

**Counter Comments to the Telecom Regulatory
Authority of India's Consultation on Regulatory
Mechanism for Over-The-Top (OTT) Communication
Services, and Selective Banning of OTT Services**

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September 15, 2023

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Introduction

I welcome this opportunity to submit counter comments to TRAI’s consultation on Regulatory Mechanism for Over-The-Top (OTT) Communication Services, and Selective Banning of OTT Services.¹

I submit my comments as a professor of law and, by courtesy, electrical engineering at Stanford University whose research focuses on Internet architecture, innovation, and regulation. I have a Ph.D. in computer science and a law degree and have worked on net neutrality for the past 23 years.

My book “Internet Architecture and Innovation,” which was published by MIT Press in 2010, is considered the seminal work on the science, economics, and politics of network neutrality. My papers on network neutrality have influenced discussions on network neutrality all over the world.

I have testified on matters of Internet architecture, innovation, and regulation before the California Legislature, the US Federal Communications Commission, the Canadian Radio-Television and Telecommunications Commission, and BERC, including on proposals to force applications to pay ISPs for terminating traffic to the ISPs’ customers.

The FCC’s 2010 and 2015 Open Internet Orders relied heavily on my work. My work also informed the European Union’s 2015 and 2020 guidelines implementing the European Union’s net neutrality law, the E.U.’s 2022 update that banned harmful zero-rating, and the 2016 and 2017 Orders on zero-rating by TRAI and the Canadian Radio-Television and Telecommunications Commission, respectively.

I have not been retained or paid by anyone to participate in this proceeding.²

I would welcome the opportunity to discuss these important issues further.

Finally, some of my comments in this submission draw heavily on my earlier writings on the topic.³

¹ <https://www.trai.gov.in/consultation-paper-regulatory-mechanism-over-top-ott-communication-services-and-selective-banning>.

² Additional information on my funding is available here: <https://cyberlaw.stanford.edu/about/people/barbara-van-schewick>.

³ For a list of my recent writings on network fees, see <https://cyberlaw.stanford.edu/about/people/barbara-van-schewick>. You can find my initial comments to this consultation here: https://www.trai.gov.in/sites/default/files/Barbara_Van_Schewick_06092023.pdf.

Executive Summary

The main comments calling for the establishment of network fees come from the largest telecoms in India, including Reliance JIO and Vodafone, as well as their trade organizations: the Internet Service Providers Association of India (ISPAI) and the Cellular Operators Association of India (COAI).

Collectively, their comments:

1. Fail to acknowledge the astounding success of the current model, in which both internet applications and end users each pay for their own connection to the internet without paying the other party's ISP;
2. Fail to acknowledge that the traffic on their networks is solely caused by the ISPs' own subscribers using the internet access service that they paid for;
3. Fail to show any proof or projection that future traffic levels will grow beyond the usual and expected rate, let alone "exponentially;"
4. Fail to provide any proof that the actual increase in traffic is straining their networks or raising costs;
5. Fail to substantively engage with the fact that their proposals violate network neutrality; and
6. Fail to acknowledge that 5G and fiber upgrades raise the capacity and speed of ISPs' networks exponentially.

1. Network fees proposals would undo decades of successful internet economics.

The argument for rejecting network fee proposals is simple: In the last 30 years, under a model with a general policy of network neutrality and no required network fees, the internet has grown from a plaything for academics into the most powerful communication system and economic engine the world has ever seen. That's thanks to a permissionless model, where application makers, businesses, and individuals do not have to ask ISPs for permission or pay their customers' ISPs to launch a website or online service.⁴

Now, the largest ISPs in India are asking TRAI to overturn that model, throw out net neutrality, and reinstate the failed model of Sending Party Network Pays, all so they can get paid twice for providing the same service they profitably provide now: once by individuals and companies that pay them to get online, and second, by the sites and services those individuals and companies seek to use.

As I explain in my comments, this model has been rejected over and over, around the world: by the ITU, by the OECD, by Europe's top telecom regulator BEREC, by TRAI's net neutrality proceedings, and by the U.S.⁵

⁴ van Schewick 2023 TRAI Comments, pp. 4-6, 9-10.

⁵ See van Schewick 2023 TRAI Comments, pp. 10-11, 18-19, 28.

In order to justify this latest attempt to get paid twice for the same service, the ISPs and their associations rely heavily on a recommendation from the ITU about a Collaborative framework for OTT services, attempting to twist it into a justification for getting paid.

