



## Western Europe - 2021 Forecast Highlights

### IP Traffic

- In Western Europe, IP traffic will grow 3-fold from 2016 to 2021, a compound annual growth rate of 22%.
- In Western Europe, IP traffic will reach 37.4 Exabytes per month in 2021, up from 14.0 Exabytes per month in 2016.
- Western Europe's IP networks will carry 1.2 Exabytes per day in 2021, up from 461 Petabytes per day in 2016.
- In Western Europe, IP traffic will reach an annual run rate of 448.7 Exabytes in 2021, up from an annual run rate of 168.2 Exabytes in 2016.
- In Western Europe, IP traffic will reach 89 Gigabytes per capita in 2021, up from 34 Gigabytes per capita in 2016.
- In Western Europe, average IP traffic will reach 114 Tbps in 2021, and busy hour traffic will reach 723 Tbps.
- In 2021, the gigabyte equivalent of all movies ever made will cross Western Europe's IP networks every 9 minutes.

### Internet Traffic

- In Western Europe, Internet traffic will grow 3.0-fold from 2016 to 2021, a compound annual growth rate of 24%.
- In Western Europe, busy hour Internet traffic will grow 4.4-fold from 2016 to 2021, a compound annual growth rate of 34%.
- In Western Europe, Internet traffic will reach 32.9 Exabytes per month in 2021, up from 11.2 Exabytes per month in 2016.

- Western Europe's Internet traffic will be 1.1 Exabytes per day in 2021, up from 370 Petabytes per day in 2016.
- Western Europe's Internet traffic in 2021 will be equivalent to 99 billion DVDs per year, 8 billion DVDs per month, or 11 million DVDs per hour.
- In 2021, the gigabyte equivalent of all movies ever made will cross the Internet every 11 minutes.
- Western European Internet traffic in 2021 will be equivalent to 72x the volume of the entire Western European Internet in 2005.
- In Western Europe, Internet traffic will reach 78 Gigabytes per capita in 2021, up from 27 Gigabytes per capita in 2016.
- In Western Europe, average Internet traffic will increase 3.0-fold by 2021 and will reach 100 Tbps.
- In Western Europe, busy hour Internet traffic will increase 4.4-fold by 2021 and will reach 637 Tbps.

### Wired Wi-Fi and Mobile Growth

- Western Europe's Fixed/Wi-Fi was 46% of total IP traffic in 2016, and will be 49% of total IP traffic in 2021.
- Western Europe's Fixed/Wired was 49% of total IP traffic in 2016, and will be 40% of total IP traffic in 2021.
- Western Europe's Mobile was 5% of total IP traffic in 2016, and will be 11% of total IP traffic in 2021.
- Western Europe's Fixed/Wi-Fi was 55.6% of total Internet traffic in 2016, and will be 55.1% of total Internet traffic in 2021.
- Western Europe's Fixed/Wired was 38% of total Internet traffic in 2016, and will be 33% of total Internet traffic in 2021.
- Western Europe's Mobile was 6.5% of total Internet traffic in 2016, and will be 12.2% of total Internet traffic in 2021.
- In Western Europe, mobile data traffic will grow 6-fold from 2016 to 2021, a compound annual growth rate of 41%.
- In Western Europe, mobile data traffic will reach 4.0 Exabytes per month in 2021, up from 724 Petabytes per month in 2016.
- Western European mobile data traffic will grow 2 times faster than Western European fixed IP traffic from 2016 to 2021.
- Western Europe's Mobile was 5% of total IP traffic in 2016, and will be 11% of total IP traffic in 2021.
- In Western Europe, mobile data traffic in 2021 will be equivalent to 8x the volume of the entire Western European Internet in 2005.

### IP Video

- In Western Europe, IP video traffic will grow 3-fold from 2016 to 2021, a compound annual growth rate of 25%.
- In Western Europe, IP video traffic will reach 29.9 Exabytes per month in 2021, up from 9.8 Exabytes per month in 2016.
- In Western Europe, IP video will be 80% of all IP traffic in 2021, up from 70% in 2016.
- In Western Europe, Ultra HD will be 20.2% of IP Video traffic in 2021, up from 1.2% in 2016 (119.7% CAGR).
- In Western Europe, HD will be 61.2% of IP Video traffic in 2021, up from 47.7% in 2016 (31.4% CAGR).
- In Western Europe, SD will be 18.6% of IP Video traffic in 2021, compared to 51.1% in 2016 (2.0% CAGR).

