

STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION
DT 09-044

New Hampshire Telephone Association
Petition for an Investigation into the Regulatory Status of
IP Enabled Voice Telecommunications Services

REPLY BRIEF OF THE RURAL CARRIERS OF THE
NEW HAMPSHIRE TELEPHONE ASSOCIATION

NOW COME the incumbent carriers (excluding affiliates of FairPoint Communications, Inc.) of the New Hampshire Telephone Association, a New Hampshire voluntary corporation¹ (the “RLECs”), and hereby submit the following Reply Brief in connection with the Petition for Investigation into the Regulatory Status of IP Enabled Voice Telecommunications Services.

I. CABLE VOIP SERVICE IS TELEPHONE SERVICE UNDER RSA 362:2.

In their briefs, Comcast Phone of New Hampshire, LLC and its affiliates (“Comcast”) and TWC Digital Phone LLC (“TWC”) raise issues of statutory interpretation and invoke a “contextual” argument that RSA 362:2 must be interpreted in the context of its 1911 enactment, and thus cannot apply to a modern technology like Cable VoIP.² Beginning with the “common and approved usage” test of RSA 21:2, Comcast states that “[t]he service contemplated by the enacting legislature, and over which the Commission has now had long-standing regulatory authority, is known as ‘plain old telephone service’ or ‘POTS,’”³ and that this is one reason that

¹ Bretton Woods Telephone Company, Inc.; Dixville Telephone Company; Dunbarton Telephone Company, Inc.; Granite State Telephone, Inc.; Hollis Telephone Company, Inc.; Kearsarge Telephone Company; Merrimack County Telephone Company; Wilton Telephone Company, Inc.

² Comcast at 11; TWC at 6.

³ Comcast at 11.

“the legislature did not intend (and could not have intended) the Commission to regulate VoIP services like CDV.”⁴ This argument is complete nonsense. Comcast and TWC would require the PUC to determine its jurisdiction based on telephone service as it existed in 1911, when telephone service in New Hampshire probably consisted of a simple two piece handset by which the user alerted a central switchboard operator of the need to be manually connected to another user.⁵ At the time, it is doubtful that the legislature contemplated automated telephone exchange equipment, electronic switches, microwave transport, digital transmission, time division multiplexing, CENTREX, PBX trunks, or a host of other technologies that are now integral to modern telephone service. So according to this “contextual” argument, Commission jurisdiction over telephone utilities should have disappeared decades ago.

A more basic problem with the “contextual” argument is that it assumes that this sort of statutory interpretation technique is required in the first place. However, one of the primary principles of statutory interpretation is that interpretation *may not be necessary* at all. Principles of statutory interpretation are only invoked when there is a conflict or ambiguity. “If the language is plain and unambiguous, we need not look beyond the statute for further indications of legislative intent.”⁶ “A frequently encountered rule of statutory interpretation asserts that a statute, clear and unambiguous on its face, need not and cannot be interpreted by a court and that only statutes which are doubtful of meaning are subject to statutory interpretation.”⁷

Here, there is no conflict or ambiguity. The Commission should look beyond the technology smokescreen that Comcast and TWC are laying down and focus on the service. RSA

⁴ Comcast at 13. *See also* TWC at 6.

⁵ For representative pictures of equipment, see Violette, Alderic O., *Merrimack County Telephone Company: The First Hundred Years*, MCT, Inc., 1997.

⁶ *Ireland v. Worcester Ins. Co.*, 149 N.H. 656, 661 (2003).

⁷ 2A Sutherland, *Statutes and Statutory Construction* § 45.2 (7th ed.).

362:2 is a service oriented statute, not technology based, and applies to the “conveyance of telephone messages.” The technology comparisons that Comcast and TWC tout are distinctions without a difference. For example, Comcast describes its “HomePoint” communications device as an Internet enabled device,⁸ as if this makes it any more or less a telephone handset, and as if this changes the characteristics of the underlying telephone service any more than any other Part 68 device attached to an RJ-11 port. This device, and its capabilities, are irrelevant to the question of whether Cable VoIP is a telephone service. As the RLECs explained in their Initial Brief, the end user experience in making and receiving calls is the same for Cable VoIP and regulated local exchange service from the RLECs. When customers make a call, they pick up a phone, hear a dial tone, and dial the number of the person they want to call. When the called party answers the phone, the two parties talk. The customers hear the same audio indicators such as a busy signal, call waiting tone, and other signals to communicate the call status with the caller. The end users take no additional or different actions in placing and receiving Cable VoIP calls than they do with telephone calls provided by the RLECs.

