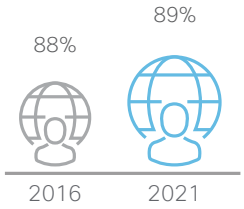
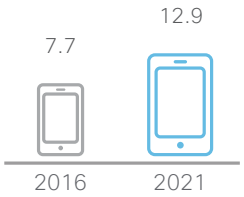
North America

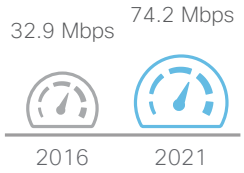
Internet Users: % of Population



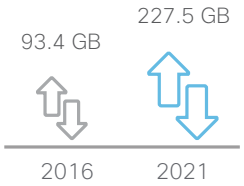
Devices and Connections per Capita



Average Speeds



Average Traffic per Capita per Month



North America – 2021 Forecast Highlights

IP Traffic

- In North America, IP traffic will grow 3-fold from 2016 to 2021, a compound annual growth rate of 20%.
- In North America, IP traffic will reach 85.0 Exabytes per month in 2021, up from 33.6 Exabytes per month in 2016.
- North America's IP networks will carry 2.8 Exabytes per day in 2021, up from 1.1 Exabytes per day in 2016.
- In North America, IP traffic will reach an annual run rate of 1.0 Zettabytes in 2021, up from an annual run rate of 403.8 Exabytes in 2016.
- In North America, IP traffic will reach 228 Gigabytes per capita in 2021, up from 93 Gigabytes per capita in 2016.
- In North America, average IP traffic will reach 259 Tbps in 2021, and busy hour traffic will reach 1.8 Pbps.
- In 2021, the gigabyte equivalent of all movies ever made will cross North America's IP networks every 4 minutes.

Internet Traffic

- In North America, Internet traffic will grow 2.9-fold from 2016 to 2021, a compound annual growth rate of 24%.
- In North America, busy hour Internet traffic will grow 4.0-fold from 2016 to 2021, a compound annual growth rate of 32%.
- In North America, Internet traffic will reach 68.3 Exabytes per month in 2021, up from 23.3 Exabytes per month in 2016.
- North America's Internet traffic will be 2.2 Exabytes per day in 2021, up from 770 Petabytes per day in 2016.

- North America's Internet traffic in 2021 will be equivalent to 205 billion DVDs per year, 17 billion DVDs per month, or 23 million DVDs per hour.
- In 2021, the gigabyte equivalent of all movies ever made will cross the Internet every 5 minutes.
- North American Internet traffic in 2021 will be equivalent to 154x the volume of the entire North American Internet in 2005.
- In North America, Internet traffic will reach 183 Gigabytes per capita in 2021, up from 65 Gigabytes per capita in 2016.
- In North America, average Internet traffic will increase 2.9-fold by 2021 and will reach 208 Tbps.
- In North America, busy hour Internet traffic will increase 4.0-fold by 2021 and will reach 1.4 Pbps.

Wired Wi-Fi and Mobile Growth

- North America's Fixed/Wi-Fi was 35% of total IP traffic in 2016, and will be 43% of total IP traffic in 2021.
- North America's Fixed/Wired was 61% of total IP traffic in 2016, and will be 50% of total IP traffic in 2021.
- North America's Mobile was 4% of total IP traffic in 2016, and will be 7% of total IP traffic in 2021.
- North America's Fixed/Wi-Fi was 48.4% of total Internet traffic in 2016, and will be 51.6% of total Internet traffic in 2021.
- North America's Fixed/Wired was 46% of total Internet traffic in 2016, and will be 40% of total Internet traffic in 2021.
- North America's Mobile was 5.9% of total Internet traffic in 2016, and will be 8.6% of total Internet traffic in 2021.
- In North America, mobile data traffic will grow 4-fold from 2016 to 2021, a compound annual growth rate of 34%.
- In North America, mobile data traffic will reach 5.9 Exabytes per month in 2021, up from 1.4 Exabytes per month in 2016.
- North American mobile data traffic will grow 2 times faster than North American fixed IP traffic from 2016 to 2021.
- North America's Mobile was 4% of total IP traffic in 2016, and will be 7% of total IP traffic in 2021.
- In North America, mobile data traffic in 2021 will be equivalent to 11x the volume of the entire North American Internet in 2005.