- In Western Europe, consumer IP video traffic will be 82% of consumer IP traffic in 2021, up from 76% in 2016.
- In Western Europe, business IP video traffic will be 69% of business IP traffic in 2021, up from 45% in 2016.

### Internet Video

- In Western Europe, Internet video traffic will grow 4-fold from 2016 to 2021, a compound annual growth rate of 29%.
- In Western Europe, Internet video traffic will reach 25.8 Exabytes per month in 2021, up from 7.4 Exabytes per month in 2016.
- In Western Europe, total Internet video traffic (business and consumer, combined) will be 78% of all Internet traffic in 2021, up from 66% in 2016.
- In Western Europe, Ultra HD will be 19.9% of Internet video traffic in 2021, up from 1.5% in 2016 (115.7% CAGR).
- In Western Europe, HD will be 60.6% of Internet video traffic in 2021, up from 39.0% in 2016 (40.4% CAGR).
- In Western Europe, SD will be 19.5% of Internet video traffic in 2021, compared to 59.5% in 2016 (2.8% CAGR).
- In Western Europe, consumer Internet video traffic will be 80% of consumer Internet traffic in 2021, up from 70% in 2016.
- In Western Europe, business Internet video traffic will be 71% of business Internet traffic in 2021, up from 48% in 2016.
- In Western Europe, Internet-Video-to-TV traffic will be 41% of fixed consumer Internet video traffic in 2021, up from 36% in 2016.
- In Western Europe, Internet-Video-to-TV traffic will increase 4-fold between 2016 and 2021 (29.8% CAGR).
- In Western Europe, 468 billion minutes (891,121 years) of video content will cross the Internet each month in 2021. That's 178,224 minutes of video streamed or downloaded every second.
- In Western Europe, 94% of all Internet video traffic will cross content delivery networks in 2021, up from 82% in 2016.
- In Western Europe, 75.3% of all Internet video traffic will be long-form video (including live) in 2021, up from 57.5% in 2016.
- In Western Europe, 13.5% of all Internet video traffic will be Live video in 2021, up from 2.9% in 2016.
- In Western Europe, Live Internet video traffic will increase 16-fold between 2016 and 2021 (74.5% CAGR).

### IP VOD

- In Western Europe, Ultra HD will be 24.4% of IP VOD traffic in 2021, up from 0.4% in 2016 (157.0% CAGR).
- In Western Europe, HD will be 72.4% of IP VOD traffic in 2021, up from 79.9% in 2016 (8.1% CAGR).
- In Western Europe, SD will be 3.3% of IP VOD traffic in 2021, compared to 19.8% in 2016 (-23.1% CAGR).

### Gaming

- In Western Europe, gaming traffic will grow 12-fold from 2016 to 2021, a compound annual growth rate of 63%.

- In Western Europe, gaming traffic will reach 2.3 Exabytes per month in 2021, up from 197 Petabytes per month in 2016.
- In Western Europe, gaming traffic will be 8% of consumer Internet traffic in 2021, up from 2% in 2016.