In short, while Cable VoIP may differ in the specific technology used to provide it, the service the customer receives is telephone service. Cable VoIP service is, in all important respects, telephone service that is subject to regulation by this Commission, and comports in all respects with the federal definition of telecommunications service.

Comcast and TWC also look toward cases like *Omni Communications*⁹ and *Allied Gas*¹⁰ for support of their argument that the Commission’s jurisdiction does not extend to Cable VoIP.¹¹

⁸ Comcast at 4.

⁹ Appeal of Omni Communications, 122 NH 860 (1982).

¹⁰ *Allied New Hampshire Gas Co. v. Tri-State Gas & Supply Co.*, 107 N.H. 306 (1966) (“*Allied Gas*”).

¹¹ TWC at 6-8, Comcast at 13.

As the RLECs acknowledged in their Initial Brief, the Commission does not have authority under RSA 362:2 to regulate industries that are merely “related” to statutory utility services. However, unlike the text-based mobile paging and bottled gas services at issue in *Omni Communications* and *Allied Gas*, Cable VoIP is a direct and transparent substitute for existing PSTN service. It is not “somehow related” to telephone service – it *is* telephone service, no different than other telephone services provided by regulated RLECs, ILECs and CLECs. Where a service “conveys the telephone message for the benefit of its customers,” the Commission is fully empowered to assert its jurisdiction.¹² In this case, NHTA is not recommending that the Commission expand its powers, but merely exercise its authority as directed by the legislature. The Commission’s authority under RSA 362:2 is defined by the characteristics of the companies and services they provide – not the technology employed to provide those services.

The Commission should not be concerned that this will lead to a slippery slope of “absurd” regulation, as TWC warns.¹³ In its brief, TWC has concocted a straw man argument, accusing NHTA of advocating regulation of most *any* service that uses a telephone – going so far as to suggest that home intercom systems would fall within this ambit.¹⁴ This mischaracterization of the RLECs’ position has no basis whatsoever in this record. It is a blatant diversion from the simple question of whether Cable VoIP is telephone service. As the RLECs concluded in their Initial Brief, Cable VoIP service conveys telephone messages as described in RSA 362:2 and has all the characteristics of a telecommunications service as this term is defined by the Communications Act. It is a paid service that is offered directly to the public. It is a voice

¹² Appeal of Atlantic Connections, Ltd., 135 N.H. 510, 513-514 (1992).

¹³ TWC at 8.

¹⁴ *Id.*

transmission among points as specified by the user without a change in the form or content of the information as sent and received. There is nothing about Cable VoIP, architecturally, technically or practically, that distinguishes it from the telephone service provided by other regulated carriers.

II. THE VONAGE ORDER DID NOT PREEMPT ALL STATE VOIP REGULATION.

Contrary to Comcast's and TWC's assertions¹⁵ the FCC did not unconditionally preempt cable company VoIP offerings in its *Vonage Order*.¹⁶ In support of this position, Comcast cites, but does not quote, a paragraph of the *Vonage Order* that references its applicability to cable services. Read in the context of the entire order and subsequent FCC actions, however, it is plain that the *Vonage Order* does not apply the Cable VoIP services at issue here.

The *Vonage Order* was decided on a "narrow jurisdictional question"¹⁷ pertaining only to the nomadic Vonage service and services comparable to it. The *Vonage Order* involved the "impossibility" exception that allows the FCC to preempt state regulation of a service where it is impossible to separate the service's intrastate and interstate components as contemplated by the 1996 Act.¹⁸ Faced with the "impossibility" of determining the geographic endpoints of Vonage's service, the FCC held that preemption of the Minnesota state regulations was warranted, emphasizing "the practical inseparability of other types of IP-enabled services *having basic characteristics similar to DigitalVoice* would likewise preclude state regulation to the same

¹⁵ Comcast at 8, TWC at 11.

