

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of)
)
Restoring Internet Freedom) WC Docket No. 17-108

Joint Reply Comments of the American Civil Liberties Union and the Electronic Frontier Foundation on Notice of Proposed Rulemaking

August 30, 2017

The American Civil Liberties Union (“ACLU”) and Electronic Frontier Foundation (“EFF”) submit this reply to the comments submitted in response to the Federal Communications Commission (“Commission” or “FCC”) Notice of Proposed Rulemaking (hereinafter “NPRM”) on or before July 17, 2017.¹ As expressed in our initial comments,² we oppose the current proposal to overturn the Open Internet Order of 2015 because it would eliminate the net neutrality protections that are critical to each individual’s right to retrieve and share information online.

The ACLU and EFF submit this reply to highlight two points: First, the comments submitted by various Broadband Internet Access Service (“BIAS”) providers show that maintaining the Open Internet Order of 2015 would not violate providers’ First Amendment rights. Second, we are concerned that many of those same comments contain numerous technical and practical errors and misrepresentations.

I. Enforceable Net Neutrality Principles Do Not Violate BIAS Providers’ First Amendment Rights

The ACLU and EFF are both organizations devoted to, and responsible for, the robust application of the First Amendment to online speech. We thus consider carefully the argument that government regulation of the BIAS may violate ISPs’ First Amendment

¹ *In re Restoring Internet Freedom*, FCC WC Docket No. 17-108 (NPRM adopted May 18, 2017).

² See ACLU Comment (July 17, 2017), https://ecfsapi.fcc.gov/file/107142322321780/2017-07-14_ACLU_Comments_FCC_Net%20Neutrality.pdf; EFF Comment (July 17, 2017), <https://ecfsapi.fcc.gov/file/10717276427999/Dkt.%2017108%20EFF%20Comments%20FCC%20NN%202017.07.17.pdf>.

rights. We filed a joint amicus brief on this very issue in the legal proceedings challenging the Open Internet Order.³

We conclude now, as we did then, that the Open Internet Order does not violate anyone's First Amendment rights. Rather, the current comment record confirms that the Order promotes First Amendment values. Specifically, the record confirms that enforceable net neutrality rules do not have a significant impact on BIAS providers' expression because providers function as conduits, and are not in the business of endorsing the speech they deliver.

For example, in the ISPs' own words:

- “To be extremely clear . . . Frontier does not have any interest in favoring certain Internet content or in interfering with anyone's right to free speech. Frontier remains committed to ensuring its users can access the content of their choice.” Frontier Communications Corporation Comment at 6 (July 17, 2017).⁴
- “[N]o ISP sees any commercial upside in depriving its customers of access to the complementary applications they value.” AT&T Services Inc. Comment at 2–3 (July 17, 2017);⁵ *see also* Charter Communications, Inc. Comment at 16–17 (July 17, 2017).⁶
- “[B]roadband providers have every incentive to design, maintain and manage their networks in a way that meets end user expectations for openness.” CenturyLink Comment at 8 (July 17, 2017).⁷
- “[A] wide array of BIAS providers . . . and their industry associations have made prominent and unequivocal commitments . . . to refrain from blocking [content]” in order to “deliver the Internet experience their customers seek—including the ability to . . . access whatever lawful online content and services they choose.” Cox Communications, Inc. Comment at 20–21 (July 17, 2017).⁸

³ Final Brief of Amici Curiae Electronic Frontier Foundation, American Civil Liberties Union, and the American Civil Liberties Union of the Nation's Capital In Support of the Respondents,” *U.S. Telecom Assoc. v. FCC*, Case No. 15-1063 (D.C. Cir. Oct. 13, 2015).

⁴ Available at <https://ecfsapi.fcc.gov/file/107171074518088/Comments%20%20Net%20Neutrality%2007.17.17.pdf>.

⁵ Available at <https://ecfsapi.fcc.gov/file/10717906301564/AT&T%20Internet%20Freedom%20Comments.pdf>.

⁶ Available at <https://ecfsapi.fcc.gov/file/1071767289168/Charter%20Restoring%20Internet%20Freedom%20Comments%2007-17-17.pdf>.

