

EXECUTIVE SUMMARY

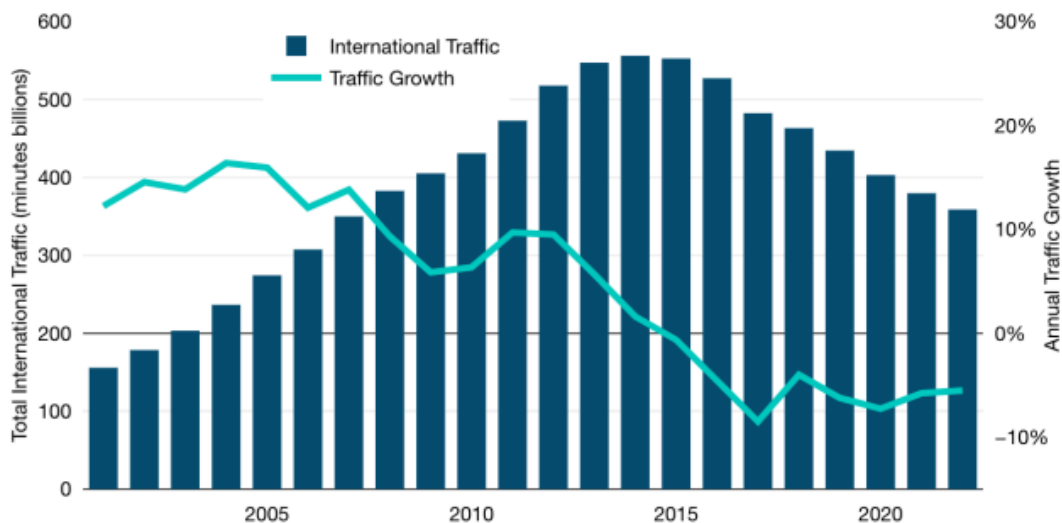
TeleGeography International Voice Report



Executive Summary

Still falling, after all of these years. 2015 marked a turning point in the international voice market—the first time since the Great Depression that international call traffic declined, even if only by one half percent. It's been downhill ever since, as the slump in voice traffic has turned into a rout. Carriers' traffic fell by 4% in 2018 and by 6% in 2019 and a further 7% in 2020. The COVID-19 pandemic spurred a short-term rally in international call volumes in early 2020, but things pretty much returned to the new normal. Traffic fell a further 6% in 2021, similar to the two previous years.

FIGURE 1
I've Fallen and I Can't Get Up...



Notes: Data for 2022 are projections.

Source: TeleGeography

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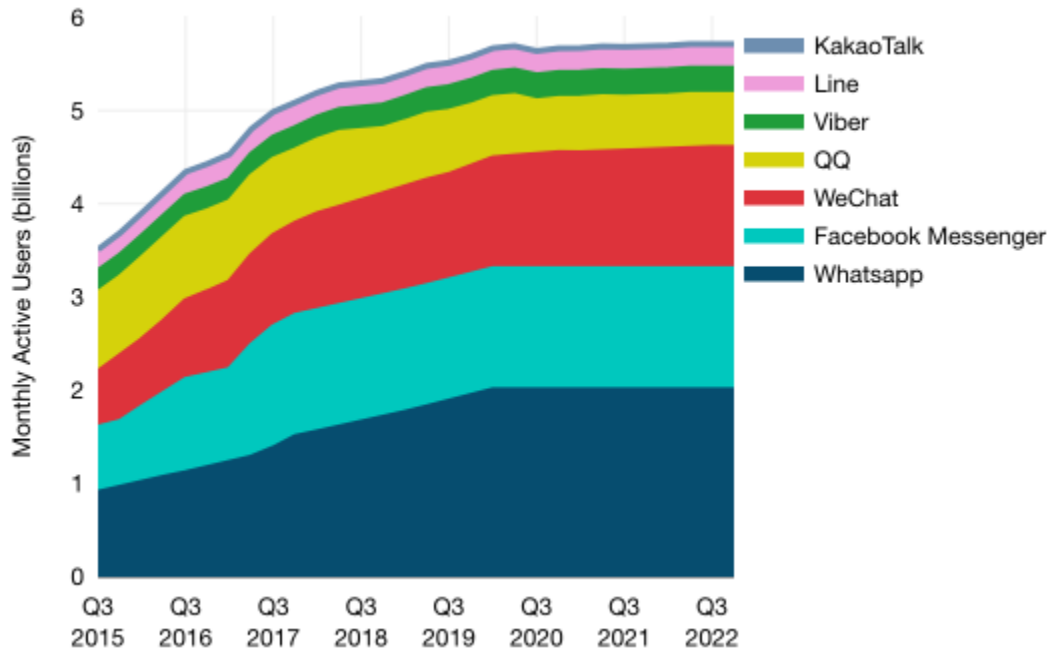
The OTT Effect