Notably, the ITU-APT Foundation of India firmly rejects that interpretation.⁶

The ITU’s recommendations on ‘Collaborative framework for OTT services’ relate to introducing a collaborative framework that promotes competition, consumer protection, consumer benefits, innovation, investment, and infrastructure development. We understand that these are important aspects to consider. However, the existing business and economic environment in India already promotes these aspects. Thus, there is no need to introduce a formal collaborative framework for OTT service providers and TSPs.⁷

I agree. As I explain in my comments, using the ITU recommendation as cover for introducing network fees has no basis in the recommendation.⁸

The network fee proposals that JIO, Vodafone, and their trade associations are trying to revive have been thoroughly rejected for the past 30 years. That’s been a blessing for everyone including the telecoms, who have been saved from their short-sighted efforts to ban, block, slow-down, and charge the very apps and services that have created a universal demand for internet connectivity.

Nothing in their filings shows any justification for rewriting the rules of the internet, just so Reliance JIO and Vodafone can get paid twice for the same service.

Despite Vodafone’s protests to the contrary, this isn’t distorting their position.

In an unintentionally revealing section of Vodafone’s filing, Vodafone “debunks” the “myth” that ISPs want to get paid twice – by saying they want to get paid twice.

Myth 5: [...] Levying additional cost on OTTs, without providing any additional services, would be akin to double charging of customers.

Reality: i. Fair Share is not double charging. Many Internet services are based on two sided market business models.

ii. Fair share just aims to get paid by users (tariff) and Traffic Originators (bandwidth usage/traffic).

⁶ The ITU-APT Foundation of India (IAFI), a registered non-profit and non-political foundation, has been recognized by the International Telecommunication Union (ITU) as an international/regional Telecommunications organization and has been granted sector Membership, among others, of the ITU Telecommunication Standardization Bureau (ITU-T), which adopted the ITU recommendation in question.

⁷ ITU-APT Foundation of India (IAFI), ITU APT Foundation of India (IAFI) comments on TRAI Consultation Paper regarding Regulatory Mechanism for Over-The-Top (OTT) Communication Services, and Selective Banning of OTT Services, p. 13, https://www.trai.gov.in/sites/default/files/ITU_APT_Foundation_04092023.pdf

⁸ van Schewick 2023 TRAI Comments, pp. 19-21.

iii. Internet companies get paid by users and businesses at the same time: App Store from app developers and buyers / users of apps, Google from users (data) and businesses (ads).⁹

“Get[ting] paid by users (tariff) *and* Traffic Originators (bandwidth usage/traffic)” – that’s literally getting paid twice for the same service.

That might be the telecoms’ dream, but any service operating under such a model is not an internet access service. Internet access service, is, by definition, a service sold by an ISP that lets subscribers reach the entire internet, not just the apps and sites that pay their ISP: According to the Unified License Agreement, “the scope of [the authorization for] Internet service ... covers the following: The Licensee may provide Internet access including IPTV. The subscriber [of internet service] shall have unrestricted access to all the content available on the Internet.” (Chapter IX, Clause 2 & 2.1(i)).¹⁰

2. ISP subscribers, not applications, cause traffic.

Throughout their submissions, ISPs try to blame OTT’s for the traffic caused by the ISPs’ subscribers who use the internet access service they paid for.

Reliance JIO, for instance says:

It is no secret that OTT Players consume humongous amounts of bandwidth, which puts tremendous pressure on the network infrastructure [...] ¹¹

Vodafone says:

Few OTT players (generally very large OTT players) are generating most of the traffic being handled by data networks of TSPs.¹²

The Internet and Mobile Association of India points out the absurdity of this in a single sentence:

⁹ Vodafone, VIL Comments to the TRAI Consultation Paper on “Regulatory Mechanism for Over-The-Top (OTT) Communication Services, and Selective Banning of OTT Services” p. 14, https://www.trai.gov.in/sites/default/files/Vodafone_Idea_04092023.pdf

¹⁰ Government of India, Ministry of Communications, Department of Telecommunications, License Agreement for Unified License (updated as of March 31, 2023), available at <https://dot.gov.in/sites/default/files/Updated%20UL-AGREEMENT%20up%20to%2031%20Mar%2023.pdf>. van Schewick 2023 TRAI Comments, p. 28.

