraine | 8.1 | 30.4 | 90% |
| United Kingdom | 20.4 | 90.9 | 95% |
| **NORTH AMERICA** | | | |
| Canada | 5.3 | 46.7 | 66% |
| El Salvador | 3.0 | 17.7 | 16% |
| Puerto Rico | 9.6 | 42.4 | 89% |
| United States | 4.0 | 17.8 | 27% |
| **SOUTH AMERICA** | | | |
| Argentina | 1.8 | 11.1 | 8.9% |
| Bolivia | 2.0 | 10.7 | 0.9% |
| Brazil | 2.5 | 20.7 | 7.2% |
| Chile | 2.5 | 16.8 | 8.5% |
| Colombia | 2.5 | 14.1 | 6.4% |
| Paraguay | 4.1 | 24.1 | 36% |
| Uruguay | 5.4 | 32.0 | 57% |
| Venezuela | 7.0 | 25.9 | 97% |

Figure 33: Average and Average Peak Connection Speeds, 4 Mbps Broadband Adoption for Mobile Connections by Country/Region

# Countries with high average speed above 4Mbps

- A total of 40 countries achieved average speeds at or above the 4 Mbps broadband level, up significantly from 30 countries in the fourth quarter.
  - Africa: Morocco, 4.8 Mbps