¹⁶ *Vonage Holdings Corp.*, WC Docket No. 03-211, Memorandum Opinion & Order, 19 FCC Rcd 22404 (2004) ("*Vonage Order*").

¹⁷ *Id.* n. 46.

¹⁸ *Louisiana Pub. Serv. Comm'n*, 476 U.S. 355, 368 (1986) (FCC can preempt state law "where compliance with both federal and state law is in effect physically impossible.").

extent as described herein.”¹⁹ Analyzing these characteristics in greater detail, the FCC described how the Vonage service “harnesses the power of the Internet to enable its users to establish a *virtual presence* in *multiple locations* simultaneously, to be reachable *anywhere* they may find a broadband connection, and to manage their communications needs from *any* broadband connection.”²⁰ More to the point, the FCC observed that “[w]ere it appropriate to base our decision today . . . solely on the functional similarities between DigitalVoice and other existing voice services . . . we would find DigitalVoice *far more similar to CMRS*, which provides mobility, is often offered as an all-distance service, and needs uniform national treatment on many issues.”²¹

As the RLECs established in their Initial Brief, the service described in the preceding paragraph bears little resemblance to the Cable VoIP services at issue in this proceeding, which have few of the “basic characteristics similar to DigitalVoice.” Cable VoIP is a service that requires the end-user to use a geographically specific telephone number at a fixed location, with end points of the call that are clearly identifiable.

To whatever extent that the *Vonage Order* expressed any applicability to Cable VoIP service, it should also be considered a product of its time. In the *Vonage Order*, the FCC relied on self representations by the cable companies that Cable VoIP was comparable to the Vonage service and was indubitably an interstate service.²² Since that day over five years ago, the FCC has developed a more nuanced understanding of VoIP and no longer finds the service so monolithic. This was demonstrated in the FCC Enforcement Bureau’s letter to Comcast in January of 2009, in which it observed that

¹⁹ *Vonage Order* ¶ 32 (emphasis supplied).

²⁰ *Id.* ¶ 24 (emphases supplied).

²¹ *Id.* ¶ 22 (emphasis supplied).

²² *Id.* n. 113.

“To the extent that Comcast maintains that its VoIP offering is a telephone service offering transmission facilities for VoIP calls distinct from Comcast’s broadband offering, then it would appear that the fee Comcast assesses its customers for VoIP service pays in part for the privileged transmission of information of the customer’s choosing across Comcast’s network. . . . Given that Comcast apparently is maintaining that its VoIP service is a ‘separate facilities-based’ telephone service that is distinct from its broadband service and differs from the service offered by ‘VoIP providers that rely on delivering calls over the public Internet,’ . . . it would appear that Comcast’s VoIP service is a telecommunications service subject to regulation under Title II of the Communications Act of 1934, as amended.”²³

In their Initial Brief, the RLECs referred as well to a subsequent FCC Order that demonstrates the limited reach of the *Vonage Order*. In a proceeding concerning universal service funding that was convened after the *Vonage* case, the FCC elaborated on the scope of its the preemption:

[A]n interconnected VoIP provider with a capability to track the jurisdictional confines of customer calls would no longer qualify for the preemptive effects of our *Vonage Order* and would be subject to state regulation. This is because the central rationale justifying preemption set forth in the *Vonage Order* would no longer be applicable to such an interconnected VoIP provider.²⁴

This language from the *USF Order* unambiguously recognizes that VoIP providers who have the capability to track the jurisdiction of their traffic do not qualify for *Vonage* preemption and are therefore subject to traditional state telephone regulation.

TWC disagrees, contending that “nothing in the FCC’s 2006 *USF Order* has any bearing on the preemption analysis set forth herein. That order observed in *dicta* that VoIP providers that choose to make universal service contributions on the basis of their actual interstate revenues could become subject to state regulation.”²⁵ TWC further implies that the FCC has since disavowed or weakened this statement, citing to (but not quoting) a letter the FCC filed with

²³ Letter to Kathryn A Zachem, Vice President, Regulatory Affairs, Comcast Corporation, File No. EB-08-IH-1518 (January 18, 2009) (citations omitted) (attached as Appendix 1).