⁷ Available at <https://ecfsapi.fcc.gov/file/1071893493148/170717%20CTL%20Declaration%20App%203%20Glover%20WC%2017-108%20FINAL.pdf>.

⁸ Available at <https://ecfsapi.fcc.gov/file/1071791092787/Cox%20OI%20Comments%202017.07.17.pdf>.

- “[T]here’s no incentive to harm the customer experience by preventing them from accessing the lawful content they seek” and any provider who tried “would face backlash.” Verizon Comment at 10 (July 17, 2017).⁹

Thus, in comment after comment, the BIAS providers have asserted that they are committed to providing access to all content that users seek—not only to content the providers endorse.

As the Supreme Court has correctly held, this conduit role is not expressive. *See Turner*, 512 U.S. at 629 (distinguishing between the selection of programming, which is expressive, and serving as “conduit for the speech of others”, which is not). Even in the cable TV context, where slots are limited and operators actively curate programming, the Court found “little risk that cable viewers would assume that the broadcast stations carried on a cable system convey ideas or messages endorsed by the cable operator.” *Id.* at 655. Therefore, regulating BIAS providers’ function as a conduit to information created and sought by third parties does not violate the providers’ First Amendment rights.

The record further confirms that BIAS providers that go beyond this role of neutral conduit are not subject to Title II classification, precisely because they curate expressively and clearly communicate their curatorial practice to their customers. As Inmarsat Inc. explained in its comment, the current rules “do[] not apply to an ISP . . . making sufficiently clear to potential customers that it provides a filtered service involving the ISP’s exercise of ‘editorial discretion.’” (quoting *U.S. Telecom Ass’n v. FCC*, 855 F.3d 381, 389 (D.C. Cir. 2017) (denying rehearing en banc) (Tatel, J., concurring));¹⁰ *see also* Open Internet Order of 2015 ¶ 25 (applying rules only to services that allow customers to reach “all or substantially all Internet endpoints”). This includes the “outliers” described in the law review article attached to Tech Knowledge’s comments, *see* Attachment to Tech Knowledge Comment at 586 (July 17, 2017) (identifying Jnet, Dnet, and Clean Internet as “outliers among ISPs” because they “actively promote their content curation”).¹¹ The rules pose no problem for such providers as they already create space to make curation an expressive part of their BIAS business model, so long as the fact of that curation is made clear to customers.

⁹ Available at <https://ecfsapi.fcc.gov/file/10717390819816/2017%2007%2017%20Verizon%20comments%202017%20Open%20Internet%20Notice.pdf>.

¹⁰ Insamart Inc. Comment at 12 (July 17, 2017), available at <https://ecfsapi.fcc.gov/file/10717849314797/asfiled%20Inmarsat%20Internet%20Freedom%20comments.pdf>.

¹¹ Available at <https://ecfsapi.fcc.gov/file/107170266703916/The%20First%20Amendment%20and%20the%20Internet%20The%20Press%20Clause%20Protects%20t.pdf>.

II. Major BIAS Providers' Comments Contain Numerous Technical Inaccuracies

After carefully reviewing the comments of several ISPs, we are concerned that several BIAS providers made claims that were either demonstrably wrong or unsupported by hard data or proof—data to which those BIAS providers would have easy access. As a result, the Commission should view their comments on industry operations with skepticism.

A. DNS is Part of a Telecommunications Service, Not an Information Service

AT&T incorrectly asserts that BIAS qualifies as an information service “because it invariably provides [“data processing” and “data storage”] functionalities, including those involving the Domain Name System (“DNS”).”¹² However, even the authority from which AT&T quotes—the *North American Telecom's Ass'n*, 101 F.C.C.2d 349, ¶ 28 (May 29, 1985) (“NATA Centrex Order”) —says the exact opposite:

In the Commission's words, an “offering of access to a data base for purpose of obtaining telephone numbers” was an “adjunct to basic telephone service,” but “an offering of access to a data base for most other purposes is the offering of an enhanced service,” now an information service.¹³

If the NATA Centrex Order had concerned Internet access, it would doubtless have read “offering of access to a data base for purpose of obtaining *Internet* numbers” is an “adjunct to basic *Internet* service.” Of course, this is the primary purpose of DNS: to obtain IP addresses (the exact analogue of telephone numbers in the telephone system).

