



Global - 2022 Forecast Highlights

IP Traffic

- Globally, IP traffic will grow 3-fold from 2017 to 2022, a compound annual growth rate of 26%.
- Globally, IP traffic will reach 396.0 EB per month by 2022, up from 122.4 EB per month in 2017.
- Global IP networks will carry 13.0 EB per day by 2022, up from 4.0 EB per day in 2017.
- Globally, IP traffic will reach an annual run rate of 4.8 ZB by 2022, up from an annual run rate of 1.5 ZB in 2017.
- Globally, IP traffic will reach 50 gigabytes per capita by 2022, up from 16 gigabytes per capita in 2017.
- Globally, average IP traffic will reach 1 Pbps by 2022, and busy hour traffic will reach 7.2 Pbps.
- By 2022, the gigabyte equivalent of all movies ever made will cross Global IP networks every 1 minutes.

Internet Traffic

- Globally, Internet traffic will grow 3.7-fold from 2017 to 2022, a compound annual growth rate of 30%.
- Globally, busy hour Internet traffic will grow 4.8-fold from 2017 to 2022, a compound annual growth rate of 37%.
- Globally, Internet traffic will reach 350.8 EB per month by 2022, up from 96.0 EB per month in 2017.
- Global Internet traffic will be 11.5 EB per day by 2022, up from 3.2 EB per day in 2017.
- Global Internet traffic by 2022 will be equivalent to 1 trillion DVDs per year, 88 billion DVDs per month, or 120 million DVDs per hour.

- By 2022, the gigabyte equivalent of all movies ever made will cross the Internet every 1 minutes.
- Global Internet traffic by 2022 will be equivalent to 193x the volume of the entire Global Internet in 2005.
- Globally, Internet traffic will reach 44 gigabytes per capita by 2022, up from 13 gigabytes per capita in 2017.
- Globally, average Internet traffic will increase 3.7-fold by 2022 and will reach 1 Pbps.
- Globally, busy hour Internet traffic will increase 4.8-fold by 2022 and will reach 6.4 Pbps.
- Globally, the total number of DDoS attacks will grow 1.9-fold from 2017 to 2022, a compound annual growth rate of 14%.
- Globally, the total number of DDoS attacks will be 14.5 million per year by 2022, up from 7.5 million per year in 2017.

Wired/Wi-Fi and Mobile Growth

- Global fixed/Wi-Fi was 43% of total IP traffic in 2017, and will be 51% of total IP traffic by 2022.
- Global fixed/wired was 48% of total IP traffic in 2017, and will be 29% of total IP traffic by 2022.
- Global mobile was 9% of total IP traffic in 2017, and will be 20% of total IP traffic by 2022.
- Global fixed/Wi-Fi was 53.0% of total Internet traffic in 2017, and will be 56.8% of total Internet traffic by 2022.
- Global fixed/wired was 35% of total Internet traffic in 2017, and will be 21% of total Internet traffic by 2022.
- Globally, mobile data traffic will grow 7-fold from 2017 to 2022, a compound annual growth rate of 46%.
- Globally, mobile data traffic will reach 77.5 EB per month by 2022, up from 11.5 EB per month in 2017.
- Global mobile data traffic will grow 2.0 times faster than fixed IP traffic from 2017 to 2022.
- Global mobile was 9% of total IP traffic in 2017, and will be 20% of total IP traffic by 2022.
- Global mobile was 12.0% of total Internet traffic in 2017, and will be 22.1% of total Internet traffic by 2022.
- Globally, mobile data traffic by 2022 will be equivalent to 38x the volume of the entire Global Internet in 2005.

IP Video

- Globally, IP video traffic will grow 4-fold from 2017 to 2022, a compound annual growth rate of 29%.
- Globally, IP video traffic will reach 325.4 EB per month by 2022, up from 91.3 EB per month in 2017.
- Globally, IP video will be 82% of all IP traffic by 2022, up from 75% in 2017.
- Globally, Ultra HD will be 22.3% of IP video traffic by 2022, up from 3.3% in 2017 (89.1% CAGR).
- Globally, HD will be 56.8% of IP video traffic by 2022, up from 46.4% in 2017 (34.2% CAGR).
- Globally, SD will be 20.9% of IP video traffic by 2022, compared to 50.3% in 2017 (8.2% CAGR).
- Globally, consumer IP video traffic will be 84% of consumer IP traffic by 2022, up from 79% in 2017.
- Globally, business IP video traffic will be 71% of business IP traffic by 2022, up from 54% in 2017.