¹¹ Reliance JIO Infocomm Limited’s Comments on TRAI’s Consultation Paper on “Regulatory Mechanism for Over-The-Top (OTT) Communication Services, and Selective Banning of OTT Services” p. 1, https://www.trai.gov.in/sites/default/files/Reliance_JIO_Infocomm_04092023.pdf

¹² Vodafone, VIL Comments to the TRAI Consultation Paper on “Regulatory Mechanism for Over-The-Top (OTT) Communication Services, and Selective Banning of OTT Services” p. 1, https://www.trai.gov.in/sites/default/files/Vodafone_Idea_04092023.pdf

In any scenario the amount of data that is consumed – or the bandwidth used – is directly dependent on the amount of data sold by telecom companies to consumers.¹³

As I explain in my comments, data traffic on an ISP’s network is entirely caused by the ISP’s paying internet access customers, who use the data they paid for, with the promise they can use it for whatever they want to do on the internet.¹⁴

Vodafone tries, quite humorously, to debunk this “myth”, saying that:

CAPs decide without user control and knowledge, the traffic volumes delivered. They decide on compression techniques i.e. whether to transmit standard definition, high definition or ultra-high definition and how to proceed in case of network congestion – reducing the quality of the streaming, or “over provisioning.”¹⁵

Here’s what Vodafone is talking about: When a user decides to watch a video or listen to an audio stream, many online services adapt to the user’s network condition, reducing the quality of the media when the user’s network is congested or if the user is on a low-bandwidth connection.

This doesn’t mean that YouTube randomly sends videos to Vodafone subscribers. YouTube sends a video to a Vodafone subscriber only in response to a Vodafone subscriber pressing play on a video or navigating to the YouTube homepage. It’s the subscriber, who has paid its ISP to do whatever they like online, who causes this traffic.

The fact that YouTube often *reduces* the amount of data it sends to a Vodafone subscriber because Vodafone’s network is congested isn’t proof that YouTube is the traffic generator. Instead, it simply shows that YouTube, along with all other major video services, responds to its customers’ video requests in ways that burden ISPs’ networks as little as possible.

Finally, Vodafone’s description is inaccurate.

Popular online video services generally do give their users a choice of how much data they want to use. Vodafone’s comments describe the default setting. However, YouTube and Netflix, for example, both allow their customers to change the desired quality (and resulting bandwidth demand) of their service: instead of automatically adjusting the quality according to network conditions, users can choose various levels of quality and data use.¹⁶

¹³ The Internet and Mobile Association of India, IMAI Submission on TRAI CP on Regulatory Mechanism for OTT Communication Services, and Selective Banning of OTT Services, p. 2, https://www.trai.gov.in/sites/default/files/Internet_Mobile_Association_India_04092023.pdf

¹⁴ van Schewick 2023 TRAI Comments, pp. 15-16.

¹⁵ Vodafone, VIL Comments to the TRAI Consultation Paper on “Regulatory Mechanism for Over-The-Top (OTT) Communication Services, and Selective Banning of OTT Services” p. 14, https://www.trai.gov.in/sites/default/files/Vodafone_Idea_04092023.pdf

¹⁶ See, e.g., YouTube Help, Change the Quality of Your Video, <https://support.google.com/youtube/answer/91449>; Netflix Help Center, How to control how much data Netflix uses, <https://help.netflix.com/en/node/87>.

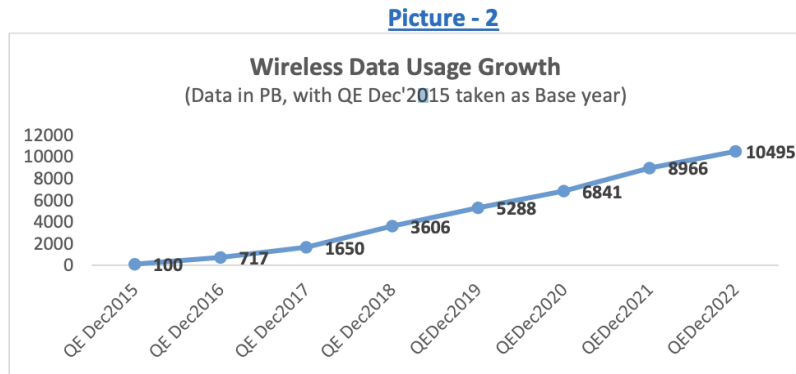
Moreover, on mobile phones, subscribers can prevent many apps, including popular video ones, from using any cellular data, and most social networking and communication apps give users control over whether multimedia elements download or play automatically on mobile connections.¹⁷

3. Traffic isn't growing exponentially.

No provider has provided any evidence or projections that traffic levels are rising or likely to rise at an “exponential rate.” That’s a phrase they all like to use, but they appear not to know what it actually means.