  - Asia Pacific: South Korea, 8.8 Mbps
  - Europe: United Kingdom, 20.4 Mbps
  - North America: Puerto Rico, 9.6 Mbps
  - South America: Venezuela, 7.0 Mbps

# Peak Mobile Speed

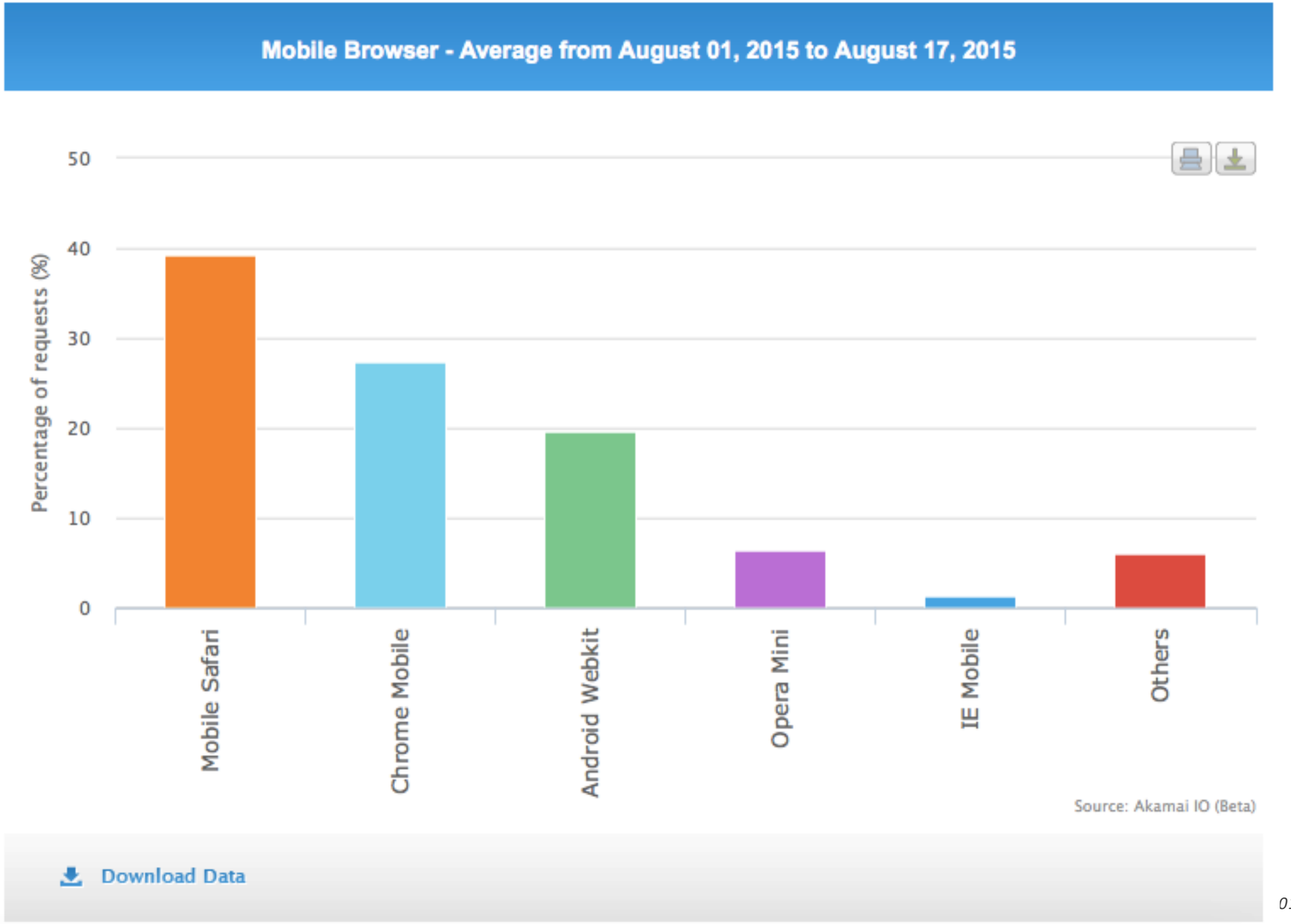
- Large range, from 149.3 Mbps in Australia to 8.2 Mbps in Indonesia.
- A total of four countries — Australia, Japan, Singapore, and Thailand — posted average peak speeds above 100 Mbps.
- Perhaps due to roll-out of LTE-A, the successor to 4G LTE, a total of 15 countries had average peak speeds above 50 Mbps.
- All but two countries — Nepal and Indonesia — saw average peak mobile connection speeds above 10 Mbps.
- Regional champs for peak speed:
  - Africa: Morocco, 51.6 Mbps
  - Asia Pacific: Australia, 149.3 Mbps
  - Europe: United Kingdom, 90.9 Mbps
  - North America: Canada, 46.7 Mbps
  - South America: Uruguay, 32.0 Mbps