Internet Video

- Globally, Internet video traffic will grow 4-fold from 2017 to 2022, a compound annual growth rate of 33%.
- Globally, Internet video traffic will reach 282.3 EB per month by 2022, up from 66.9 EB per month in 2017.
- Globally, total Internet video traffic (business and consumer, combined) will be 80% of all Internet traffic by 2022, up from 70% in 2017.
- Globally, Ultra HD will be 20.3% of Internet video traffic by 2022, up from 3.7% in 2017 (87.2% CAGR).
- Globally, HD will be 56.2% of Internet video traffic by 2022, up from 36.1% in 2017 (45.7% CAGR).
- Globally, SD will be 23.4% of Internet video traffic by 2022, compared to 60.2% in 2017 (10.4% CAGR).
- Globally, consumer Internet video traffic will be 82% of consumer Internet traffic by 2022, up from 73% in 2017.
- Globally, business Internet video traffic will be 73% of business Internet traffic by 2022, up from 56% in 2017.
- Globally, Internet-Video-to-TV traffic will be 27% of fixed consumer Internet video traffic by 2022, from 33% in 2017.
- Globally, Internet-Video-to-TV traffic will increase 3-fold between 2017 and 2022 (24.0% CAGR).
- Globally, 3 trillion minutes (5 million years) of video content will cross the Internet each month by 2022. That's 1.1 million minutes of video streamed or downloaded every second.
- Globally, 79% of all Internet video traffic will cross content delivery networks by 2022, up from 70% in 2017.
- Globally, 3.4% of all Internet video traffic will be due to Video Surveillance by 2022, up from 2.2% in 2017.
- Globally, Internet Video Surveillance traffic will increase 7-fold between 2017 and 2022 (45.9% CAGR).
- Globally, 1.3% of all entertainment traffic (Internet video and gaming) will be due to Virtual Reality by 2022, up from 0.2% in 2017.
- Globally, Virtual Reality traffic will increase 12-fold between 2017 and 2022 (65.3% CAGR).
- Globally, 82.3% of all Internet video traffic will be long-form video (including live) by 2022, up from 68.1% in 2017.
- Globally, 17.1% of all Internet video traffic will be Live video by 2022, up from 4.7% in 2017.
- Globally, Live Internet video traffic will increase 15-fold between 2017 and 2022 (72.7% CAGR).

IP VoD

- Globally, Ultra HD will be 35.1% of IP VoD traffic by 2022, up from 2.1% in 2017 (97.1% CAGR).
- Globally, HD will be 60.6% of IP VoD traffic by 2022, up from 75.0% in 2017 (7.2% CAGR).
- Globally, SD will be 4.3% of IP VoD traffic by 2022, compared to 23.0% in 2017 (-20.0% CAGR).

Gaming

- Globally, gaming traffic will grow 9-fold from 2017 to 2022, a compound annual growth rate of 55%.
- Globally, gaming traffic will reach 16.0 EB per month by 2022, up from 1.8 EB per month in 2017.
- Globally, gaming traffic will be 4% of total IP traffic by 2022, up from 1% in 2017.

