



## United States - 2021 Forecast Highlights

### IP Traffic

- In the United States, IP traffic will grow 3-fold from 2016 to 2021, a compound annual growth rate of 20%.
- In the United States, IP traffic will reach 79.6 Exabytes per month in 2021, up from 31.4 Exabytes per month in 2016.
- The United States's IP networks will carry 2.6 Exabytes per day in 2021, up from 1.0 Exabytes per day in 2016.
- In the United States, IP traffic will reach an annual run rate of 955.7 Exabytes in 2021, up from an annual run rate of 376.2 Exabytes in 2016.
- In the United States, IP traffic will reach 237 Gigabytes per capita in 2021, up from 97 Gigabytes per capita in 2016.
- In the United States, average IP traffic will reach 242 Tbps in 2021, and busy hour traffic will reach 1.7 Pbps.
- In 2021, the gigabyte equivalent of all movies ever made will cross The United States's IP networks every 4 minutes.

### Internet Traffic

- In the United States, Internet traffic will grow 2.9-fold from 2016 to 2021, a compound annual growth rate of 24%.
- In the United States, busy hour Internet traffic will grow 4.0-fold from 2016 to 2021, a compound annual growth rate of 32%.
- In the United States, Internet traffic will reach 64.0 Exabytes per month in 2021, up from 21.7 Exabytes per month in 2016.

- The United States's Internet traffic will be 2.1 Exabytes per day in 2021, up from 710 Petabytes per day in 2016.
- The United States's Internet traffic in 2021 will be equivalent to 192 billion DVDs per year, 16 billion DVDs per month, or 22 million DVDs per hour.
- In 2021, the gigabyte equivalent of all movies ever made will cross the Internet every 5 minutes.
- U.S. Internet traffic in 2021 will be equivalent to 168x the volume of the entire U.S. Internet in 2005.
- In the United States, Internet traffic will reach 191 Gigabytes per capita in 2021, up from 67 Gigabytes per capita in 2016.
- In the United States, average Internet traffic will increase 2.9-fold by 2021 and will reach 195 Tbps.
- In the United States, busy hour Internet traffic will increase 4.0-fold by 2021 and will reach 1.3 Pbps.

### Wired Wi-Fi and Mobile Growth

- The United States's Fixed/Wi-Fi was 35% of total IP traffic in 2016, and will be 43% of total IP traffic in 2021.
- The United States's Fixed/Wired was 61% of total IP traffic in 2016, and will be 50% of total IP traffic in 2021.
- The United States's Mobile was 4% of total IP traffic in 2016, and will be 7% of total IP traffic in 2021.
- The United States's Fixed/Wi-Fi was 48.1% of total Internet traffic in 2016, and will be 51.5% of total Internet traffic in 2021.
- The United States's Fixed/Wired was 46% of total Internet traffic in 2016, and will be 40% of total Internet traffic in 2021.
- The United States's Mobile was 6.1% of total Internet traffic in 2016, and will be 8.8% of total Internet traffic in 2021.
- In the United States, mobile data traffic will grow 4-fold from 2016 to 2021, a compound annual growth rate of 34%.
- In the United States, mobile data traffic will reach 5.6 Exabytes per month in 2021, up from 1.3 Exabytes per month in 2016.
- U.S. mobile data traffic will grow 2 times faster than U.S. fixed IP traffic from 2016 to 2021.
- The United States's Mobile was 4% of total IP traffic in 2016, and will be 7% of total IP traffic in 2021.
- In the United States, mobile data traffic in 2021 will be equivalent to 12x the volume of the entire U.S. Internet in 2005.

### IP Video

- In the United States, IP video traffic will grow 3-fold from 2016 to 2021, a compound annual growth rate of 21%.
- In the United States, IP video traffic will reach 65.3 Exabytes per month in 2021, up from 25.4 Exabytes per month in 2016.
- In the United States, IP video will be 82% of all IP traffic in 2021, up from 81% in 2016.
- In the United States, Ultra HD will be 31.3% of IP Video traffic in 2021, up from 2.2% in 2016 (105.1% CAGR).
- In the United States, HD will be 56.5% of IP Video traffic in 2021, up from 56.7% in 2016 (20.7% CAGR).
- In the United States, SD will be 12.2% of IP Video traffic in 2021, compared to 41.1% in 2016 (-5.2% CAGR).