AT&T's theory is based on a reading that, contrary to the clear reasoning of NATA Centrex, would apply the information service label to any adjunct service with a purpose other than “obtaining telephone numbers.”¹⁴ But AT&T's own authorities support the correct conclusion: that DNS is *not* an information service, but an adjunct to a basic telecommunications service.

¹² AT&T Services Inc. Comment at 73.

¹³ AT&T Services Inc. Comment at 77, quoting “Mem. Op. and Order, *North American Telecom's Ass'n*, 101 F.C.C.2d 349, ¶ 28 (May 29, 1985) (“NATA Centrex Order”).”

¹⁴ AT&T Services Inc. Comment at 77.

B. The Offer of Additional, Non-Integral Services Such as Email and Other Extra Features Does Not Transform BIAS Into an Information Service

AT&T claims that BIAS qualifies as an information service because some BIAS providers also “offer” “email, data storage, parental controls, unique programming content, spam protection, pop-up blockers, instant messaging services, on-the-go access to Wi-Fi hotspots, and various widgets, toolbars, and applications.”¹⁵ But these services are not viewed by most consumers as a critical component of the BIAS offering.¹⁶ Taken to its logical conclusion, this argument suggests that any telecommunications provider—including a telephone company—could be reclassified as an information service if it simply bundled an email address with its telecommunications offering. Such a result would defeat the intent of the Telecommunications Act.

C. The Available Data Suggest Caching Is Not Vital Part of BIAS Offerings

Clear trends—including the rise of Content Delivery Networks (CDNs) and of HTTPS encryption—indicate that caching has become less and less important. Any data that would show otherwise, such as the hit rate for their caching servers over time, or the percentage of their outbound traffic that is instead covered by their caching servers, is in the hands of AT&T, Comcast, and other BIAS providers and it would be possible for them to provide such data to refute the trends suggested by publicly available data. Yet AT&T¹⁷ and Comcast¹⁸ each claim that caching remains a crucial part of their service without supplying any such supporting evidence.

¹⁵ AT&T Services Inc. Comment at 81, citing to “AT&T 2014 Reply Comments at 28; *see also generally id.* at 28-31 (discussing AT&T’s integrated broadband offering, including numerous information processing features); AT&T 2014 Comments at 48-49 (listing information service capabilities and functions included in AT&T’s broadband offering at no extra charge).”

¹⁶ *See, e.g.*, Joint Comments of Internet Engineers, Pioneers, and Technologists on the Technical Flaws in the FCC’s Notice of Proposed Rule-making and the Need for the Light-Touch, Bright-Line Rules from the Open Internet Order at 15 (July 17, 2017), available at <https://ecfsapi.fcc.gov/file/1071761547058/Dkt.%2017-108%20Joint%20Comments%20of%20Internet%20Engineers%2C%20Pioneers%2C%20and%20Technologists%202017.07.17.pdf>, [hereinafter Joint Comments of Internet Pioneers] noting that “Microsoft, Google, and Yahoo (the top three in the US, barring mass-marketing email providers) were ranked first, ninth, and eleventh in the world in terms of volume of email sent. For comparison, the top three US ISPs, Comcast, Charter, and AT&T²⁷ ranked 17th, 26th, and 12th.” citing to “Email & Spam Data, June 2017, TALOS INTELLIGENCE, https://talosintelligence.com/reputation_center/email_rep#top-senders-owner (last visited July 14, 2017).”

¹⁷ AT&T Services Inc. Comment at 76.

Publicly available information suggests those assertions are wrong. Given that Content Delivery Networks (CDNs) directly reduce the need for ISP caching services, and that the CDN industry has more than tripled in size since 2007, the claim that caching is still a key part of major BIAS providers' offerings seems unlikely.¹⁹ Similarly, ISP caching is significantly stymied by the use of HTTPS encryption, which has increased from just 2% in 2010²⁰ to more than 50% in 2017.²¹

Given these clear trends, without hard evidence the Commission should not accept BIAS providers' claims that caching is still critical.