IP Video

- In North America, IP video traffic will grow 3-fold from 2016 to 2021, a compound annual growth rate of 21%.
- In North America, IP video traffic will reach 69.5 Exabytes per month in 2021, up from 27.1 Exabytes per month in 2016.
- In North America, IP video will be 82% of all IP traffic in 2021, up from 81% in 2016.
- In North America, Ultra HD will be 31.0% of IP Video traffic in 2021, up from 2.2% in 2016 (105.2% CAGR).
- In North America, HD will be 56.7% of IP Video traffic in 2021, up from 56.5% in 2016 (20.8% CAGR).
- In North America, SD will be 12.3% of IP Video traffic in 2021, compared to 41.3% in 2016 (-5.3% CAGR).
- In North America, consumer IP video traffic will be 85% of consumer IP traffic in 2021, up from 86% in 2016.
- In North America, business IP video traffic will be 66% of business IP traffic in 2021, up from 50% in 2016.

Internet Video

- In North America, Internet video traffic will grow 3-fold from 2016 to 2021, a compound annual growth rate of 25%.
- In North America, Internet video traffic will reach 53.6 Exabytes per month in 2021, up from 17.3 Exabytes per month in 2016.
- In North America, total Internet video traffic (business and consumer, combined) will be 78% of all Internet traffic in 2021, up from 74% in 2016.
- In North America, Ultra HD will be 29.1% of Internet video traffic in 2021, up from 3.0% in 2016 (97.4% CAGR).
- In North America, HD will be 57.2% of Internet video traffic in 2021, up from 43.8% in 2016 (32.2% CAGR).
- In North America, SD will be 13.6% of Internet video traffic in 2021, compared to 53.2% in 2016 (-4.6% CAGR).
- In North America, consumer Internet video traffic will be 81% of consumer Internet traffic in 2021, up from 79% in 2016.
- In North America, business Internet video traffic will be 69% of business Internet traffic in 2021, up from 52% in 2016.
- In North America, Internet-Video-to-TV traffic will be 51% of fixed consumer Internet video traffic in 2021, up from 50% in 2016.
- In North America, Internet-Video-to-TV traffic will increase 3-fold between 2016 and 2021 (24.0% CAGR).
- In North America, 450 billion minutes (855,951 years) of video content will cross the Internet each month in 2021. That's 171,190 minutes of video streamed or downloaded every second.
- In North America, 99% of all Internet video traffic will cross content delivery networks in 2021, up from 86% in 2016.
- In North America, 78.8% of all Internet video traffic will be long-form video (including live) in 2021, up from 59.2% in 2016.
- In North America, 14.1% of all Internet video traffic will be Live video in 2021, up from 3.0% in 2016.
- In North America, Live Internet video traffic will increase 14-fold between 2016 and 2021 (70.7% CAGR).

IP VOD

- In North America, Ultra HD will be 40.0% of IP VOD traffic in 2021, up from 0.7% in 2016 (143.0% CAGR).
- In North America, HD will be 58.4% of IP VOD traffic in 2021, up from 82.1% in 2016 (2.3% CAGR).
- In North America, SD will be 1.6% of IP VOD traffic in 2021, compared to 17.1% in 2016 (-31.6% CAGR).

Gaming

- In North America, gaming traffic will grow 14-fold from 2016 to 2021, a compound annual growth rate of 68%.
- In North America, gaming traffic will reach 5.3 Exabytes per month in 2021, up from 392 Petabytes per month in 2016.
- In North America, gaming traffic will be 9% of consumer Internet traffic in 2021, up from 2% in 2016.