## Devices

- In Western Europe, there will be 3.8 billion networked devices in 2021, up from 2.2 billion in 2016.
- In Western Europe, there will be 8.9 networked devices per capita in 2021, up from 5.3 per capita in 2016.
- In Western Europe, 30% of all networked devices will be mobile-connected in 2021.
- In Western Europe, M2M modules will account for 63% (2.4 billion) of all networked devices in 2021, compared to 45% (991.5 million) in 2016, (19% CAGR).
- In Western Europe, PCs will account for 6% (208.3 million) of all networked devices in 2021, compared to 11% (234.0 million) in 2016, (-2.3% CAGR).
- In Western Europe, Tablets will account for 3% (121.1 million) of all networked devices in 2021, compared to 5% (120.6 million) in 2016, (0.1% CAGR).
- In Western Europe, Smartphones will account for 12% (448.3 million) of all networked devices in 2021, compared to 16% (348.2 million) in 2016, (5.2% CAGR).
- In Western Europe, Connected TVs will account for 13% (476.7 million) of all networked devices in 2021, compared to 15% (340.8 million) in 2016, (6.9% CAGR).
- In Western Europe, Non-Smartphones will account for 0.6% (22.8 million) of all networked devices in 2021, compared to 5% (115.2 million) in 2016, (-27.7% CAGR).
- In Western Europe, Other Portables will account for 3% (105.5 million) of all networked devices in 2021, compared to 3% (60.4 million) in 2016, (11.8% CAGR).
- In Western Europe, 4K TVs will account for 56% (106.2 million) of all flat panel TVs in 2021, compared to 12.9% (14.0 million) in 2016, (50.1% CAGR).
- Western Europe's IP traffic from non-PC devices was 50% of total IP traffic in 2016, and will be 73% of total IP traffic in 2021.
- In Western Europe, PCs accounted for 50% of IP traffic in 2016, and will be 27% of IP traffic in 2021.
- In Western Europe, TVs accounted for 31% of IP traffic in 2016, and will be 34% of IP traffic in 2021.
- In Western Europe, Smartphones accounted for 9% of IP traffic in 2016, and will be 21% of IP traffic in 2021.
- In Western Europe, Tablets accounted for 7% of IP traffic in 2016, and will be 10% of IP traffic in 2021.
- In Western Europe, M2M modules accounted for 3.1% of IP traffic in 2016, and will be 8.1% of IP traffic in 2021.
- In Western Europe, PCs accounted for 54% of consumer Internet traffic in 2016, and will be 26% of consumer Internet traffic in 2021.
- In Western Europe, TVs accounted for 22% of consumer Internet traffic in 2016, and will be 33% of consumer Internet traffic in 2021.
- In Western Europe, TVs accounted for 18% of total Internet traffic in 2016, and will be 27% of total Internet traffic in 2021.

## Speed Evolution

- In Western Europe, the average fixed broadband speed will grow 1.8-fold from 2016 to 2021, from 30.2 Mbps to 53.6 Mbps.
- In Western Europe, 97% of fixed broadband connections will be faster than 5 Mbps in 2021, up from 80% today.
- In Western Europe, 82% of fixed broadband connections will be faster than 10 Mbps in 2021, up from 61% today.
- In Western Europe, 57.2% of fixed broadband connections will be faster than 25 Mbps in 2021, up from 31.9% today.
- In Western Europe, 44.0% of fixed broadband connections will be faster than 50 Mbps in 2021, up from 18.2% today.
- In Western Europe, the average Wi-Fi speeds from mobile devices will grow 1.7-fold from 2016 to 2021, from 20.3 Mbps to 35 Mbps.
- In Western Europe, the average mobile connection speed will grow 3-fold from 2016 to 2021, reaching 28 Mbps in 2021.

## Traffic per User and Household

- In Western Europe, the average Internet user will generate 79.7 Gigabytes of Internet traffic per month in 2021, up 156% from 31.1 Gigabytes per month in 2016, a CAGR of 21%.
- In Western Europe, the average Internet household will generate 164.7 Gigabytes of Internet traffic per month in 2021, up 156% from 64.4 Gigabytes per month in 2016, a CAGR of 21%.
- In Western Europe, the average FTTx Internet household will generate 243.0 Gigabytes of Internet traffic per month in 2021, 56.8% more than other broadband households.
- In Western Europe, the average FTTx Internet household generated 109.8 Gigabytes of Internet traffic per month in 2016, 88.6% more than other broadband households.
- In Western Europe, there will be 33 million Internet households (23.2% of all Internet households) generating more than 250 Gigabytes per month in 2021.
- In Western Europe, there will be 12 million households (8.7% of all Internet households) generating more than 500 Gigabytes per month in 2021.
- In Western Europe, there will be 3 million households (2.4% of all Internet households) generating more than a terabyte per month in 2021.
- In Western Europe, the average mobile connection will generate 6,474 Megabytes of mobile data traffic per month in 2021, up from 1,345 Megabytes in 2016.

## Traffic Topology and Traffic Patterns

- In Western Europe, 44% of Internet traffic will be carried metro-to-metro in 2021, up from 27% in 2016.
- In Western Europe, 29% of Internet traffic will be carried on regional backbones (without touching cross-country backbones) in 2021, compared to 26% in 2016.
- In Western Europe, 26% of Internet traffic will traverse cross-country backbones in 2021, compared to 47% in 2016.
- In Western Europe, 84% of all Internet traffic will cross content delivery networks in 2021, up from 64% in 2016.
- In Western Europe, peak Internet traffic will grow at a compound annual growth rate of 34% from 2016 to 2021, compared to 24% for average Internet traffic.