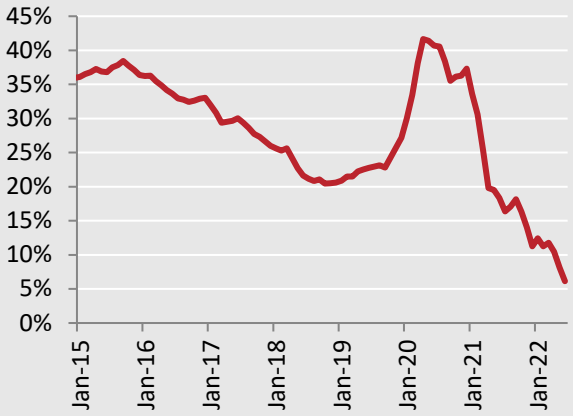
Patterns of fixed traffic growth, 2022

This note[2] considers the growth of broadband traffic per fixed line in various countries[3] around the world. In summary, we find that the pattern of declining traffic growth, already evident before the pandemic, has reasserted itself as lockdowns have eased around the world (Figure 1). While some of this may be due to growth being 'brought forward' by the pandemic, there is increasing evidence that lower growth rates are in fact the new normal. Slowing VOD adoption and natural limits on the number of hours that can be spent online in a day are likely key factors in decelerating growth.

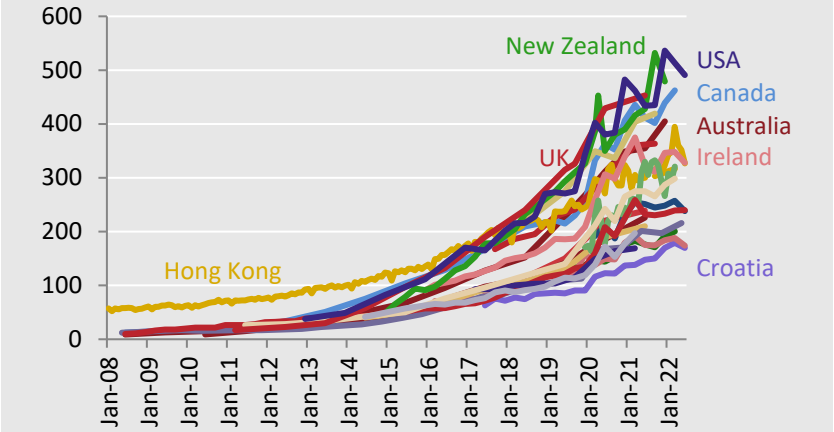
Figure 1: Year-on-year growth in traffic per fixed broadband line, average across countries[1]



Traffic levels

We begin by looking at absolute levels of traffic. It is no surprise that (broadly) traffic per line continues to grow:

Figure 2: Traffic per fixed broadband line, GB/month (23 countries)[4]



Multiple countries now exceed 400 GB per line per month, roughly equivalent to 10 hours of streamed HD video per day per household. These are average figures, and individual users will be well above this.

[1] See Footnotes 4 and 8 for sources and caveats

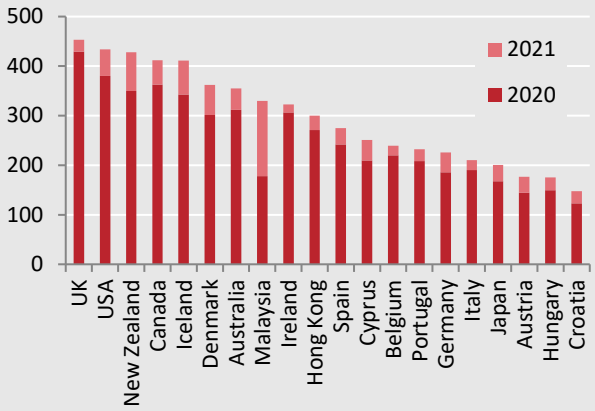
[2] Previous analyses are available at Communications Chambers, *Patterns of internet traffic growth*, April 2018 and *Patterns of internet traffic growth 2021*, October 2021

[3] Countries are those for which relevant data could be identified, which are primarily more developed countries

[4] Sourced from relevant national regulatory authorities or government statistical services, with the exception of New Zealand (sourced from Chorus) and the US (from OpenVault). Figures are average for both business and residential lines, except for the UK which (from 2015) is residential only. Traffic is upload+download, except Australia which is download

There are of course significant differences in traffic levels and rates of growth between countries. Figure 3 shows the traffic per line as of June 2021, the latest date[5] for which widespread data is available. (Note that the timings of lockdowns in individual countries, with their associated traffic surges, may mean that this international comparison is not strictly like-for like.)