The new-ish market dynamic—social calling that replaced business communications as the primary

driver of ILD usage—fueled a long era of international call traffic growth that began in the 1990s. In 1990, U.S. international call prices averaged over one dollar per minute(!) and business users accounted for 67% of ILD revenue. A wave of market liberalization in the subsequent decade brought new market entrants, causing prices to tumble, and making international calling ever more affordable to consumers. In the early 2000s, the introduction of low-cost prepaid phones made it possible for billions of people in developing countries to obtain their own telephones, and to keep in touch with friends and family abroad easily. Call volumes soared, and by 2015, calls to mobile phones in developing countries accounted for 48% of global ILD traffic.

The transition to mobile and social calling drove a 20-year boom in voice traffic, but has also left the industry uniquely vulnerable to the rise of mobile social media. While Skype was the dominant communications application for computers, a veritable menagerie of smartphone-based communications applications, such as WhatsApp, Facebook Messenger, WeChat (Weixin), Viber, Line, KakaoTalk, and Apple's FaceTime, now pose a greater threat. WhatsApp had about 2 billion monthly active users in 2021, with Facebook Messenger topping 1.3 billion. WeChat reported about 1.2 billion active users at the same time. TeleGeography estimates that seven OTT communications applications—WhatsApp, Facebook Messenger, WeChat, QQ, Viber, Line, and KakaoTalk—combined had nearly 6 billion monthly users in September 2021. These estimates exclude apps for which directly comparable data is unavailable, including Apple's FaceTime, Google Hangouts, and Skype (the latter two of which have over 1 billion downloads from Google's App Store).

FIGURE 2
Monthly Active Users of Major Messaging Applications



Notes: Apple (FaceTime), Google (Hangouts, Duo), and Microsoft (Skype) do not release usage metrics and are excluded from this chart.

