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* NOT ADMITTED IN VIRGINIA

FLETCHER, HEALD & HILDRETH, P.L.C.

ATTORNEYS AT LAW

11th FLOOR, 1300 NORTH 17th STREET

ARLINGTON, VIRGINIA 22209-3801

(703) 812-0400

TELECOPIER

(703) 812-0486

INTERNET

www.fhh-telcomlaw.com

FRANK U. FLETCHER
(1939-1985)
ROBERT L. HEALD
(1956-1983)
PAUL D.P. SPEARMAN
(1936-1962)
FRANK ROBERSON
(1936-1961)
RUSSELL ROWELL
(1948-1977)

EDWARD F. KENEHAN
(1960-1978)

CONSULTANT FOR INTERNATIONAL AND INTERGOVERNMENTAL AFFAIRS
SHELDON J. KRYS
U. S. AMBASSADOR (ret.)

OF COUNSEL
EDWARD A. CAINE*
MITCHELL LAZARUS*
EDWARD S. O'NEILL*
JOHN JOSEPH SMITH

WRITER'S DIRECT

703-812-0440
lazarus@fhh-telcomlaw.com

July 13, 1999

BY HAND DELIVERY
Ms. Magalie Salas
Secretary
Federal Communications Commission
445 12th Street SW, Room TW-B204
Washington DC 20554

Re: CC Docket No. 96-98
Implementation of the Local Competition Provisions in the Telecommunications Act of 1996

CC Docket No. 99-68
Inter-Carrier Compensation for ISP-Bound Traffic

Ex Parte Communication

Dear Ms. Salas:

Pursuant to Section 1.1206(b)(1) of the Commission's Rules, and on behalf of CDS Networks, Inc., I submit for filing with the Commission the original and three copies of this written ex parte communication. Kindly file two copies in each of the above-referenced dockets.

This letter responds to the "Declaratory Ruling in CC Docket No. 96-98 and Notice of Proposed Rulemaking in CC Docket No. 99-68," FCC 99-38 (released Feb. 26, 1999) (DR & NPRM).

SUMMARY

Large numbers of popular Internet sites are "cached" at ISPs and other locations close to the end user. A large fraction of end user traffic to an ISP thus goes no farther than a local cache, and remains wholly intrastate. This traffic is properly under state jurisdiction, and its amount can be measured easily and precisely. Remaining ISP traffic is jurisdictionally mixed, although predominantly interstate. That traffic should be subject to federal rules that promote fair and independent negotiation between incumbent LECs and CLECs.

DISCUSSION

The DR & NPRM seeks comment on proposed rules for inter-carrier reciprocal compensation applicable to traffic delivered to an ISP. The Commission had previously determined that reciprocal compensation obligations apply only to "local" telecommunications traffic.[1] Several state commissions had determined that ISP-bound traffic terminates at the ISP, thus making it subject to reciprocal compensation if handed off from one LEC to another. But the DR & NPRM reached a contrary determination. There the Commission decided that communications between an end user and the user's ISP are ultimately interstate in the large majority of cases. Its key finding:

> [T]he communications at issue here do not terminate at the ISP's local server, as CLECs and ISPs contend, but continue to the ultimate destination or destinations, specifically at an Internet website that is often located in another state.[2]

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[1] Local Competition Provisions, 11 FCC Rcd 15499, 16013 (1966) (subsequent history omitted). *See* DR & NPRM at ¶ 7.

[2] DR & NPRM at ¶ 12 (footnotes omitted).

The precedents require that jurisdiction be determined by analyzing the communication end-to-end.[3] Here, the Commission found the "other end" of a user's call to an ISP is at a distant computer somewhere on the Internet. That would make the call interstate, and hence within the federal jurisdiction. As a result, prior state determinations requiring reciprocal compensation on these calls are no longer good law.[4]

The Commission acknowledges that not all ISP-bound traffic is interstate.[5] The Commission asks whether it is practical to separate interstate and intrastate traffic, and whether it should adopt federal rules for interstate traffic that are distinct from state rules governing intrastate traffic.[6]

A. A Large and Growing Fraction of Internet Traffic Is Actually Intrastate.

The Commission's present inquiry rests on a factual misapprehension, possibly owing to developments that occurred after compilation of the pertinent record in CC Docket No. 96-98. **In fact, a large fraction of successful Internet communications never go beyond the ISP, but remain wholly local.** The percentage of such communications is increasing rapidly.