Figure 3: Traffic per fixed broadband line, June 2020 and 2021, GB/month

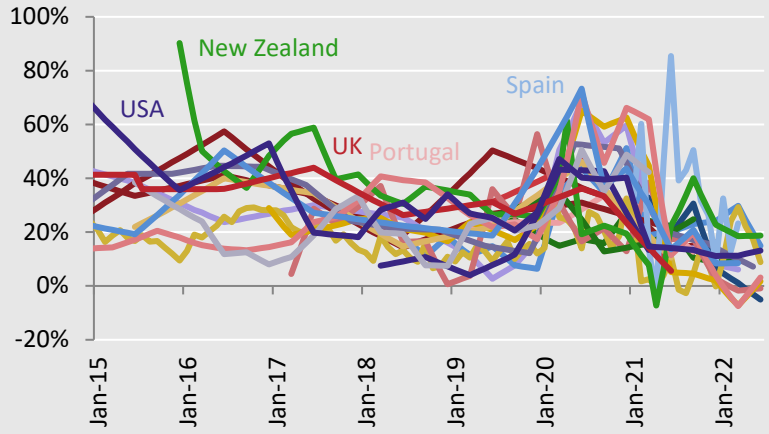


English-speaking markets continue to dominate the top of the rankings. This may be because the US is a key source of internet innovation, and other English-speaking countries may be quickest to adopt or imitate (alongside their own innovations). There is probably also a larger pool of English language content available than for most languages.

Growth rates

We now turn to growth rates, starting with a longer-term perspective before looking in more detail at the impact of the pandemic. Figure 4 shows year-on-year growth in traffic. There is significant variation, both between countries and for any given county over time.

Figure 4: Year-on-year growth in traffic per fixed broadband line[6]



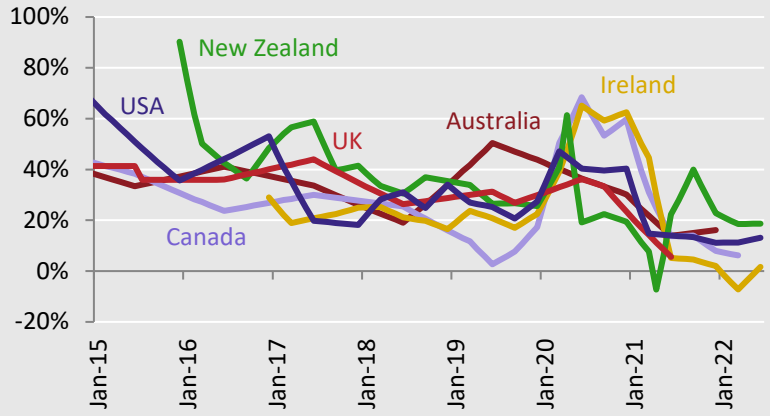
While the data is noisy, it is clear that there has been an appreciable slowing in growth in recent months. For the countries for which we have data, no country has recorded a year-on-year growth rate of higher than 33% since October 2021.

[5] Note that reporting periods vary (eg monthly vs annually). Data for specific months have been interpolated where necessary, to enable comparisons

[6] Per FN 4. Communications Chambers analysis. Data interpolated where necessary

Figure 5 shows the same data for English speaking markets only. The pattern is similar, with declining growth to 2019, followed by a pandemic spike in 2020 and early 2021 (though note the effect of New Zealand's much more limited lock-down in 2020) and then modest growth in 2022.