# Fast Mobile Broadband

Definition: percentage of unique ip addresses connecting to Akamai from mobile network providers within the qualifying countries/regions at average speeds of over 4 Mbps

- Africa: Morocco, 55%
- Asia Pacific: Australia, 96%
- Europe: Denmark, 98%
- North America: Puerto Rico, 89%
- South America: Venezuela, 97%

# Mobile browser usage on cellular connections



# Global traffic growth – 2G + 3G + 4G

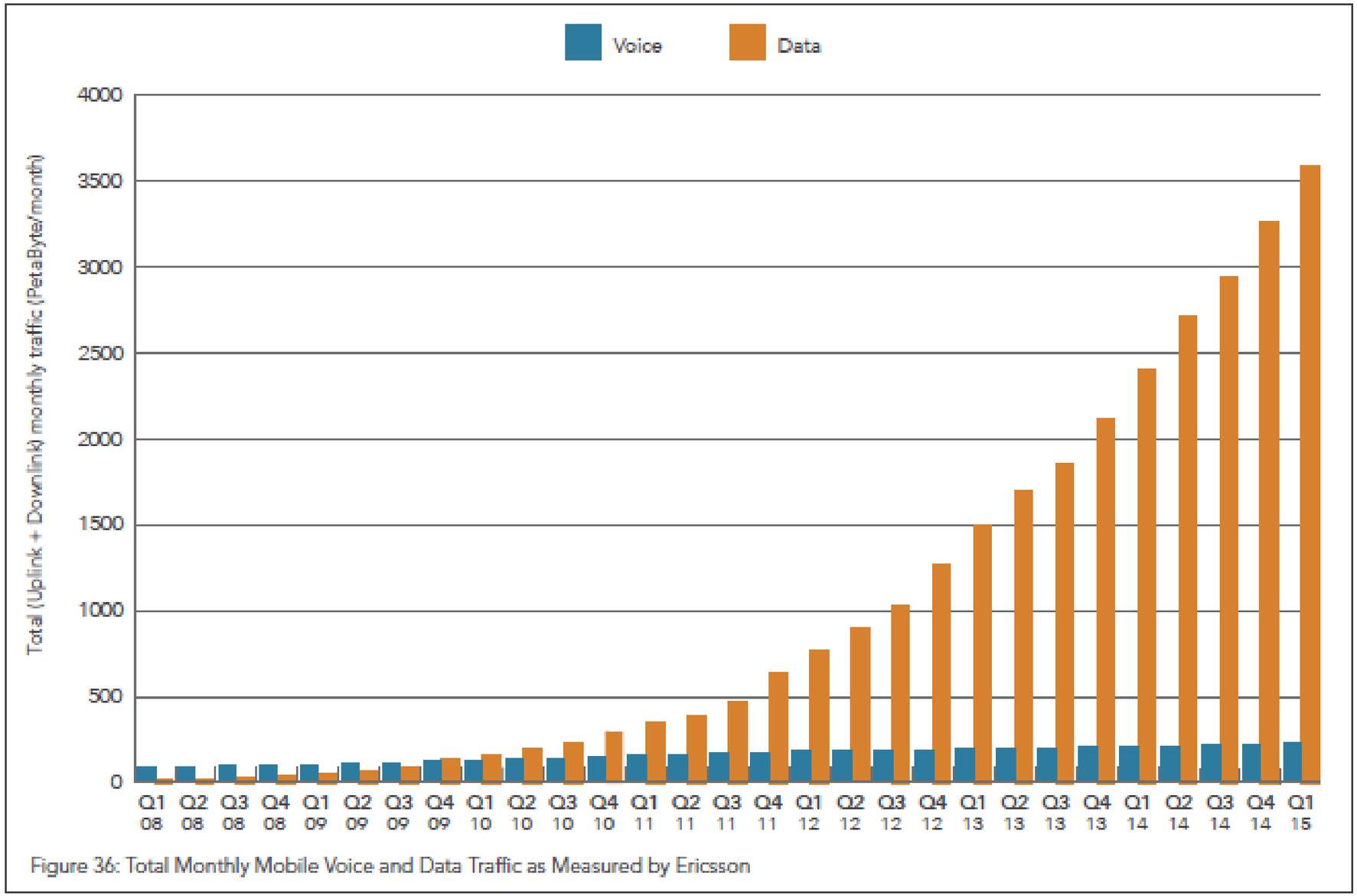



Figure 36: Total Monthly Mobile Voice and Data Traffic as Measured by Ericsson

# IPV6 adoption

| | Country/Region | Q1 2015 IPv6 Traffic % | QoQ Change |
|---|---|---|---|
| 1 | Belgium | 33% | 1.7% |
| 2 | Germany | 16% | 9.4% |
| 3 | United States | 14% | 16% |
| 4 | Peru | 13% | 18% |
| 5 | Luxembourg | 11% | -3.8% |
| 6 | Switzerland | 8.4% | -11% |
| 7 | Czech Republic | 8.2% | 17% |
| 8 | Norway | 8.1% | -1.3% |
| 9 | Greece | 8.0% | 24% |
| 10 | Portugal | 7.8% | 57% |