- In the United States, consumer IP video traffic will be 85% of consumer IP traffic in 2021, up from 86% in 2016.
- In the United States, business IP video traffic will be 67% of business IP traffic in 2021, up from 51% in 2016.

## Internet Video

- In the United States, Internet video traffic will grow 3-fold from 2016 to 2021, a compound annual growth rate of 25%.
- In the United States, Internet video traffic will reach 50.4 Exabytes per month in 2021, up from 16.3 Exabytes per month in 2016.
- In the United States, total Internet video traffic (business and consumer, combined) will be 79% of all Internet traffic in 2021, up from 75% in 2016.
- In the United States, Ultra HD will be 29.2% of Internet video traffic in 2021, up from 3.0% in 2016 (97.1% CAGR).
- In the United States, HD will be 57.2% of Internet video traffic in 2021, up from 43.9% in 2016 (32.2% CAGR).
- In the United States, SD will be 13.6% of Internet video traffic in 2021, compared to 53.0% in 2016 (-4.5% CAGR).
- In the United States, consumer Internet video traffic will be 81% of consumer Internet traffic in 2021, up from 79% in 2016.
- In the United States, business Internet video traffic will be 69% of business Internet traffic in 2021, up from 53% in 2016.
- In the United States, Internet-Video-to-TV traffic will be 51% of fixed consumer Internet video traffic in 2021, up from 50% in 2016.
- In the United States, Internet-Video-to-TV traffic will increase 3-fold between 2016 and 2021 (24.0% CAGR).
- In the United States, 389 billion minutes (740,569 years) of video content will cross the Internet each month in 2021. That's 148,114 minutes of video streamed or downloaded every second.
- In the United States, 99% of all Internet video traffic will cross content delivery networks in 2021, up from 86% in 2016.
- In the United States, 78.8% of all Internet video traffic will be long-form video (including live) in 2021, up from 59.3% in 2016.

## IP VOD

- In the United States, Ultra HD will be 40.8% of IP VOD traffic in 2021, up from 0.8% in 2016 (143.0% CAGR).
- In the United States, HD will be 57.7% of IP VOD traffic in 2021, up from 82.3% in 2016 (2.0% CAGR).
- In the United States, SD will be 1.5% of IP VOD traffic in 2021, compared to 17.0% in 2016 (-32.6% CAGR).

## Gaming

- In the United States, gaming traffic will grow 14-fold from 2016 to 2021, a compound annual growth rate of 69%.
- In the United States, gaming traffic will reach 5.0 Exabytes per month in 2021, up from 361 Petabytes per month in 2016.
- In the United States, gaming traffic will be 9% of consumer Internet traffic in 2021, up from 2% in 2016.