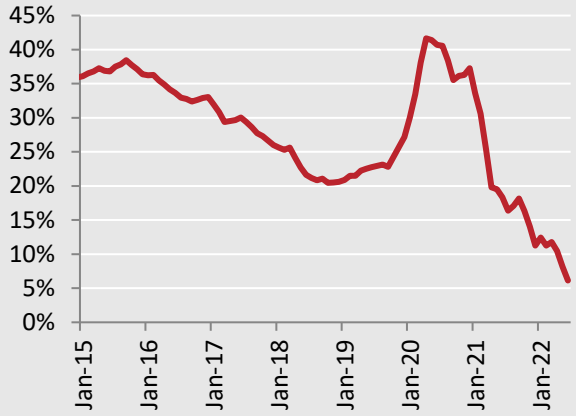
Figure 5: Year-on-year growth in traffic per fixed broadband line (English speaking markets)[7]



To better understand the global trends, we consider averaged growth across our set of countries for which we have data (Figure 6). Again, the pattern is clear – declining growth pre-pandemic, a pandemic then caused a significant spike and then a rapid decline. The 6% year-on-year growth we see for June 2022 is far below the 30% figure typically cited for traffic growth.[9]

As we look ahead, a critical question is whether such low growth rates are a 'hangover' from the pandemic (with underlying growth temporarily offset by a loss of traffic as working-from-home wanes) or are instead a 'new normal'.

Figure 6: Year-on-year growth in traffic per fixed broadband line, average across countries[8]



[7] Ibid

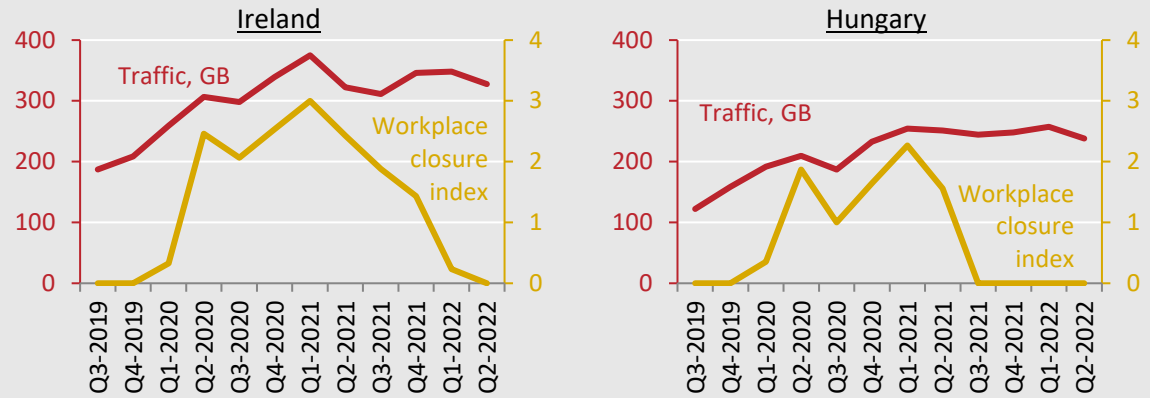
[8] Per FN 4. Communications Chambers analysis. Data interpolated where necessary. Notes: (i) The countries within the set varies somewhat over time, based on when countries started reporting and when they most recently published data. However, this variation does not appear to have material impacts on the trends shown. (ii) Because new historic data has become available, the figures in this chart do not exactly match those in the equivalent chart from our report a year ago

[9] Strictly the 30% figure is usually discussed in the context of network growth rather than per-line growth, but as broadband is at or near saturation in most markets, this distinction is not material

Impact of the pandemic

It is well understood that the pandemic led to a surge in traffic. By way of example, Figure 7 shows data volumes and degree of lockdown for Ireland and Hungary. (The lockdown index is based on the Blavatnik School of Government's workplace closure index).

Figure 7: Traffic per fixed broadband line, GB/month and degree of lockdown[10]



Peaks in both countries' traffic are clearly aligned with the periods of strictest lockdown (Q2 2020 and Q1 2021 for Ireland, for example). Both countries also show current traffic levels well above those from pre-pandemic. That said, we are now approaching three years since the start of the pandemic, so growth would likely have been appreciable in this period anyway.