Figure 4: IPv6 Traffic Percentage, Top Countries/Regions

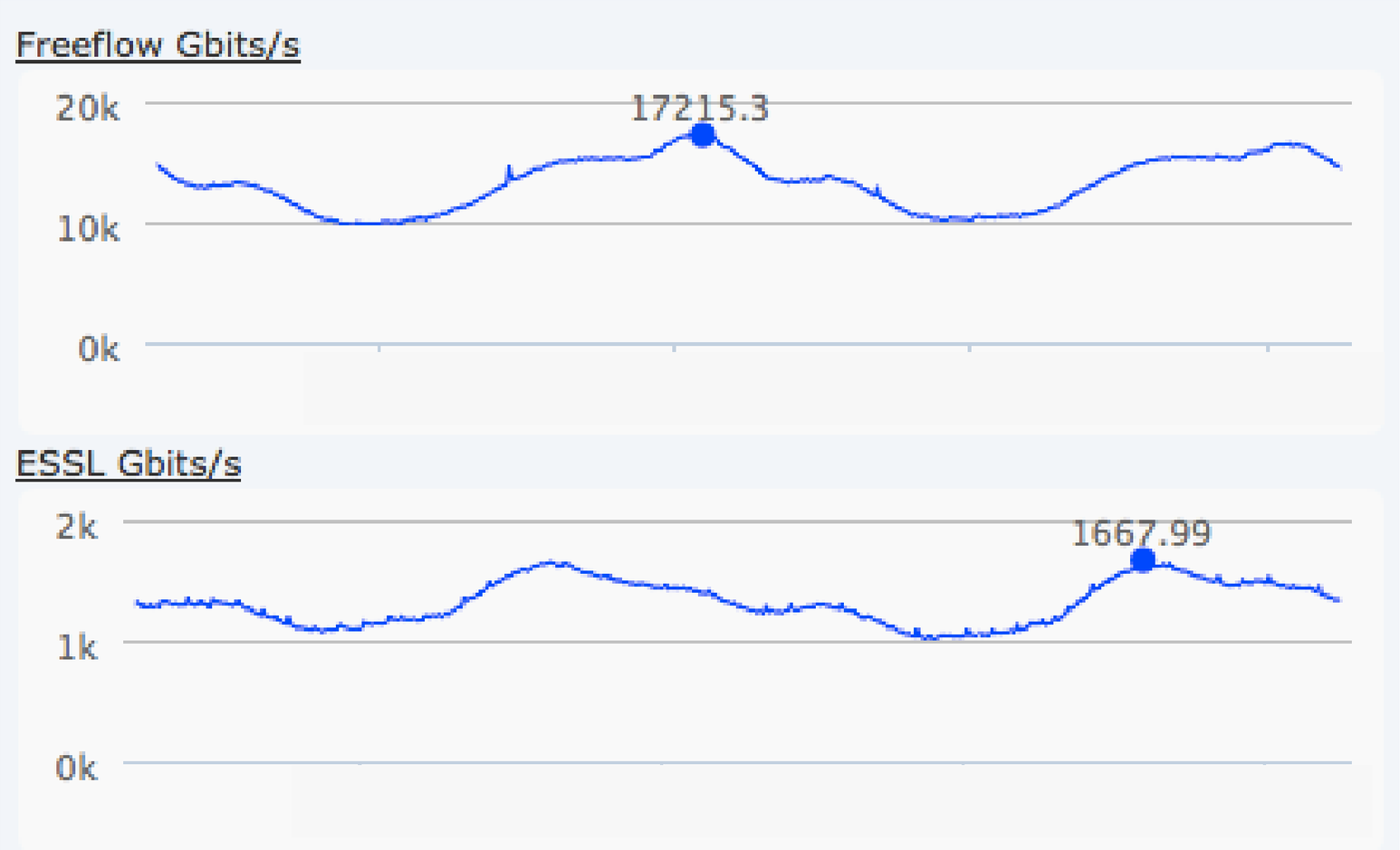
# Move to TLS delivery for all media – manifests + segments

- Security – media request cannot be intercepted
- Privacy – viewing habits cannot be inferred by inspecting traffic.
- Google page rank favoring sites delivered under https
- Any in-page media needs to match the protocol of the page it was loaded under. (MSE/EME/Flash clients)

***In case anyone was not aware, Netflix is also planning to migrate all our content to HTTPS, primarily on privacy grounds.***