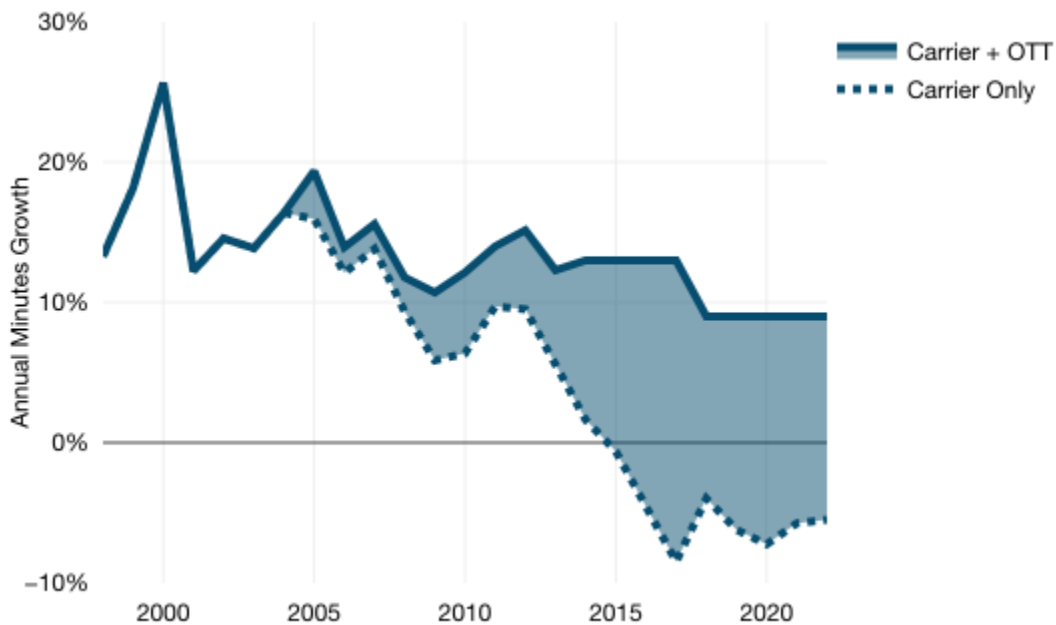
Source: TeleGeography

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It's hard to pin precise numbers on the volume of international OTT communications. However, a simple thought experiment helps to illuminate its likely scale. Between 1983 and 2007, international phone traffic grew at a compounded annual growth rate (CAGR) of 15%, and traffic grew an even faster 21% CAGR between 1927 and 1983. It's hard to believe then that the recent decline in traffic means that people have lost interest in communicating with friends and family abroad. Rather, it suggests that they are turning to other means of keeping in touch.

TeleGeography has fairly reliable estimates of Skype's traffic through 2013, when the company carried 214 billion minutes of on-net (Skype-to-Skype) international traffic. Telcos terminated 547 billion minutes of international traffic in 2013, and OTT plus carrier traffic totaled 761 billion minutes. If we assume that total international (carrier plus OTT) traffic has continued to grow at a relatively modest 13% annually since 2013 (with a drop to 9% in 2018 due to texting, video, and email), the combined volume of carrier and OTT international traffic would have expanded to 1.6 trillion minutes in 2020, and to almost 1.8 trillion minutes in 2021. (see Figure: Where Did the Minutes Go?: The OTT Effect illustrates this nicely). Traditional carrier traffic has slumped, but OTT traffic has risen to fill the void. This calculation suggests that cross-border OTT traffic overtook international carrier traffic in 2016, and would near 1.6 trillion minutes in 2022, dwarfing the 359 billion minutes of carrier traffic projected by TeleGeography.

FIGURE 3
Where Did the Minutes Go?: The OTT Effect



Notes: OTT traffic reflects in-app cross-border traffic only, and excludes calls originated on apps but terminated to the PSTN.

Source: TeleGeography

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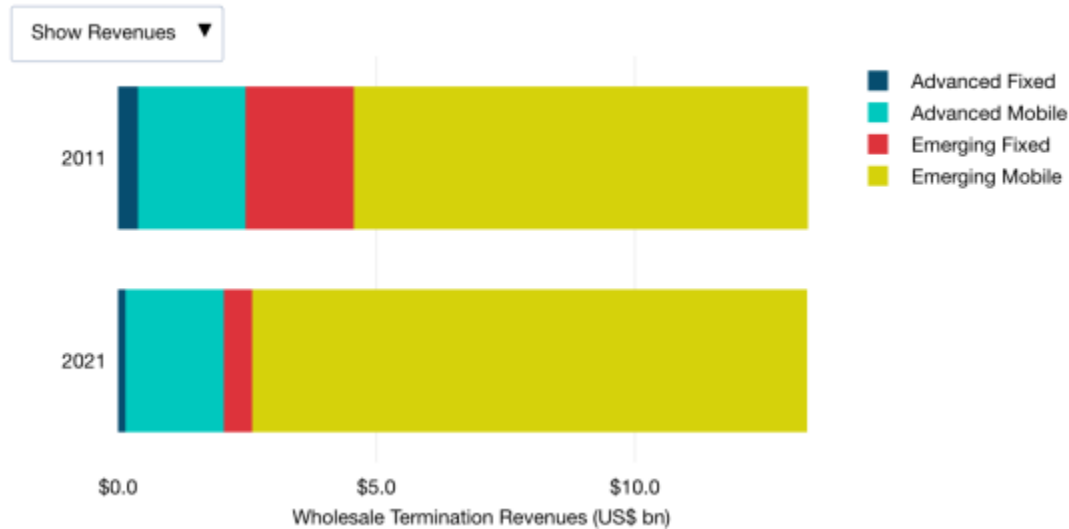
International Wholesale Services