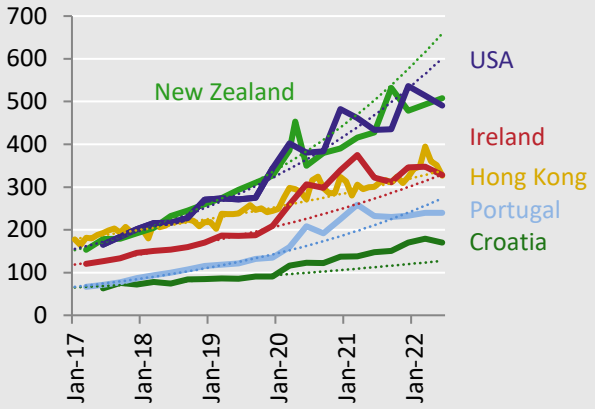
The more recent figures for Hungary are intriguing. Amongst our data set, Hungary was the earliest to abandon lockdowns entirely,[11] and thus give the best picture of what 'post pandemic' traffic growth might look like. Since the end of any lock-down in June 2021, traffic has been essentially flat. Any underlying growth is yet to make itself evident. This is particularly striking given that Hungary has the second lowest current traffic volume in our data set – it might therefore be expected to have the most room for growth.

[10] Per FN 4; Hale, Thomas, Sam Webster, Anna Petherick, Toby Phillips & Beatriz Kira (Blavatnik School of Government), *Oxford COVID-19 Government Response Tracker* [accessed 31 October 2022]

[11] Certain US states ended lockdown earlier, but traffic data is only available at the national level

To understand whether the changes in online usage prompted by the pandemic are permanent, Figure 8 looks at recent usage compared to what might be expected based on long run trends. The dotted lines represent exponential regressions against usage 2017-2019, projected forward to June 2022. Of the countries shown, only Croatia is above where it might have been expected to be based on pre-pandemic trends. The US, New Zealand and Portugal are below their trendlines. Thus while the pandemic may have brought forward some growth, it has perhaps not had lasting impact. Further, the long-term trend of slowing growth (seen in Figure 6) appears to be reasserting itself.

Figure 8: Traffic per fixed broadband line, GB/month (select countries)[12]



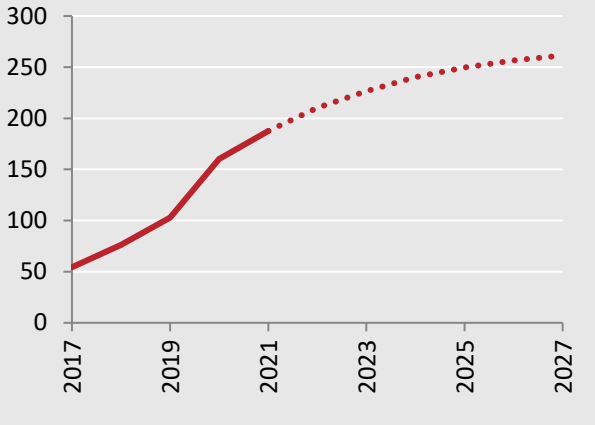
If traffic growth is slowing, why?

While there is room for debate, the data above suggests that growth in the years ahead will be well below historic levels, even allowing for the pandemic 'hangover'.

Why may this be? There are several reasons.. A key driver of growth has been the rise of video, which represents 54% of total traffic.[13] Video traffic has in turn been driven (in recent years) by increasing penetration and usage of VOD services, coupled with use of higher resolution video streams (which are more data intensive).

However, these drivers are becoming less potent. Firstly, SVOD is reaching saturation. While subscriptions grew by approximately 150m in the last five years in Western Europe (for example), in the next five years they are expected to grow by only 50m (Figure 9). Netflix is actually losing subscribers in both North America and EMEA, though this will be offset by growth in other services.