Vodafone claims that TRAI’s own data shows an expectation of exponential growth, and includes the below:

Data demand expected to rise exponentially with 5G: Faster speeds of 5G are also expected to usher India into huge growth of demand in data. In case of 4G also, India witnessed mammoth growth in network data consumption. Below picture depicts the said growth with 4G over the years as compared to the data usage prior to 4G in quarter ending Dec’2015. With 5G also, similar leap in demand of data is expected.¹⁸



Source: TRAI’s Quarterly Performance Indicator reports

In fact, this graph shows a growth curve that is slowing, even during the pandemic. The growth from 2021 to 2022 was 17%, which is healthy and surely not exponential.

It’s quite odd. The mobile industry is the only industry I know that actually complains when people want more of its service.

¹⁷ See, e.g., Netflix Help Center, How to control how much data Netflix uses, <https://help.netflix.com/en/node/87>, Adweek, Twitter’s Data Saver Feature Was Added to Its iOS, Android Apps, <https://www.adweek.com/performance-marketing/twitters-data-saver-feature-was-added-to-its-ios-android-apps/>

¹⁸ Vodafone, VIL Comments to the TRAI Consultation Paper on “Regulatory Mechanism for Over-The-Top (OTT) Communication Services, and Selective Banning of OTT Services” p. 5, https://www.trai.gov.in/sites/default/files/Vodafone_Idea_04092023.pdf

It's not just Vodafone. JIO claims that:

An intervention at this time is relevant because the traffic on telecom networks will continue to grow at an **exponential rate** as 5G matures and we move to 6G. The users alone will not be able to contribute towards the huge investment required in building such networks. Non-participation in funding the network costs by businesses and content providers can scuttle the entire process, consequently, there is a need for a big push to big technology to contribute, as 5G and 6G are ideal for their bandwidth-heavy applications like video streaming and online games.¹⁹

That doesn't pass the smell test. It also contradicts JIO's reports to investors, where it is legally required to tell the truth.

The truth is that Reliance JIO's internet services division brought in 1,19,791 crore (US\$ 1.27B) in revenue in 2022, with EBITDA of US\$ 626M (i.e. profit after expenses).²⁰ In the same annual report, Reliance JIO trumpeted how widely they were deploying 5G.

That means JIO's internet services had a profit margin of 49.3%, a margin that any company would love to have. They achieved a nearly 50% profit rate, all while deploying the very infrastructure that JIO says it can't build without the government requiring that JIO be paid twice for the same service.

Furthermore, ISPs and their associations complain to TRAI about steady and predictable 20% year-over-year traffic growth, calling that "exponential" and unsustainable without network fees. That is neither exponential nor unsustainable.

Ironically, in JIO's annual report, 20% growth in data usage by its customers is cited as a measure of the company's health. The annual report calls this a "Robust Increase in Data Usage," saying that "Customer engagement on the JIO network saw a sharp rise, with average per capita data and voice consumption at 23.1 GB/month and 1,003 min/ month, respectively, for the quarter ending March 2023."²¹

Thus, when JIO has to tell its investors the truth, it tells them that traffic growth on their network is a sign that its business is doing well. But when JIO talks to regulators, that healthy growth somehow turns into a blinking red light signifying doom, as evidenced in this bombastic statement to TRAI:

It is no secret that OTT Players consume humongous amounts of bandwidth, which puts tremendous pressure on the network infrastructure.²²

¹⁹ Reliance JIO Infocomm Limited's Comments on TRAI's Consultation Paper on "Regulatory Mechanism for Over-The-Top (OTT) Communication Services, and Selective Banning of OTT Services," p. 8, https://www.trai.gov.in/sites/default/files/Reliance_JIO_Infocomm_04092023.pdf (emphasis added)

²⁰ The Reliance Integrated Annual Report 2022, p 75. https://www.ril.com/getattachment/12403596-41c6-4622-a700-06cd9b70f9d5/AnnualReport_2022-23.aspx

²¹ The Reliance Integrated Annual Report 2022, p 74.