Many retail service providers, such as mobile operators, MVNOs, and cable broadband providers, rely heavily on wholesale carriers to transport and terminate their customers' international calls. Wholesale carriers terminated approximately 272 billion minutes of traffic in 2021, down 4% from 2020. Wholesale traffic declined at an average rate of 1% per year over the past ten years, compared to a -2% CAGR for overall traffic. Wholesale carriers terminated nearly three-fourths (72%) of international traffic in 2021, up from 70% the year before.

Traffic to mobile phones in emerging markets has spurred expansion in wholesalers' share of the overall market. In 2021, wholesale carriers terminated over 86% of traffic to Sub-Saharan Africa, and over 87% to South America. In contrast, wholesale carriers terminated only 56% of traffic to western Europe.

FIGURE 4

Wholesale Revenues and Traffic by Market Type, 2011 and 2021



Notes: Advanced markets are defined as those of the upper 30th percentile of countries as ranked by GDP per capita in 2021. Emerging markets are those of countries in the lower 70th percentile. World and regional totals exclude countries with extremely low traffic volumes.

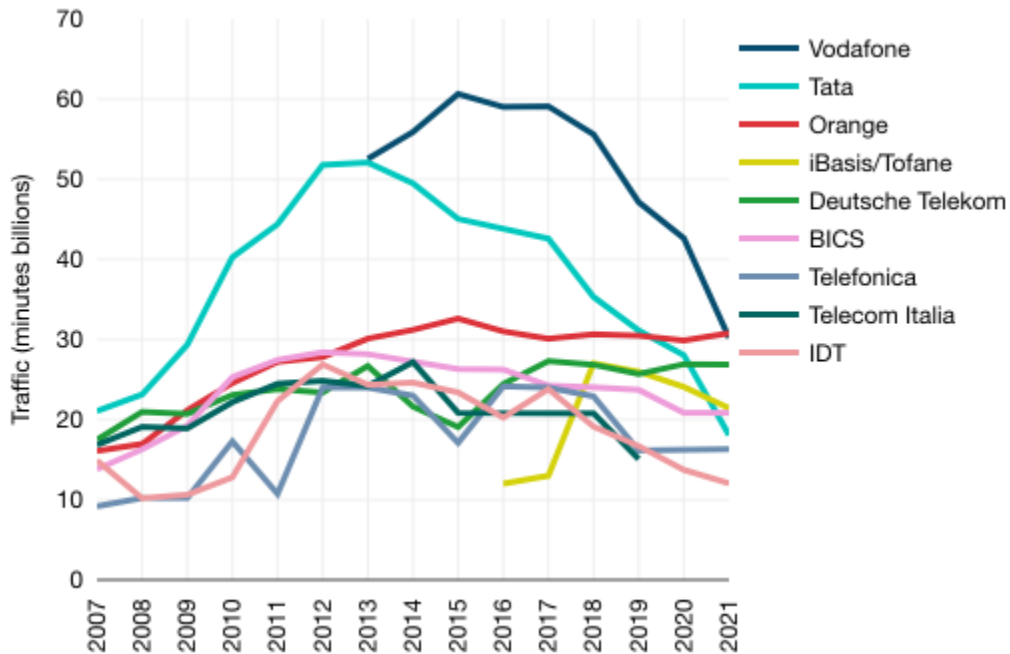
Source: TeleGeography

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Wholesale revenues have changed only marginally from ten years ago. But let's take a moment to look under the hood. Over the past decade, traffic to mobile phones in emerging markets has driven international wholesale market growth. Toggle between the "Show Revenues" and "Show Traffic" options in the "Wholesale Revenues and Traffic by Market Type, 2011 and 2021" figure. You'll probably notice that revenues from calls to mobiles in emerging markets (the yellow segments) noticeably bulged from \$8.8 billion in 2011 to \$10.7 billion in 2021. As a portion of overall wholesale carrier revenues, calls to advanced economies shrank, as did revenues from calls to fixed lines in emerging markets.