D. BIAS Providers Do Not Themselves Offer a Capability Simply By Providing Access to a Service with that Capability

Several BIAS providers embraced the Commission's own erroneous suggestion, in the NPRM, that because BIAS providers offer consumers the capability to connect to edge providers who offer the "capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications,"²² somehow it is the BIAS providers themselves that offer these capabilities.²³

Not so. As nearly 200 computer scientists, network engineers, and Internet professionals explained in a letter submitted as part of the initial comments in this proceeding ("Engineer's Letter"),

¹⁸ Comments of Comcast Corporation at 16.

¹⁹ Total worldwide CDN revenues were roughly \$1 billion in 2007, (*see* <http://www.streamingmedia.com/Articles/Editorial/Featured-Articles/Futurewatch-Content-Delivery8212%3BA-Sea-Change-in-the-CDN-Market-65399.aspx>), and were forecast to be \$3.61 billion in 2016 (*see* <http://blog.streamingmedia.com/wp-content/uploads/2016/05/2016CDNSummit-Rayburn-Pricing.pdf>).

²⁰ Sandvine Intelligent Broadband Networks, Global Internet Phenomena Report (2011), available at <https://www.sandvine.com/downloads/general/global-internet-phenomena/2011/1h-2011-global-internet-phenomena-report.pdf> (last visited July 14, 2017).

²¹ Gennie Gebhart, We're Halfway to Encrypting the Entire Web, ELECTRONIC FRONTIER FOUNDATION (Feb. 21, 2017), <https://www.eff.org/deeplinks/2017/02/we-re-halfway-encrypting-entire-web> (last visited July 14, 2017).

²² Restoring Internet Freedom, 82 Fed. Reg. 105 (proposed May 18, 2017) (to be codified at 47 CFR pt. 8 and 20) ¶ 27 [hereinafter NPRM].

²³ *See, e.g.*, Comments of Comcast Corporation at 12–13; *see also* AT&T Services Inc. Comment at 3–4; *see also* Cox Communications, Inc. Comment at 9–14; *see also* Verizon Comment at 35.

ISPs merely provide the transport between the end user and the capability that they are attempting to access. . . . If the same flawed logic were applied to the telephone network, one would conclude that because Verizon’s customers can use their phones to order a pizza, it is Verizon (instead of the local pizza parlor) that is offering the capability for having pizza delivered. The same logic makes a media company of the US Postal Service merely because one may have magazines delivered by mail. [This] characterization of ISPs as offering the capabilities associated with the totality of available services on the Internet similarly defies common sense.²⁴

E. The Commission Should Rely on the Expertise of Independent Engineers In Assessing How the Rule Will Operate in Today’s Internet

Many BIAS providers included several incorrect assertions about how the Internet works at a technical level, leading in turn to incorrect conclusions about the nature of BIAS. Fortunately, a thorough and sourced submission from nearly 200 computer scientists, network engineers, and Internet professionals without any relevant financial incentives is also before the Commission, and offers a reliable source for how the rule will operate in practice given current Internet technology.

1. BIAS Service Does Not Change the Form or Content of Information Being Transmitted

In its comments, Comcast agrees with the NPRM’s erroneous assertion that “Internet service providers routinely change the form or content of the information sent over their networks—for example, by using firewalls to block harmful content or using protocol processing to interweave IPv4 with IPv6 networks.”²⁵ Comcast goes on to claim that the Internet Protocol “necessarily entails changes to the information’s “form” because it involves “the dissolution, dispersal, and recombination of the IP packets that make up the information requested by the end user.”²⁶ Comcast cites to a letter by Richard Bennett, “noting that “telephony” is “the only information exchange that promises to send and receive information between end points without alteration of the information’s form or content.”²⁷

²⁴ Joint Comments of Internet Pioneers at 20.

²⁵ Comments of Comcast Corporation at 22, quoting NPRM ¶ 30.

²⁶ Comments of Comcast Corporation at 23.

²⁷ Comments of Comcast Corporation at 23, quoting “Letter from Richard Bennett, Consultant, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 14-28, 10-127, at 10-11 (Dec. 30, 2014)” (“Bennett Letter”).