²² Reliance Jio Infocomm Limited's Comments on TRAI's Consultation Paper on "Regulatory Mechanism for Over-The-Top (OTT) Communication Services, and Selective Banning of OTT Services" p. 5, https://www.trai.gov.in/sites/default/files/Reliance_Jio_Infocomm_04092023.pdf

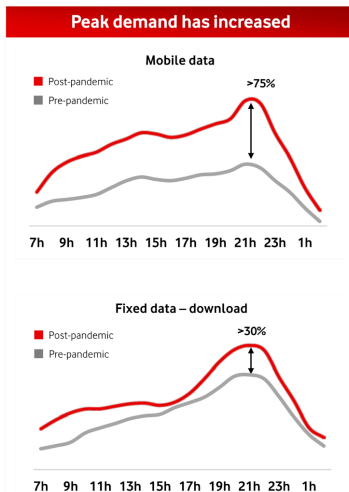
4. Increased traffic does not result in higher costs.

Tellingly, no ISP or ISP trade association submitted any figures documenting network costs. As I explain in my comments, the cost of deploying and operating broadband infrastructure generally falls faster or at about the same rate as the amount of traffic grows.²³

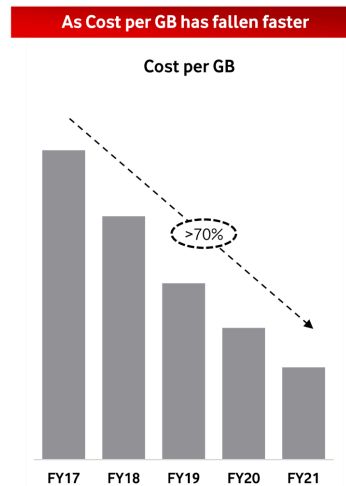
Like all other tech, network technology gets faster and cheaper every year. Routers handle more traffic with less cost, high capacity fiber gets cheaper, and software defined networking makes everything more efficient. Simultaneously, new network protocols like 5G drastically expand network capacity.

While ISPs tell regulators that the increasing traffic is too expensive to handle, they tell a different story to their investors to whom they cannot lie.

For example, a 2021 Vodafone investor presentation showed that while traffic had risen significantly from 2017 to 2021, the cost of moving that data had fallen even faster: “Peak demand has increased as the cost per GB has fallen faster.”²⁴



Source: <https://investors.vodafone.com/sites/vodafone-ir/files/2021-06/vodafone-technology-investor-briefing-presentation.pdf>, pages 12 and 38



Notably, those numbers pre-date Vodafone’s rollout of 5G that has up to 1,000 times the capacity of 4G and the ability to handle many more devices, all while using less energy.

5. Network fees violate net neutrality.

As I explained carefully in my submission, it’s impossible to mandate network fees, to require OTT communication providers to pay ISPs, or to require QoS standards from OTT communications providers without violating net neutrality.²⁵

I appreciate that the Internet Service Providers Association of India (ISPAI) acknowledges that its proposal violates net neutrality:

²³ van Schewick, 2023 TRAI Comments, pp. 16-17.

²⁴ Vodafone Technology, “Investor Briefing Presentation”, June 2021, p. 38.

²⁵ van Schewick, 2023 TRAI Comments, pp. 27-28.

Net Neutrality – In the interest of consumer protection and consumer experience, it is important that all traffic is treated equally on the internet. Collaboration between OTT and TSP may involve preferential treatment of traffic or content and may raise concerns about net neutrality.²⁶

However, I would add that there is no “may” and that the issues go far beyond preferential treatment of some traffic.²⁷

For its part, the Cellular Operators Association says network fees should only apply to bigger online services, then claims that nothing in its proposal violates net neutrality’s requirement to not discriminate.

To cater to innovation and support start-ups or smaller OTT providers, we suggest exempting them from the "fair share charge," thus ensuring that innovation and entrepreneurship remain unaffected.

It is necessary to recognize that Net Neutrality concerns unbiased treatment of content and is completely unrelated to the fair share charge to be paid by OTTs to TSPs.²⁸

The contradiction is glaring.