These facts result from the conjunction of two trends:

(1) Despite the much-touted "exponential growth" of the Internet, a small fraction of all available websites account for a large fraction of Internet activity. The ratio of websites actually accessed to the total number of on-line users is shrinking further as time goes on. Millions of less sophisticated users who are new to the

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[3] BellSouth MemoryCall, 7 FCC Rcd 1619 (1992), *cited at* DR & NPRM at ¶ 12.

[4] Despite its determination that ISP traffic is jurisdictionally interstate, the Commission noted that reciprocal compensation agreements entered into before release of the DR & NPRM remain enforceable. DR & NPRM at ¶¶ 22-24. Additionally, pending adoption of a federal rule on compensation for interstate ISP calls, state commissions may still require reciprocal compensation on ISP traffic, *id.* at ¶¶ 27-28, and carriers may voluntarily include interstate ISP traffic in their compensation agreements. *Id.* at ¶ 22.

[5] DR & NPRM at ¶¶ 18, 36.

[6] DR & NPRM at ¶ 36.

Internet tend to frequent just a few sites listed in the major portal services. Many users never learn to navigate beyond their portals.[7]

(2) Because costs of storage are declining much faster than costs of bandwidth, ISPs find they can operate more efficiently by storing copies of popular websites locally, a practice called "caching." Data accessed once is likey to be accessed again. The economies of caching increase as growing numbers of users repeatedly log on to the same handful of popular sites.

In short, it is far cheaper and faster to let 2,000 subscribers access MSNBC, ESPN, and the other popular sites from a local hard drive, at about 40 megabytes/dollar for hardware costs, than to move the same data across the Internet 2,000 times. An ISP can store data for a month at about the same cost as transmitting it across the country once.[8] Caching moves data storage from the congested interior of the Internet out to the edge, close to the requesting end user.[9]

Even if bandwidth costs were not a factor, caching would still be necessary to avoid bottlenecks at the remote server or remote router interconnection points. Ultimately, local storage is needed because the number of Internet users is increasing much faster than the number of servers. In addition,

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[7] One study, using data from December 1997, showed that 5 percent of websites in the sample studied received 75 percent of the visits. John Markoff, *Not a Great Equalizer After All?*, N.Y. Times, June 21, 1999, at C4. But this study probably underestimates the concentration. Because it focused on university and adult sites, the study may have missed the few dozen consumer sites that draw the most traffic. Moreover, the data used are now 18 months old — a lifetime on the Internet. The number of people on line may have doubled during that period, with new users more likely to restrict their activity to the same small handful of sites.

[8] Paul DeVeaux, *Cache Me If You Can*, America's Network, July 1, 1999, at 34.

[9] The equipment and services needed to accomplish these functions are themselves becoming a major industry. The caching market is expected to reach *$2 billion* by 2002, with hardware caching appliances making up 80% of that market. (The rest is software packages that run on standard operating system platforms.) Source: Collaborative Marketing 1998 Internet Caching Report. A different estimate predicts a $5.1 billion market by 2003, with continuing annual growth at over 50%. Source: International Data Corp. 1999.

new high-speed access technologies such as DSL, cable modems, and satellite will increase typical download speeds by a factor of 20 or more, enabling users to click on correspondingly more sites in the time they now take to inspect one. This level of demand will paralyze the backbone unless there is adequate caching to buffer the load.

Streaming audio and video, which consume significant bandwidth, are readily cached.[10] UseNet newsgroups and anonymous FTP (publicly available file transfer protocol) can also be fully cached. For fast-changing websites such as news, weather, and sports services, a process called "Evergreen" caching permits storing a site's unvarying graphic content — logos, borders, etc., which account for most of the bandwidth — while downloading only new content, consisting largely of low-bandwidth text. The much-discussed explosion of e-commerce encourages caching of web pages and forms, with only user-specific information and typed-in text actually transiting the Internet. (Authenticated or secure websites may carry coding that prohibits caching their contents.) A product called "Footprint" lets Internet content providers, in addition to ISPs, choose material to be cached at the ISPs' facilities. Some providers favor Footprint because it keeps information on the site readily available even during extremely heavy demand.