## Devices

- In the United States, there will be 4.4 billion networked devices in 2021, up from 2.5 billion in 2016.
- In the United States, there will be 13.2 networked devices per capita in 2021, up from 7.8 per capita in 2016.
- In the United States, 23% of all networked devices will be mobile-connected in 2021.
- In the United States, M2M modules will account for 65% (2.9 billion) of all networked devices in 2021, compared to 47% (1.2 billion) in 2016, (19.1% CAGR).
- In the United States, PCs will account for 7% (292.6 million) of all networked devices in 2021, compared to 11% (287.7 million) in 2016, (0.3% CAGR).
- In the United States, Tablets will account for 3% (119.0 million) of all networked devices in 2021, compared to 5% (122.2 million) in 2016, (-0.5% CAGR).
- In the United States, Smartphones will account for 8% (343.9 million) of all networked devices in 2021, compared to 9% (241.0 million) in 2016, (7.4% CAGR).
- In the United States, Connected TVs will account for 15% (646.2 million) of all networked devices in 2021, compared to 21% (534.9 million) in 2016, (3.9% CAGR).
- In the United States, Non-Smartphones will account for 0.2% (7.0 million) of all networked devices in 2021, compared to 3% (70.1 million) in 2016, (-36.9% CAGR).
- In the United States, Other Portables will account for 4% (163.8 million) of all networked devices in 2021, compared to 4% (95.0 million) in 2016, (11.5% CAGR).
- In the United States, 4K TVs will account for 77% (130.1 million) of all flat panel TVs in 2021, compared to 17.1% (17.1 million) in 2016, (50% CAGR).
- The United States's IP traffic from non-PC devices was 64% of total IP traffic in 2016, and will be 70% of total IP traffic in 2021.
- In the United States, PCs accounted for 36% of IP traffic in 2016, and will be 30% of IP traffic in 2021.
- In the United States, TVs accounted for 49% of IP traffic in 2016, and will be 45% of IP traffic in 2021.
- In the United States, Smartphones accounted for 8% of IP traffic in 2016, and will be 16% of IP traffic in 2021.
- In the United States, Tablets accounted for 4% of IP traffic in 2016, and will be 5% of IP traffic in 2021.
- In the United States, M2M modules accounted for 1.8% of IP traffic in 2016, and will be 4.6% of IP traffic in 2021.
- In the United States, PCs accounted for 44% of consumer Internet traffic in 2016, and will be 31% of consumer Internet traffic in 2021.
- In the United States, TVs accounted for 37% of consumer Internet traffic in 2016, and will be 41% of consumer Internet traffic in 2021.
- In the United States, TVs accounted for 31% of total Internet traffic in 2016, and will be 34% of total Internet traffic in 2021.

## Speed Evolution

- In the United States, the average fixed broadband speed will grow 2.1-fold from 2016 to 2021, from 36.1 Mbps to 75.5 Mbps.
- In the United States, 98% of fixed broadband connections will be faster than 5 Mbps in 2021, up from 87% today.
- In the United States, 93% of fixed broadband connections will be faster than 10 Mbps in 2021, up from 75% today.

- In the United States, 66.4% of fixed broadband connections will be faster than 25 Mbps in 2021, up from 42.8% today.
- In the United States, 51.9% of fixed broadband connections will be faster than 50 Mbps in 2021, up from 28.5% today.
- In the United States, the average Wi-Fi speeds from mobile devices will grow 2.0-fold from 2016 to 2021, from 28.1 Mbps to 56 Mbps.
- In the United States, the average mobile connection speed will grow 2-fold from 2016 to 2021, reaching 21 Mbps in 2021.

### Traffic per User and Household

- In the United States, the average Internet user will generate 189.6 Gigabytes of Internet traffic per month in 2021, up 168% from 70.8 Gigabytes per month in 2016, a CAGR of 22%.
- In the United States, the average Internet household will generate 463.0 Gigabytes of Internet traffic per month in 2021, up 169% from 172.3 Gigabytes per month in 2016, a CAGR of 22%.
- In the United States, the average FTTx Internet household will generate 869.9 Gigabytes of Internet traffic per month in 2021, 118.6% more than other broadband households.
- In the United States, the average FTTx Internet household generated 356.6 Gigabytes of Internet traffic per month in 2016, 128.6% more than other broadband households.
- In the United States, there will be 32 million Internet households (31.0% of all Internet households) generating more than 250 Gigabytes per month in 2021.
- In the United States, there will be 23 million households (22.0% of all Internet households) generating more than 500 Gigabytes per month in 2021.
- In the United States, there will be 17 million households (17.0% of all Internet households) generating more than a terabyte per month in 2021.
- In the United States, the average mobile connection will generate 11,910 Megabytes of mobile data traffic per month in 2021, up from 3,472 Megabytes in 2016.

### Traffic Topology and Traffic Patterns

- In the United States, 93% of all Internet traffic will cross content delivery networks in 2021, up from 76% in 2016.
- In the United States, peak Internet traffic will grow at a compound annual growth rate of 32% from 2016 to 2021, compared to 24% for average Internet traffic.