DRAFT: Borderless Broadband

The Internet seems boundless and borderless when we use it, but national borders define our online experience. How the country you live in incentivizes and regulates internet service providers (ISPs)—or if it takes on that role itself—determines the speed and quality of your connection and the degree that your online activities are restricted or surveilled. The Internet is truly a network of country-defined ISPs, each with its distinct capabilities and limitations.

All that is about to change as several planetary-scale ISPs come online this year. Using a new generation of fast-flying low-earth-orbiting satellites, space-based ISPs can offer broadband service to everyone on earth, without concern for oceans, mountains, deserts, or borders.

Internet delivered by satellite is not new, but previous options have been expensive, slow, and unable to support real-time applications. While Motorola's Iridium network pioneered the use of a massive constellation of fast-moving low-earth-orbit (LEO) satellites to deliver voice and data services in the 1990s, the service was not broadband or affordable to consumers. In contrast, today's generation of LEOs provides affordable broadband connectivity that consumers can access with a small dish.

Starlink (a division of SpaceX) is the leader in this area, with over 1300 satellites deployed and a launch cadence that will double that capacity in the next year. Launches will continue until ~12,000 satellites are in orbit, with more to be added as the service demands. The Starlink service is in beta testing with 10,000+ beta users who are experiencing data speeds between 50Mb/s and 150Mb/s. After the beta, Starlink says users can expect to see a doubling of the bandwidth to 300Mb/s and latency consistently at 20ms or less. All this can be had for a setup fee of $500 USD and a $100 USD per month subscription cost.

In 2019, the International Telecommunications Union (ITU) estimated that 4.1 billion of the 7.6 billion people on earth were connected to the Internet. As one might expect, developed countries have a high rate of access. Close to 90 percent of people in developed countries are online. In the least developed countries, the number of people online is closer to 20 percent, and connections are often slow and unreliable.

Borderless, unfiltered broadband has the potential to upgrade millions of users and to turn on the Internet switch for millions more. Pre-covid, the World Economic Forum estimated that a ten percent increase in basic internet access added 1.2 percentage points to a developing countries' per capita GDP growth. Furthermore, a ten percent increase in broadband access was associated with a 1.4 percent increase in per capita GDP growth.

We all witnessed the importance of broadband availability during the current pandemic. Broadband was a significant factor in determining whether businesses thrived or died and whether students succeeded or were left behind. Services like Starlink would allow the world's underdeveloped regions to join the internet economy now, reducing the duration and difficulty of the post-covid recovery for vast numbers of people.

The potential of planetary-scale ISPs to drive much-needed economic growth in the world's poorest countries is huge, but these systems also introduce a new set of questions and challenges. Will these new connections have the potential to get past the filtering and Internet kill switches installed by dictators since the Arab spring a decade ago? Or get past the great firewall of China?

Many authoritarian governments regularly restrict their citizen's Internet experience, going so far as to completely turn off certain services or killing all internet and cellphone data in times of unrest or government atrocities.

For example, Myanmar is currently blocking its citizens from accessing social media and other platforms, is intermittently shutting down terrestrial Internet access, and has been blocking mobile data for weeks. All in an effort to hide both the protests against the government and the government's murderous actions against its own citizens. A borderless ISP like Starlink bypasses such systems of control and represents a threat to repressive governments.

Russia has already made a preemptive strike, threatening fines of up to 30,000 rubles for individuals caught using Starlink, one million rubles for businesses. Russia may prove surprisingly able to prevent access; since the connection is two-way, Starlink base stations emit radio signals that allow for triangulating a Starlink users' location. At the same time, Russia has announced plans for its own constellation of Internet delivering satellites.

The dynamics of Internet infrastructure and regulations change when one private ISP is operating globally. While the Federal Communication Commission and the ITU regulate frequency allocation and the United Nations Office for Outer Space Affairs deals with many other space operations issues, neither is equipped nor ready to deal with network neutrality or ISP-related concerns.

Will billions of new Internet users be brought online only to be put into yet another "walled garden" or echo chamber? What if future owners of Starlink decide to filter or re-direct traffic? Jeff Bezo's Blue Origin is planning a similar constellation of Internet delivering satellites. Will one's internet usage become yet another input for Amazon's recommendation engine? Will Shopify stores be blocked or simply unknown to Blue Origin's users?

Once again, technology is getting ahead of policy. At best, our leaders might view planetary-scale ISPs as just one more company competing for consumers. At worst, they could think it is an untested technology that will fail—a theme promoted by the incumbent Internet providers who want to exclude LEO-based ISP from access to government funding for broadband services.

Planetary-scale ISPs are neither. They are something new: ISPs with worldwide coverage whose services don't have to be defined by borders. Our leaders should seize this opportunity to set a new global standard for open, unfettered Internet access that respects human rights and empowers individuals.

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