In short, the Commission's image of a user request passing through the ISP and onto the Internet may have been accurate at one time, but is now is largely out of date. Nowadays a large fraction of mouse-clicks connect the user only to a nearby cache. The process is transparent to the user, who does not ordinarily know (or care) that he has reached the cache rather than a distant site. Indeed, a sophisticated user would prefer the cache, because accessing it is usually much faster than downloading from a remote server.

If an ISP were to unplug from the Internet backbone today, 60-80% of web queries and 100% of UseNet queries would still be answered with current information. An additional 10% of Internet traffic representing anonymous FTP would also be unaffected. Only email and chat require a "live" Internet connection. But these are both primarily text-based and require very little bandwidth, and so represent only a tiny percentage of a typical ISP's data traffic.

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[10] Live audio-video content cannot be cached, of course, since it is meant to be viewed in real time. But live content can be "proxied," which replicates the information source to multiple destinations in real time.

Modern cache hardware refreshes each website automatically as the cache becomes stale. Although the calls that accomplish the refresh function are interstate, they are not calls handed off between LECs, and so do not raise issues of inter-carrier compensation. These calls originate with the cache and travel only over the private Internet backbone. Some may be prompted by end-user inquiries, but even in that event the call still terminates at the cache. The cache engine itself creates the request that travels over the Internet. Ordinarily, therefore, all end-user calls that reach a cached site are wholly intrastate.[11]

B. Interstate and Intrastate Internet Traffic Can be Readily Distinguished.

The Commission seeks comment on "whether it is possible, as a technical matter, to segregate intrastate and interstate ISP-bound traffic . . . ."[12] The answer is yes. While the LEC cannot tell the ultimate destination of traffic delivered to the ISP, the ISP easily can.[13]

An ISP's router table can be regarded as containing two categories of instructions for routing packets:

- from specified IP addresses to the same address or to other specified IP addresses;[14] and

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[11] We note below the possible exception of an ISP serving customers in two or more states through the same facility.

[12] DR & NPRM at ¶ 31.

[13] "Incumbent LECs argue that it is not technically possible to separate the intrastate and interstate ISP-bound traffic." DR & NPRM at ¶ 16 (footnote omitted). While strictly true from the LEC's standpoint, this is irrelevant for the reasons shown in text.

[14] An IP (Internet Protocol) address is the universal identifier that labels every computer attached directly to the Internet. Its format is a "dotted quad" — four numbers in the range 1-255, separated by periods. For example, 192.104.54.3 identifies the Commission's public website. The "domain names" commonly used for accessing Internet sites, such as fcc.gov, are mnemonic forms linked to particular IP addresses.

- between "any other" IP addresses and the specified IP addresses.

Typically the specified address are for the ISP itself. Thus, packets handled under the first category of instructions represent traffic destined for the ISP's own facility. This is necessarily intrastate.[15] In a refinement, the router can also store the IP addresses for other ISPs located in the same state, and can tally packets to and from those addresses as intrastate.

The remaining traffic, to or from an "any other" address, is the kind of traffic contemplated in the DR & NPRM — traffic from an end user to the ISP, and from there to a computer somewhere on the Internet. Such traffic can be jurisdictionally mixed, but is predominantly interstate.

It is a simple matter for the router to count and log the numbers of data bytes handled under each of these rule categories. That capability makes it very straightforward to identify intrastate traffic for accounting under state jurisdiction, and to implement federal rules for mixed (largely interstate) interstate traffic.[16]

C. Traffic That Can Be Readily Identified and Quantified as Intrastate Should Be Subject to Reciprocal Compensation Under State Rules.

Separate interstate and intrastate rules would be the fairest way to implement congressional intent concerning inter-carrier compensation.[17] The Commission is correct that a CLEC incurs costs when it delivers traffic originating on an incumbent LEC's network to an ISP.[18] Congress enacted Section 251(b)(5) to ensure that the terminating LEC was compensated for those costs. The question is whether the Commission or the state has jurisdiction over that compensation.