However, engineers who have studied both the Internet and the telephone system have concluded that these claims are gravely in error. As the Engineers' Letter explained,

Changing the packet structure of an IP packet from IPv4 to IPv6 no more changes the form of the information contained within the packet (i.e. the payload) than taking a letter out of a FedEx envelope and putting it in a UPS envelope changes the form of the letter... That's because when a customer sends an IP packet to their ISP, they are not asking their ISP to transmit the IP packet itself, unchanged, to its destination. Rather, they are asking their ISP to transmit the payload of the packet—the data contained within the packet—to its destination unchanged... In other words, when a BIAS customer transmits an IP packet to their ISP, the customer is essentially telling the ISP, "Here is some data. I am sending it to you as the payload in an IP packet, since IP is the language our computers have agreed to use so that I can tell you where I want my data to go. I don't care if you repackage my data (the payload) using other protocols along the way, so long as you don't change the form of the payload itself. I need the payload to reach its destination unchanged, but I don't care how it gets there."²⁸

In this same way, Comcast's assertion that packet fragmentation changes the form or content of the information being transmitted is also obviously wrong: even if a packet is fragmented, its content is still maintained across the fragmented packets. To use the analogy above, it would be like saying that taking a two-page letter out of one envelope and putting each page in a separate envelope for sending somehow changes what is written on each page.

Regarding Comcast's (and the NPRM's) assertion that firewalls somehow change the content of communications, the same letter explained that

Rather than changing content, a firewall blocks certain types of content based on the source, destination, or port (which might indicate what class of information the packet contains). Blocking potentially harmful connections does not change the form of any information—it simply prevents those connections from reaching the end user, and so long as it is done without objection by the user, certainly constitutes reasonable network management. This is very similar to how telephone networks address unwanted robocalls: the network provider determines what calls are likely to be unwanted based on information like the validity of the source phone number or the caller ID information and then blocks the call—without changing the form or content of the call.²⁹

²⁸ Joint Comments of Internet Pioneers at 29, footnotes omitted.

²⁹ Joint Comments of Internet Pioneers at 30.

Given the above, it is clear that Comcast's final claim that telephony is "the only information exchange that promises to send and receive information between end points without alteration of the information's form or content" is also incorrect, since IP also transmits information without alteration of the information's form or content. Further, many telephony providers perform the same sort of transformation on the information in phone calls (e.g. repackaging sound data in different modes of transmission³⁰) as BIAS providers do on the information in IP packets (by converting packets from IPv4 to IPv6).

2. Users Choose the Endpoints of their Transmissions

Many major BIAS providers also duplicated the NPRM's error in suggesting that BIAS does not qualify as a telecommunications service because "Internet users do not typically specify the 'points' between and among which information is sent online."³¹ For example, AT&T stated that

When an end user enters a URL for a news story reported on cnn.com, he may receive the main text content of the webpage from a centralized CNN server or, more likely, from various cache servers maintained closer to his location. If the webpage is accompanied by video content, that content may well be sent from a separate server. In addition, various locations on the webpage are populated by advertisements, which the user did not specifically request, but which are sent to him from disparate locations operated by ad networks (such as Google/DoubleClick). . . . *The ISP handles all of these transmissions on the end user's behalf by means of the ISP's DNS functionality and related information-processing services.*³²

This assertion is misleading. The only transmissions the ISP must handle on the user's behalf are the requests to send data to and from specific IP addresses, which are set by the user (or the browser, on the user's behalf), and which are not changed, altered, or modified by the ISP. In particular, the user does not necessarily have to use the ISP's DNS server, and it is unclear what related "information-processing services" AT&T is alluding to. Additionally, even if some of the data the user seeks is on a caching server, the user's browser will still send a request to a specific IP address—a specific point specified by the user. In the same way it is up to a telephone company to figure out how to route a call to reach a phone, it is up to the ISP to figure out how to route the request to that IP address—but the end point has still been specified by the user.

AT&T's next claim is even more misleading, to the point of being factually incorrect. AT&T states that "the end user does not himself "specify" any of the potentially dozens

³⁰ See, e.g., <http://electronics.howstuffworks.com/question354.htm>, which explains that analog voice data is often digitized and transmitted as packets, just like information on the Internet.

³¹ NPRM ¶ 29.