As my comments explain, charging some providers but not others is plainly discrimination and violates India’s net neutrality protections. In addition, some providers will be unable or unwilling to pay the mandated fee, leading to blocking, which would also violate net neutrality.²⁹ And even if TRAI limited network fees to larger OTT providers, start-ups and smaller providers would still be harmed.³⁰

Reliance JIO goes even further. Its comments essentially call for abandoning net neutrality’s ban on paid fast lanes. JIO deceptively calls this a “pragmatic implementation approach towards Net Neutrality.”

We understand that some OTT service providers will need and prefer differentiated service so that their users get the desired experience. We believe that the same can be provided under existing regulatory ambit and can create a win-win situation for TSP and OTT service providers with users being the ultimate beneficiary through better network infrastructure.

Consumers also benefit from differentiated services aligned as per their preferences. We believe that aggregate consumption tends to be higher with differentiated quality and pricing, thus benefiting the broader society.

²⁶ ISPAI Response to TRAI Consultation Paper on ‘Regulatory Mechanism for Over-The-Top (OTT) Communication Services, and Selective Banning of OTT Services’, p 15, https://www.trai.gov.in/sites/default/files/Internet_Service_Providers_Association_India_05092023.pdf

²⁷ van Schewick, 2023 TRAI Comments, pp. 27-28.

²⁸ Cellular Operators Association of India (COAI) Response to TRAI CP on Regulatory Mechanism for Over-The-Top (OTT), p7 https://www.trai.gov.in/sites/default/files/COAI_04092023.pdf

²⁹ See van Schewick 2023 TRAI Comments, pp. 26-27.

³⁰ van Schewick 2023 TRAI Comments, pp. 25-26.

In this regard, the Authority is also requested to approach a pragmatic implementation approach towards Net Neutrality.³¹

I appreciate JIO's frankness here. Its comments show that it's not hyperbole when I say that network fee proposals are clear attempts to attack and dismantle India's net neutrality protections.

6. 5G and fiber upgrades raise the capacity and speed of ISPs' networks exponentially.

Like other ISPs around the world, Indian ISPs are currently in the midst of upgrading their mobile networks to 5G and their fixed networks to fiber to the home/premises.

In other forums and to the press, ISPs and their tech providers hail these new technologies as revolutionary and creating the possibility for all new sorts of uses and consumer benefits.

And this is true. However, not a word of this is spoken of in their filings to TRAI's consultation. I strongly suspect that's because it makes their arguments that they'll be unable to handle 20% year-over-year traffic growth in traffic look ridiculous.

This is also where one can use the word "exponentially" correctly.

5G and fiber are exponentially better than 4G, cable, and copper in nearly every measure that matters in network performance: latency, throughput, and overall network capacity.

Latency, which measures how fast responses come to end users, is the secret sauce to fast online experiences.³²

5G latency is about 5ms. 4G is 60 to 98 ms. That is exponentially better.³³

Fiber latency is often less than 5ms, since data travels through fiber at the speed of light, far faster than over copper DSL and cable lines. Again, this is exponentially faster, not just mathematically but also due to the outsized effect that latency has on actual web performance.

Since latency measures the time between an information request and its arrival, lower latency means any given request is taken care of faster on a fiber or 5G network. It's like speeding up cars on roads ten times

³¹ Reliance JIO Infocomm Limited's Comments on TRAI's Consultation Paper on "Regulatory Mechanism for Over-The-Top (OTT) Communication Services, and Selective Banning of OTT Services," p. 25, https://www.trai.gov.in/sites/default/files/Reliance_JIO_Infocomm_04092023.pdf

³² More Bandwidth Doesn't Matter (much), Mike Belshe, Google, 04/08/10 <https://docs.google.com/a/chromium.org/viewer?a=v&pid=sites&srcid=Y2hyb21pdW0ub3JnfGRldnxneDoxMzcyOWIIN2I4YzI3NzE2>

³³ Tech Target, 5G vs. 4G: Learn the key differences between them, <https://www.techtarget.com/searchnetworking/feature/A-deep-dive-into-the-differences-between-4G-and-5G-networks>

This means there's more usable network capacity because usage doesn't take as much time, even if the size of the lanes are the same.

But the size of the lanes aren't the same. They are also exponentially wider.

5G and fiber have exponentially more capacity than 4G, DSL, and cable.