**...Mark**

# Move to TLS delivery for media – manifests + segments

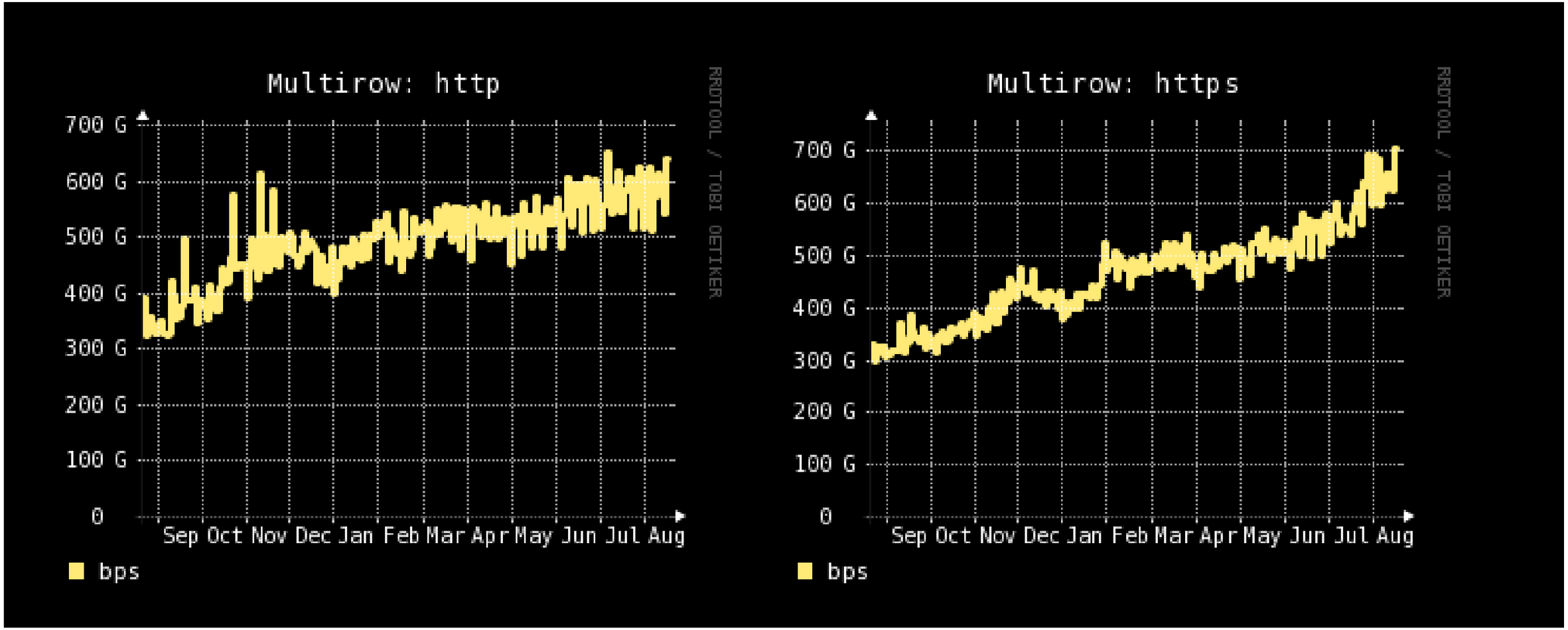



HTTP

(Approximate comparison across two subnets)

HTTPS

# Move to TLS delivery for media – manifests + segments



# User Data Caps & Business models

- One hour video at 3Mbps consumes 1.3GB
- Watching 8 such videos a month consumes the entirely of your current AT&T 10GB data cap.
- If throughput increases dramatically, then billing models need to change to allow this throughput to be used
- Solutions we would like to see more of in the transition to 5G
  - Simplified zero rated billing form content provider side
  - Differentiated bandwidth cost with time-of-consumption.
  - Operator incentives to flatten peak consumption through pre-delivery
  - Dynamic access to radio network congestion data to route-around, or back-off delivery.
  - Allow caching systems deep within the RAN

# Emerging Mobile BU

Leverage Akamai's core assets to develop products for mobile network operators

Extend Akamai's Edge deep into mobile networks & devices

Collaborate with other business units to improve & accelerate mobile solutions


Akamai
FASTER FORWARD