³² AT&T Services Inc. Comment at 70.

of “points” from which those various transmissions are sent, all in the course of allowing him to download a single webpage. In addition, much of the transmitted information (such as the ad content) is not “of the user’s choosing.”³³

This is simply wrong from a technical standpoint. The user, or more precisely, the user’s browser, on the user’s behalf, most certainly *does* specify all the dozens of points to which requests for data are sent. The user may not know before she tries to load cnn.com what those points will be, because it is possible that the page she views will contain references to resources on other servers. But those references do not come from the ISP; they come from the website itself or any Content Delivery Networks (CDNs) it employs.³⁴ Further, the user’s browser *does indeed* make a choice to load content from those other servers, and asks the ISP to transmit requests for that data to those servers. At no point does the ISP change what IP address the user has specified her data be sent to, and at no point does the ISP determine what data should be sent back to the user or where it should be sent from.³⁵

This point is particularly well-illustrated by the use of ad-blockers: software which a user can install in her browser to tell her browser not to make requests to certain servers. If the end user’s browser were not specifying on her behalf the points to which her transmissions were sent, it would be impossible for ad-blockers to function correctly. Of course, ad-blockers function properly every day. Further, it makes no difference that the browser automatically specifies some points to which transmissions will be sent (instead of the user specifying those points manually); from the ISP’s perspective, there is no way to tell the difference, and it has no bearing on how the ISP treats the transmissions.

Verizon makes a similar argument, claiming incorrectly that

Unlike telephone numbers, web addresses do not correlate with any single endpoint – the same information is often stored on multiple servers, and thus the same request may be routed to different endpoints. The Title II Order rejected this reality, implying that to recognize it would be to

³³ AT&T Services Inc. Comment at 70–71.

³⁴ While it is true that some major ISPs also operate their own CDNs, those operations are wholly separate from the business of providing BIAS (particularly given that the customers for CDNs are edge providers, not retail consumers), and are not a necessary component of BIAS in any way, shape, or form.

³⁵ The primary exception is when an ISP performs a malicious action, such as inserting data into a user’s request or the request’s response, or redirecting a user to a captive portal. These actions are the exception, however, and not the rule, and will often trigger an error in the user’s browser if they violate further security protections. *See, e.g.*, Gennie Gebhart and Jacob Hoffman-Andrews, How Captive Portals Interfere With Wireless Security and Privacy, ELECTRONIC FRONTIER FOUNDATION (Aug. 9, 2017), <https://www.eff.org/deeplinks/2017/08/how-captive-portals-interfere-wireless-security-and-privacy> (last visited August 30, 2017).

require that users specify “the routing or handling of their transmissions along the path to the end point.” But that is false: The relevant question under the statute is whether the user specifies the endpoint, as with a telephone number, or whether instead a behind-the-scenes, information-processing technology determines which of multiple identical endpoints will be selected.³⁶

This claim is wrong for two separate reasons. *First*, with the exception of anycast IP addresses, IP addresses do indeed correlate with a single end point which the user specifies when she sends her transmissions. And even in the case of anycast IP addresses, in which multiple servers in different geographic locations share the same public IP address, at any instant in time only one of those servers will be the one to which the user’s transmissions are sent (usually the closest one), so again, the user is specifying a single point to which her transmissions should be sent (i.e. “the closest server with this IP address”).³⁷ *Second*, some telephone numbers exhibit this same property of the same number potentially leading to different endpoints; depending on a user’s location, a call to 411 or 911 may be routed to a different endpoint, or a call to a PBX system could be sent to multiple phones. This does not mean that PTSN is not a telecommunications service, rather it emphasizes the similarity between these two services, both of which are clearly telecommunications services.

Comcast similarly errs, claiming that BIAS is not a telecommunications service because “routing decisions are based on the architecture of the network, not on consumers’ instructions, and consumers are often unaware of where online content is stored.”³⁸

Internet engineers disagree:

Saying that Internet users do not specify the points to which information is sent online is like saying that telephone users do not specify the phone they want their call sent to when they dial a phone number. . . . [B]oth the Internet and the telephone network make use of dynamic routing based on the architecture of the network. Further, in both networks the customer is often unaware of where the endpoint is actually located—particularly in mobile networks, where a phone customer may have absolutely no way of knowing, a priori, even what country a mobile phone might be located in. Thus, this interpretation of what it means to transmit information between or among points specified by the user, i.e. that the user must explicitly tell the network what routing decisions to take, has no basis in reality. Taken to its logical conclusion, it would require the FCC to similarly decide that

³⁶ Verizon Comment at 41.