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[15] A possible exception arises if an ISP serves customers in two or more states through the same facility. In that event the ISP would have to segregate the traffic by state, or else treat it all as interstate.

[16] *See* DR & NPRM at ¶ 36.

[17] *See* 47 U.S.C. § 251(b)(5).

[18] DR & NPRM at ¶ 29.

As shown above, a large fraction of ISP traffic is unambiguously intrastate, and its quantities can be precisely determined. That traffic must remain under state jurisdiction. Moreover, it should be subject to the same reciprocal compensation rules that prevailed before release of the DR & NPRM. The Commission has no jurisdiction to regulate any aspect of it.[19]

The findings of the DR & NPRM have no bearing on identifiably intrastate traffic. Thus, for example, the Commission lacks authority to question an arbitrator's construction of a most-favored-nation (MFN) clause — or any other clause — of an interconnection agreement insofar as it bears on intrastate traffic.[20] Although the Commission is properly concerned about the threat of misallocations of costs and revenues between the state and federal jurisdictions,[21] these are best avoided by letting incumbent LECs and CLECs negotiate their own compensation agreements, subject to arbitration. MFN clauses further promote competition, and hence keep rates down, by hindering the incumbent LEC from favoring large CLECs at the expense of small ones.

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[19] Section 251(b)(5) requires reciprocal compensation "for the transport and termination of *telecommunications*." 47 U.S.C. § 251(b)(5) (emphasis added). "Telecommunications" is defined as "the transmission, between or among points specified by the user, of information of the user's choosing . . . ." 47 U.S.C. § 153(43). Incumbent LECs may argue that an end user accessing a cached site is not communicating with a point specified by the end user, but rather with a point specified by the ISP — and hence that the transaction is not "telecommunications" on which reciprocal compensation must be paid. But this argument is specious. A customer dialing an 800 number for a large catalog company neither knows nor cares what geographic "point" he communicates with. Moreover, the catalog company can and does reroute calls on the fly, so successive calls made moments apart from the same telephone may be answered in different parts of the country. Such calls remain "telecommunications" nonetheless, because the customer successfully chooses his "point" of communication to be the catalog company. Similarly, an Internet subscriber who successfully accesses the MSNBC web site, for example, engages in telecommunications regardless of whether the request is ultimately handled by the MSNBC server or by a cache.

[20] *See* DR & NPRM at ¶ 35.

[21] DR & NPRM at ¶ 36.

CONCLUSION

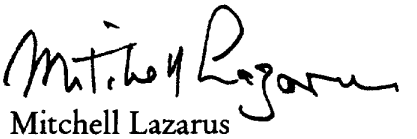
The Commission's conclusion that nearly all ISP traffic is interstate is factually incorrect. Because of widespread caching, a large fraction of typical ISP traffic never leaves the ISP's facility, and is wholly intrastate. Moreover, the amount of that traffic is readily monitored and quantified. This intrastate component of the ISP's traffic is within state jurisdiction. Prior to release of the DR & NPRM, state commissions consistently sought to enforce compensation agreements concerning ISP traffic against the incumbent LECs. The Commission should clarify that the DR & NPRM does not apply to identifiably intrastate traffic, and should urge the state commissions to continue their role with respect to that traffic. Compensation for jurisdictionally mixed traffic should be subject to federal rules that promote fair and independent negotiation between incumbent LECs and CLECs.

■ ■ ■ ■

Kindly date-stamp and return the extra copy of this letter.

If there are any questions about this filing, please call me at the number above.

Respectfully submitted,



Mitchell Lazarus
Counsel for CDS Networks, Inc.

ML:deb

cc: Larry Strickling, Chief, Common Carrier Bureau
Carol E. Mattey, Chief, Policy and Program Planning Division
Anna Gomez, Chief, Network Services Division
Kurt Schroeder, Deputy Chief, Network Services Division
Jane E. Jackson, Chief, Competitive Pricing Division
Cleve Tooker, CDS Networks, Inc.