Who's carrying all this traffic? Take a look at the figure "Comparison of Top International Carriers." It shows a ranking of some of the world's largest international carriers. The top 8 operators in the figure carried nearly half of all global traffic in 2021, about 177 billion minutes. Among the eight largest carriers in the world, only Orange terminated more traffic in 2021 than in 2020.

FIGURE 5
Traffic Volumes of Major Carriers



Notes: Pre-2013 data for Vodafone, which reflect the combined traffic of Vodafone and the former Cable & Wireless Communications, are not available. In 2021 Vodafone Idea India and Vodafone Australia traffic is no longer reported under Vodafone structure due to ownership changes in 2020.

Source: TeleGeography

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Prices & Revenues

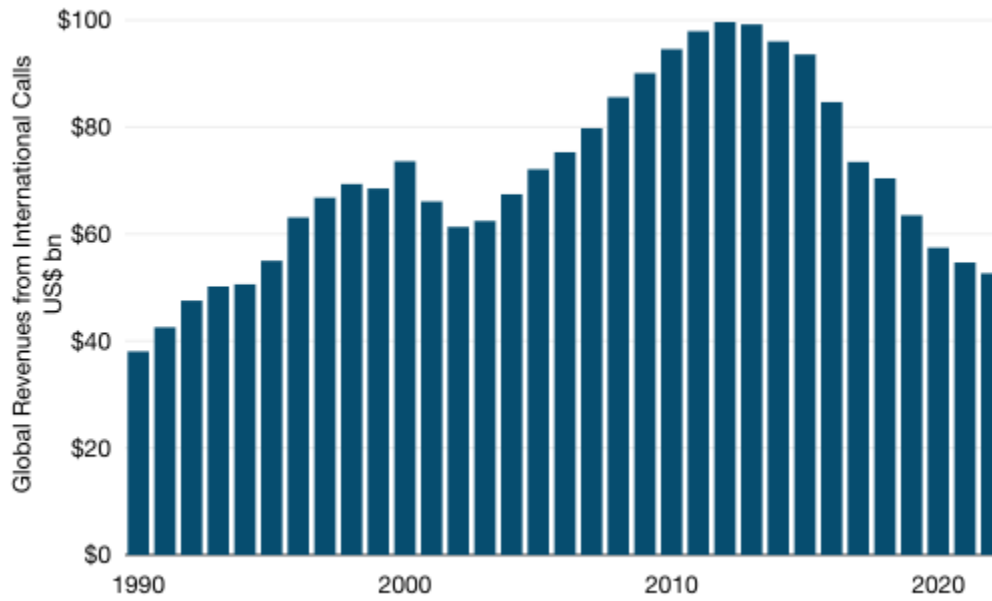
Retail ILD call revenues have slowly withered in recent years. So, too, has ILD's contribution to overall carrier revenues.

Let's look back a few years. In 2013, retail international call revenues (revenues that exclude wholesale revenues and termination payments) generated \$99 billion. During that year, wireline, broadband, and wireless services, in total, generated \$1.4 trillion. Thus, ILD accounted for 7.1% of total revenues in 2013.

In 2022, ILD accounts for only 3.3% of total carrier revenues.

For the mobile market, outgoing ILD revenues as a share of overall wireless revenues had remained relatively static; they had even increased from 2010 to 2012. Since then, international mobile revenues have followed the same downward trajectory as fixed ILD revenue trends. In both the fixed and mobile sectors, ILD calls account for a noticeably smaller share of overall carrier revenues than they did a few years ago.

FIGURE 6
Global Retail Revenues from International Calls



Notes: Data measure retail revenues on outgoing international calls; totals do not include revenue from wholesale services or incoming international traffic termination. Data for 2022 are projections.

Source: TeleGeography

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