³⁷ See, e.g., <https://en.wikipedia.org/wiki/Anycast>.

³⁸ Comments of Comcast Corporation at 21–22, citing “Bennett Letter at 2.”

telephone services are also not telecommunications services—an obviously absurd conclusion.³⁹

This expert opinion clearly refutes the claim that there is a difference between how users direct their phone calls to certain phone numbers and how users direct their web requests to specific IP addresses, since *both* networks involve a level of computer-based mediation.

Charter made a similar argument, asserting that

it is less and less accurate to describe end users as dictating the “points” from which information is sent and received over the internet, as they do in traditional telecommunications contexts . . . For example, many prominent edge providers such as Netflix maintain duplicate stores or caches of their content directly on the servers of various internet access providers, so that when a user requests a movie or television program, the ISP (or CDN) does not need to search for and transmit such information across various networks in order to deliver it back to the user . . . As these networks and relationships among upstream providers grow more complex, it becomes less and less accurate to conceptualize users as specifying the “points” among which their internet data is transmitted—rather, users are largely unaware of where the information they request is stored (or where the information they send is directed), and have come to depend on intermediaries to retrieve and route information for them to and from the right places in the most efficient manner possible.⁴⁰

Again, this characterization of how users specify where their data is transmitted is inaccurate at best. When a user transmits an IP packet to their ISP, that packet has a specific destination address. A user might not know what that IP address will be until they receive the response to an earlier request (e.g. if, as Charter suggests, the data the user wants is located on a different server than the server they first contact), but this is no different from a phone user calling an organization’s national phone number in order to determine what the phone number of the organization’s regional office is. In both cases, all the ISP does is transmit the data at the behest of the user, to the points specified by the user’s device. The fact that the user’s device might first transmit queries to other servers to find out where the information she seeks is located doesn’t change the underlying technical interaction: that the user (via her device) specifies a specific IP address to which she wants her requests sent.

³⁹ Joint Comments of Internet Pioneers at 25–26.

⁴⁰ Charter Communications, Inc. Comment at 15–16.

3. The Commission Should Not Credit Misrepresentations in BIAS Provider Comments

Finally, several BIAS providers' comments include simple misrepresentations, which we urge the Commission to dismiss outright.

a. BIAS Has Clearly Changed Since 2005

Cox asserts that “the factual particulars of BIAS . . . have not changed meaningfully since the Supreme Court considered them in *Brand X*.”⁴¹ This is demonstrably untrue. In fact, the past 12 years have seen significant changes in how BIAS is marketed, the additional services BIAS providers offer, and how people use their BIAS connections.

For example, as explained in the Engineers' Letter,

in the early days of Internet access, customers frequently chose which ISP to subscribe to based on the content and information services that ISPs supplied in addition to general Internet access. ISPs like AOL, Compuserve, or Prodigy differentiated themselves based on the different information services each provided—services like chat rooms, bulletin board systems, email, and specialized content only available to an ISP's own subscribers. In other words, ISPs competed on what information services they actually provided themselves. Not so today. Further, although Internet users obtained many functions from third parties in 2002, the wealth of capabilities that users can find on the Internet today simply did not exist at that time. Very few services that today are common household names existed in 2002: Wikipedia had only 20,000 articles (compared to its current 5.4 million), Google did not have its IPO until 2004, Facebook would not exist (even as a prototype) for another year, YouTube was three years away from its creation, Twitter was four years away from being founded, and Netflix was five years away from streaming its first movie online.⁴²

Even the devices consumers used to access the Internet were markedly different: the iPhone did not debut until 2007, and Android phones until 2008.⁴³ As a result, even the notion of mobile broadband did not exist at the time of *Brand X*. “In short, Internet users today have more choices of third-party services to use, and are far less likely to use their ISP for anything besides providing a connection to those services.”⁴⁴

⁴¹ Cox Communications, Inc. Comment at 7.