Figure 9: Online video subscriptions (m), Western Europe[14]



As a related point, time spent with digital video is forecast to grow only modestly. In the US the average person already spends 2 hours, 41 minutes per day with digital video, and eMarketer expects only a 12 minute increase by 2024.[15]

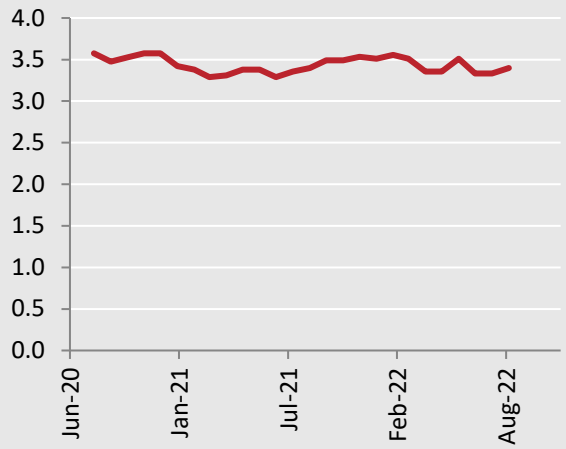
[12] Per FN 4
[13] Sandvine, *Global Internet Phenomena Report*, January 2022
[14] Omdia, quoted in TBI, *TBI Tech & Analysis: Picking apart Western Europe's pay-TV & OTT markets*, 5 September 2022
[15] eMarketer, *US Time Spent with Media 2022*, 15 June 2022

So time spent streaming is unlikely to be a key driver of traffic growth, but nor is increased video bit rates. The bit rate for a given stream is driven by a mix of factors, including the device in use, the video resolution, the video codec (which compresses the video digitally), available bandwidth and choices made by both the provider and the end user.

As VOD has shifted from smartphones and tablets to TV sets, bigger screens may have required higher resolutions. However, this is a trend that has largely played out – in the UK 81% of VOD viewing is already on the TV set.[17]

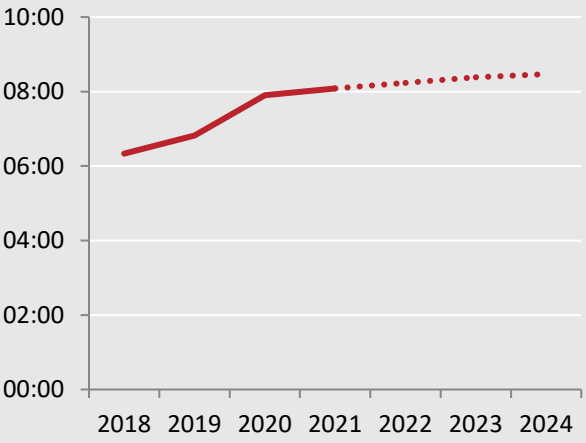
The net position is that there does not appear to be substantial growth VOD bitrates over time. Figure 10 shows average UK bitrates for Netflix streams. It is essentially unchanged over the last two years, suggesting that any move to higher resolution viewing is offset by improved video compression for all streams.

Figure 10: UK Netflix bitrates (Mbps)[16]



Looking wider than just video, a limit on *overall* internet traffic growth is that time online is – in more developed markets – apparently nearing saturation. In the US, for example, eMarketer sees extremely limited growth in the years ahead (Figure 11).

Figure 11: US digital media time, hours/user/day[18]



What then could reignite growth? The metaverse, if it gains traction, could drive substantial traffic, since significant bandwidths are required for high resolution, head-mounted displays.[19] The timing of any widespread adoption of the metaverse is of course an open question.

[16] Simple average of UK ISP bitrates. Netflix, *Speed Index* [accessed 31 October 2022]
[17] BARB, *Total Identified Viewing summary* [accessed 1 November 2022]. Data for September 2022. Video sharing consumption (TikTok, YouTube) is still mostly on mobile devices, but is perhaps likely to stay there
[18] eMarketer, *US Time Spent with Media 2021*, 4 February 2021; *Shifting patterns mean US adults are spending more time with media on entertainment devices*, 17 May 2022
[19] Meta, *The next big connectivity challenge: Building metaverse-ready network*, 27 February 2022

Conclusion

There continue to be substantial differences in traffic per fixed line around the world. However, in the more developed internet markets, there are signs that growth may be slowing appreciably. This is consistent with some of the drivers of growth approaching saturation.

Next year, with a full year of figures post-lockdown, the picture will be clearer. It may be there is a modest recovery, as the hangover effect fades. But for now, it appears that the '30% annual growth' assumption is no longer solid.

Rob Kenny [rob@commcham.com]
October 2022

Annex – Traffic by country (GB per fixed line per month)