²⁴ *Universal Service Contribution Methodology*, WC Docket No. 06-122, Report and Order and Notice of Proposed Rulemaking, 21 FCC Rcd 7518 ¶ 56 (2006).

²⁵ TWC at 17 (emphasis in original).

Eight Circuit in which the FCC “took pains . . . emphatically rejecting” the New York Public Service Commission’s assertion that the USF Order undercut the case for preemption.²⁶ This letter, however, was not as strident as TWC would suggest. It only reiterated the FCC’s position that it retained authority over VoIP service for which the jurisdiction could not be determined. “[T]he possibility that some VoIP providers might develop the technological capability for accurately distinguishing interstate and intrastate communications does not call into question the FCC’s authority to preempt state regulation of VoIP providers *that do not have that capability*.”²⁷

TWC also asserts that the FCC, in its brief to the Eighth Circuit, “emphasized that *fixed* VoIP providers, just like Vonage . . . ‘may transmit packets consisting of interstate and intrastate communications that are intertwined and inseverable.’”²⁸ This is *not* what the FCC said. The passage that TWC quotes did not relate to fixed VoIP at all, but to the prospect of VoIP service mixed with other IP-based services in the same transmission.²⁹ Indeed, throughout its brief, the FCC expressly reserved judgment regarding fixed VoIP: “[T]he FCC has not yet been squarely presented with the issue of whether these technological differences between the PSTN and the Internet are sufficient to justify preemption of state entry and tariffing regulation of fixed VoIP services.”³⁰ The court agreed that the *Vonage Order* was silent on the issue of fixed VoIP

²⁶ TWC at 18.

²⁷ See Letter from Nandan M. Joshi, Office of General Counsel, FCC, to Michael E. Gans, Clerk, United States Court of Appeals for the Eighth Circuit, at 2, Nos. 05-1069 *et al.* (8th Cir. filed July 11, 2006) (emphasis supplied) (attached as Appendix 2).

²⁸ TWC at 16 (quoting Brief for Respondent FCC, Minn. Pub. Utils. Comm’n v. FCC, No. 05-1069, at 64 (8th Cir. filed Dec. 1, 2005) (emphasis supplied) (“*FCC Brief*”).

²⁹ *FCC Brief* at 64.

³⁰ *Id.* at 65. (“The FCC’s [Vonage Order] nowhere addresses fixed VoIP services. . . .” *Id.* at 22. “VoIP services can be provided in a variety of different ways, and the particular characteristics of a fixed VoIP service may bear on the FCC’s preemption analysis.” *Id.* at 63. (internal citations omitted).

services, and held that any challenges to the order based on that issue were not ripe for review.³¹

It is ultimately up to the Commission to assess the weight of the *USF Order*, but the RLECs suggest that the FCC's "observation," as TWC phrases it, was not as tempered as TWC cares to believe. In the *USF Order*, the FCC clarified the central rationale of the *Vonage Order*, and stated unequivocally that carriers *would* – not "could" – be subject to state regulation if traffic jurisdiction was discernable.

Comcast also argues that "[t]he FCC has made clear that IP-enabled services such as VoIP must be permitted to develop free of state utilities regulation."³² It cites two paragraphs in the *IP-Enabled NPRM* for this proposition, but a check of those citations reveals that they are *non sequitur*. Nowhere in the cited paragraphs is there a reference to state regulation or an allusion to an FCC policy of encouraging the growth of VoIP services. (One paragraph is introductory, the other is wholly devoted to 911 obligations.) In fact, in one of the cited paragraphs, the FCC "expressly recognize[s] the possibility that we ultimately will need to differentiate among various IP-enabled services" and that "we do not prejudge these issues."³³ Consequently, there is no support for any assertion that the FCC has adopted a blanket policy opposing state regulation of Cable VoIP.

As the evidence in this investigation establishes, Cable VoIP is a fixed VoIP service with jurisdictional endpoints that can be tracked, providing a practical means to separate Cable VoIP

³¹ *Minn. Pub. Utils. Comm'n v. FCC*, 483 F.3d 570, 582-583 (2007) ("We conclude the NYPSC's challenge to the FCC's order is not ripe for review. The order only suggests the FCC, if faced with the precise issue, would preempt fixed VoIP services. Nonetheless, the order does not purport to actually do so Indeed, as we noted, the FCC has since indicated [in the *USF Order*] VoIP providers who can track the geographic end-points of their calls do not qualify for the preemptive effects of the *Vonage order*." (internal citations omitted)).