⁴² Joint Comments of Internet Pioneers at 22–23, citations omitted.

⁴³ https://en.wikipedia.org/wiki/Smartphone#Mass_adoption.

⁴⁴ Joint Comments of Internet Pioneers at 22–23.

b. There Is Ample Evidence of Consumer Harm

Several BIAS providers also insist that there has been an “absence of any meaningful evidence of anticompetitive conduct by BIAS providers.”⁴⁵

In fact, the Engineers’ Letter detailed nearly a dozen different instances in which light-touch, bright-line rules would have prevented consumer harm due to misbehavior by BIAS providers (including situations which AT&T incorrectly characterized as network management, such as when AT&T blocked certain plans from using FaceTime). Instead of reproducing the list of harms in full here, we direct the Commission to the comments referenced.

F. The Actions of Several BIAS Providers Contradict Their Claimed Commitment to Net Neutrality

Broadband providers claim to have “remained faithful to consensus open Internet principles throughout the many years that BIAS was classified as an information service—and have pledged to maintain the same consumer-friendly practices regardless of how BIAS is classified.”⁴⁶

Their actions suggest otherwise.

For example, that particular statement is attributable to Comcast—the same Comcast that interfered with BitTorrent in 2007.⁴⁷ Cox claims, they are “unwaveringly committed to maintaining Internet freedom as a matter of sound business and public policy,”⁴⁸ but Cox hijacked its’ users’ DNS requests in 2008⁴⁹, exposing users to degraded performance, malfunctioning applications, and security vulnerabilities.⁵⁰ AT&T claims that “no ISP wishes to block or throttle Internet content without a reasonable network-management

⁴⁵ Cox Communications, Inc. Comment at 15. *See also* AT&T Services Inc. Comment at 13, claiming that “there have been no “net neutrality” rules of any kind for most of the broadband era, and—despite incessant warnings to the contrary—no problems arose in that unregulated environment revealing any need for common-carrier style regulation.”

⁴⁶ Comments of Comcast Corporation at 40.

⁴⁷ Peter Eckersley et al., Packet Forgery By ISPs: A Report on the Comcast Affair, ELECTRONIC FRONTIER FOUNDATION (Nov. 28, 2007), <https://www.eff.org/wp/packet-forgery-isps-report-comcast-affair> (last visited July 14, 2017).

⁴⁸ Cox Communications, Inc. Comment at 1.

⁴⁹ Nate Ritter, How to Turn Off (Disable) Cox’s 404 Hijacking/Interception, THE BLOG OF NATE RITTER, WEB CHEF (Oct. 3, 2008), <http://blog.perfectspace.com/2008/10/03/how-to-turn-off-disable-cox-404-hijacking/> (last visited July 14, 2017).

⁵⁰ Ryan Single, ISPs’ Error Page Ads Let Hackers Hijack Entire Web, Researcher Discloses, WIRED (April 19, 2008), <https://www.wired.com/2008/04/isps-error-page>.

justification,” but AT&T blocked FaceTime but not other video chat services, in an attempt to force customers to upgrade to more expensive data plans.⁵¹ T-Mobile claims that it “has long supported an Open Internet and core net neutrality principles,”⁵² but charges users extra if they don’t want their video throttled, regardless of the amount of data they use.⁵³ Verizon claims that it is “committed to an open Internet”, which it defines as “consumers [being] able to access the legal content of their choice when and how they want,”⁵⁴ but it has also jumped on the video-throttling bandwagon.⁵⁵

Actions speak louder than words. The Commission cannot trust these providers’ commitment to protecting the Open Internet.

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⁵¹ <http://www.computerworld.com/article/2472675/technology-law-regulation/at-t-blocks-facetime--follow-the-money.html>.

⁵² Comments of T-Mobile USA at 1 (July 17, 2017), *available at* <https://ecfsapi.fcc.gov/file/1071829217714/TMUS%20Restoring%20Internet%20Freedom%20Opening%20Comments.pdf>.

⁵³ <https://www.eff.org/am/node/96664>.

⁵⁴ Verizon Comment at 1.

⁵⁵ <https://arstechnica.com/information-technology/2017/08/verizon-to-start-throttling-all-smartphone-videos-to-480p-or-720p/>.