Devices

- In North America, there will be 4.8 billion networked devices in 2021, up from 2.8 billion in 2016.
- In North America, there will be 12.9 networked devices per capita in 2021, up from 7.7 per capita in 2016.
- In North America, 23% of all networked devices will be mobile-connected in 2021.
- In North America, M2M modules will account for 65% (3.1 billion) of all networked devices in 2021, compared to 47% (1.3 billion) in 2016, (19.1% CAGR).
- In North America, PCs will account for 7% (317.1 million) of all networked devices in 2021, compared to 11% (312.8 million) in 2016, (0.3% CAGR).
- In North America, Tablets will account for 3% (129.3 million) of all networked devices in 2021, compared to 5% (133.7 million) in 2016, (-0.7% CAGR).
- In North America, Smartphones will account for 8% (373.4 million) of all networked devices in 2021, compared to 10% (264.2 million) in 2016, (7.2% CAGR).
- In North America, Connected TVs will account for 14% (699.4 million) of all networked devices in 2021, compared to 21% (577.0 million) in 2016, (3.9% CAGR).
- In North America, Non-Smartphones will account for 0.2% (7.6 million) of all networked devices in 2021, compared to 3% (74.6 million) in 2016, (-36.6% CAGR).
- In North America, Other Portables will account for 4% (179.5 million) of all networked devices in 2021, compared to 4% (103.0 million) in 2016, (11.7% CAGR).
- In North America, 4K TVs will account for 75% (139.0 million) of all flat panel TVs in 2021, compared to 16.6% (18.2 million) in 2016, (50.2% CAGR).
- North America's IP traffic from non-PC devices was 63% of total IP traffic in 2016, and will be 70% of total IP traffic in 2021.
- In North America, PCs accounted for 37% of IP traffic in 2016, and will be 30% of IP traffic in 2021.
- In North America, TVs accounted for 49% of IP traffic in 2016, and will be 44% of IP traffic in 2021.
- In North America, Smartphones accounted for 8% of IP traffic in 2016, and will be 15% of IP traffic in 2021.
- In North America, Tablets accounted for 5% of IP traffic in 2016, and will be 5% of IP traffic in 2021.
- In North America, M2M modules accounted for 1.8% of IP traffic in 2016, and will be 4.7% of IP traffic in 2021.
- In North America, PCs accounted for 45% of consumer Internet traffic in 2016, and will be 31% of consumer Internet traffic in 2021.
- In North America, TVs accounted for 36% of consumer Internet traffic in 2016, and will be 41% of consumer Internet traffic in 2021.
- In North America, TVs accounted for 30% of total Internet traffic in 2016, and will be 34% of total Internet traffic in 2021.

Speed Evolution

- In North America, the average fixed broadband speed will grow 2.3-fold from 2016 to 2021, from 32.9 Mbps to 74.2 Mbps.
- In North America, 98% of fixed broadband connections will be faster than 5 Mbps in 2021, up from 87% today.
- In North America, 92% of fixed broadband connections will be faster than 10 Mbps in 2021, up from 74% today.

- In North America, 64.9% of fixed broadband connections will be faster than 25 Mbps in 2021, up from 41.2% today.
- In North America, 50.7% of fixed broadband connections will be faster than 50 Mbps in 2021, up from 27.0% today.
- In North America, the average Wi-Fi speeds from mobile devices will grow 1.9-fold from 2016 to 2021, from 27.4 Mbps to 52 Mbps.
- In North America, the average mobile connection speed will grow 2-fold from 2016 to 2021, reaching 25 Mbps in 2021.

Traffic per User and Household

- In North America, the average Internet user will generate 180.1 Gigabytes of Internet traffic per month in 2021, up 165% from 67.9 Gigabytes per month in 2016, a CAGR of 22%.
- In North America, the average Internet household will generate 437.2 Gigabytes of Internet traffic per month in 2021, up 166% from 164.3 Gigabytes per month in 2016, a CAGR of 22%.
- In North America, the average FTTx Internet household will generate 821.7 Gigabytes of Internet traffic per month in 2021, 118.3% more than other broadband households.
- In North America, the average FTTx Internet household generated 347.9 Gigabytes of Internet traffic per month in 2016, 133.9% more than other broadband households.
- In North America, there will be 35 million Internet households (29.9% of all Internet households) generating more than 250 Gigabytes per month in 2021.
- In North America, there will be 25 million households (21.6% of all Internet households) generating more than 500 Gigabytes per month in 2021.
- In North America, there will be 18 million households (15.6% of all Internet households) generating more than a terabyte per month in 2021.
- In North America, the average mobile connection will generate 11,351 Megabytes of mobile data traffic per month in 2021, up from 3,310 Megabytes in 2016.

Traffic Topology and Traffic Patterns

- In North America, 51% of Internet traffic will be carried metro-to-metro in 2021, up from 35% in 2016.
- In North America, 34% of Internet traffic will be carried on regional backbones (without touching cross-country backbones) in 2021, compared to 33% in 2016.
- In North America, 15% of Internet traffic will traverse cross-country backbones in 2021, compared to 32% in 2016.
- In North America, 93% of all Internet traffic will cross content delivery networks in 2021, up from 76% in 2016.
- In North America, peak Internet traffic will grow at a compound annual growth rate of 32% from 2016 to 2021, compared to 24% for average Internet traffic.