According to Cisco,

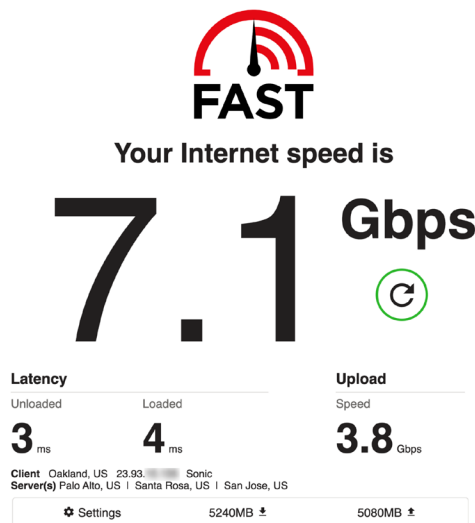
5G's data capacity can be up to 1,000 times that of 4G. With increased data capacity, performance will remain robust for all users when they connect to public networks in crowded locations like airports, performance.[...]

5G can support up to 100 times as many devices and endpoints as 4G. This means 5G is ready to support the next generation of user growth and the millions of IoT (Internet of Things) devices expected to come online in the near future.³⁴

Fiber lines typically are sold at 1 Gbps capacity, though most installs are now using 10Gbps capacity cables, with matching upload and download speeds. This is exponentially more capacity than DSL and cable.

In Oakland, California, for instance, Sonic, a small independent ISP, sells a residential 10 Gbps fiber line for \$60 a month (non-promotional price).³⁵

This isn't the future. This is now. Sonic subscribers get usable download speeds at over 7 Gbps, with latency lower than 5ms. All of Sonic's plans have unlimited data.



Test taken on Thursday Sept 14, 2023, measured via Fast.com, on a home connection using a Mac Mini.

³⁴ Cisco, What Is 5G vs 4G?, <https://www.cisco.com/c/en/us/solutions/what-is-5g/5g-vs-4g.html#~benefits-of-5g>

³⁵ <https://www.sonic.com/residential/internet>

As Sonic CEO Dane Jasper continually points out, their data usage costs are a tiny portion of their expenses, and extra customer data usage costs them essentially nothing.

To be clear, I'm not for any limitations on usage-based-billing (UBB). Carriers that invest in infrastructure should do what they like. That's capitalism.

I am just making the point that there is basically zero marginal cost in usage. UBB is competitive market failure.³⁶

In other words, at the very moment that Indian ISPs are asking to get paid twice for the “ginormous” traffic on their networks that's growing at a mere 20% year over year, they are building out networks that are exponentially faster and have exponentially more capacity. And extra data isn't expensive at all.

This isn't just limited to fiber. In the US, T-Mobile and Verizon have so much extra 5G capacity that they now compete with residential wireline providers, offering unlimited 5G service to the home for \$35 to \$50 a month.

JIO is now doing the same, selling JIOAirFiber, a 5G-powered offering to homes and businesses that it said it can provision up to 150,000 households *every day*.³⁷

Here's how they describe the service in their annual report:

JIOAirFiber is a FWA [Fixed Wireless Access] solution that brings clutter-free high-speed connectivity of up to 1 Gbps to homes and offices. Multiple devices, including smartphones, PCs, tablets, smart TVs, and set-top boxes can be connected simultaneously without compromising on internet speeds or stability.³⁸

The fact that JIO is 1) offering this service on its supposedly overburdened network 2) is bragging about all the video service-centric devices you could hook up to it without hampering the network and 3) is saying that it could add up to 150,000 households daily – each using home network-level usage on its new 5G network – tells you everything you need to know about network economics and network capacity.

Moving data is cheap. Network speeds and capacity are in the midst of a generational jump, despite the absence of network fees. And there's absolutely no crisis facing ISPs, now or in the future, simply because their customers actually use the data plans they paid for.

There's no reason to overturn the internet's fundamental economics and toss out net neutrality in a fruitless attempt to solve a non-existent problem.

³⁶ Sonic CEO Dane Jasper tweet <https://twitter.com/dane/status/1353542530642526210> Jan 24, 2021. See also <https://twitter.com/dane/status/1670870243189878784> where he says data costs are less than 2 percent of their expenses.

³⁷ Techcrunch, <https://techcrunch.com/2023/08/28/jio-airfiber-india-launch/>

³⁸ The Reliance Integrated Annual Report 2022, p 77. https://www.ril.com/getattachment/12403596-41c6-4622-a700-06cd9b70f9d5/AnnualReport_2022-23.aspx