Devices

- Globally, there will be 28.5 billion networked devices by 2022, up from 18.0 billion in 2017.
- Globally, there will be 3.6 networked devices per capita by 2022, up from 2.4 per capita in 2017.
- Globally, 43% of all networked devices will be mobile-connected by 2022.
- Globally, M2M modules will account for 51% (14.6 billion) of all networked devices by 2022, compared to 34% (6.1 billion) in 2017, (18.9% CAGR).
- Globally, PCs will account for 4% (1.2 billion) of all networked devices by 2022, compared to 8% (1.4 billion) in 2017, (-2.5% CAGR).
- Globally, tablets will account for 3% (790.2 million) of all networked devices by 2022, compared to 3% (615.6 million) in 2017, (5.1% CAGR).
- Globally, smartphones will account for 24% (6.7 billion) of all networked devices by 2022, compared to 24% (4.3 billion) in 2017, (9.2% CAGR).
- Globally, connected TVs will account for 11% (3.2 billion) of all networked devices by 2022, compared to 13% (2.3 billion) in 2017, (7.2% CAGR).
- Globally, non-smartphones will account for 4.2% (1.2 billion) of all networked devices by 2022, compared to 16% (3.0 billion) in 2017, (-16.5% CAGR).
- Globally, other portables will account for 3% (728.0 million) of all networked devices by 2022, compared to 2% (290.6 million) in 2017, (20.2% CAGR).
- Globally, 4K TVs will account for 62% (798.7 million) of all flat panel TVs by 2022, compared to 22.9% (162.2 million) in 2017, (37.6% CAGR).
- Global IP traffic from non-PC devices was 59% of total IP traffic in 2017, and will be 81% of total IP traffic by 2022.
- Globally, PCs accounted for 41% of IP traffic in 2017, and will be 19% of IP traffic by 2022.
- Globally, TVs accounted for 32% of IP traffic in 2017, and will be 24% of IP traffic by 2022.
- Globally, smartphones accounted for 18% of IP traffic in 2017, and will be 44% of IP traffic by 2022.
- Globally, tablets accounted for 5% of IP traffic in 2017, and will be 6% of IP traffic by 2022.
- Globally, M2M modules accounted for 3.1% of IP traffic in 2017, and will be 6.4% of IP traffic by 2022.
- Globally, PCs accounted for 44% of consumer Internet traffic in 2017, and will be 16% of consumer Internet traffic by 2022.

- Globally, TVs accounted for 21% of consumer Internet traffic in 2017, and will be 19% of consumer Internet traffic by 2022.
- Globally, TVs accounted for 17% of total Internet traffic in 2017, and will be 16% of total Internet traffic by 2022.

Speed Evolution

- Globally, the average fixed broadband speed will grow 1.9-fold from 2017 to 2022, from 39.0 Mbps to 75.4 Mbps.
- Globally, 98% of fixed broadband connections will be faster than 5 Mbps by 2022, up from 84% today.
- Globally, 95% of fixed broadband connections will be faster than 10 Mbps by 2022, up from 69% today.
- Globally, 79.0% of fixed broadband connections will be faster than 25 Mbps by 2022, up from 42.4% today.
- Globally, 62.9% of fixed broadband connections will be faster than 50 Mbps by 2022, up from 29.2% today.
- Globally, the average Wi-Fi speeds from mobile devices will grow 2.2-fold from 2017 to 2022, from 24.4 Mbps to 54 Mbps.
- Globally, the average mobile connection speed will grow 3-fold from 2017 to 2022, reaching 29 Mbps by 2022.

Average Traffic per User and Household

- Globally, the average Internet user will generate 84.6 gigabytes of Internet traffic per month by 2022, up 194% from 28.8 gigabytes per month in 2017, a CAGR of 24%.
- Globally, the average Internet household will generate 240.4 gigabytes of Internet traffic per month by 2022, up 193% from 82.0 gigabytes per month in 2017, a CAGR of 24%.
- Globally, the average FTTx Internet household will generate 263.7 gigabytes of Internet traffic per month by 2022, 22.9% more than other broadband households.
- Globally, the average FTTx Internet household generated 85.6 gigabytes of Internet traffic per month in 2017, 9.1% more than other broadband households.
- Globally, there will be 224 million Internet households (24.8% of all Internet households) generating more than 250 gigabytes per month by 2022.
- Globally, there will be 121 million households (13.4% of all Internet households) generating more than 500 gigabytes per month by 2022.
- Globally, there will be 45 million households (5.0% of all Internet households) generating more than a terabyte per month by 2022.
- Globally, the average mobile connection will generate 8.8 gigabytes of mobile data traffic per month by 2022, up from 1.6 gigabytes in 2017.

Traffic Topology and Traffic Patterns

- Globally, 33% of Service Provider network capacity will be in metro segment by 2022, up from 27% in 2017.
- Globally, 24% of Service Provider network capacity will be in regional backbones (without touching cross-country backbones) by 2022, compared to 25% in 2017.
- Globally, 43% of Service Provider network capacity will be in cross-country backbones by 2022, compared to 48% in 2017.
- Globally, 72% of all Internet traffic will cross content delivery networks by 2022, up from 56% in 2017.
- Globally, peak Internet traffic will grow at a compound annual growth rate of 37% from 2017 to 2021, compared to 30% for average Internet traffic.