³² Comcast at 31.

³³ *IP-Enabled Services*, WC Docket No. 04-36, Notice of Proposed Rulemaking, 19 FCC Rcd 4863 ¶ 5 (2004) ("*IP-Enabled Services NPRM*").

communications into intrastate and interstate traffic. It necessarily follows, then, that intrastate Cable VoIP service lies beyond the reach of the FCC's exercise of preemption, and therefore remains subject to state regulation. Such a determination no more conflicts with federal rules and policies than the current scheme for distinguishing intrastate and interstate POTS traffic – itself based on the end-points of the calls.

III. CABLE VOIP IS NOT AN INFORMATION SERVICE.

A major thrust of Comcast's and TWC's arguments is that Cable VoIP is an information service, notwithstanding the FCC's pointed and repeated insistence that it has not made a decision on that issue.³⁴ This argument is supported by two claims: that Cable VoIP effects a net protocol conversion between a Cable VoIP user, and that Cable VoIP service is attended by a variety of IP-enabled communications features "that augment and complement its calling features."³⁵

A. Cable VoIP effects no net protocol conversion that renders it an information service.

Few issues in the law of telecommunications are so fraught with discord as is the distinction between an information service and a telecommunications service, particularly when the focus is on the concept of a "protocol conversion." The parties in this case, and throughout the industry, disagree as to what a "protocol" is, where it exists in the network and where it does not, whether this protocol changes from one point in the network to another, whether this change

³⁴ See e.g., *IP-Enabled Services*, WC Docket No. 04-36, Report and Order, 24 FCC Rcd 6039 n.21 (2009) ("[t]he Commission to date has not classified interconnected VoIP service as a telecommunications service or information service as those terms are defined in the Act, and we do not make that determination today"); *Schools and Libraries Universal Service Support Mechanism*, CC Docket No. 02-6, Report and Order and Further Notice of Proposed Rulemaking, FCC 09-105 ¶ 12 (rel. Dec. 2, 2009) (noting that "the Commission has not yet classified interconnected VoIP service as either a telecommunications service or an information service").

³⁵ Comcast at 17.

risers to the level of a “protocol conversion” and, if so, whether this conversion is within the category of those considered dispositive as to whether the service is an information service or not.

This analysis is complicated by the differing terms applied to the various representations of a communications signal (*e.g.*, analog, digital, data, voice, electrical, optical, packetized, formatted, etc.) and disputes regarding what points correspond to the respective “ends” in an end-to-end call. This discord is compounded by the tendency of different parties to view the network at various levels of abstraction, and then further compounded when those levels are mixed in the same discussion. For example, at the most basic level, a telecommunications transmission is a stream of unformatted, undifferentiated electromagnetic signals in some sort of carrier medium, *e.g.* copper wire, fiber, coax, microwave, etc. At the highest level, it is an intelligible message on a particular subject. In between, it can be multiplexed, coded into character streams, framed into packets, and otherwise processed in countless ways to meet the requirements of the transmission and switching equipment that comprise the networks it traverses. At each of these conceptual levels, the communications transmission is governed by a collection of specific protocols, standards and rules, all “stacked” above and below each other and cooperating in the overall transmission.

Comcast maintains that the interconnection of its IP-network transmission to the traditional POTS network (the so-called “IP-to-TDM” conversion) constitutes a net protocol conversion that renders its Cable VoIP offerings as information services. In its testimony and briefs, it relies on various cases and statutes for support of this conclusion. However, once the various terms and concepts are untangled, this position does not bear up to analysis, from either a legal or technical perspective.

Analyzing the arguments of the parties in this case requires answering these key questions:

- Is the signal subject to a “protocol?”
- If there is a protocol, is it “converted” at any point(s) in the transmission?
- If there is a conversion, is there a “net” conversion between each “endpoint” of the transmission, and what constitutes an “endpoint?”
- If there is a net protocol conversion, is it such that it renders the transmission an “information service?”

1. Is the signal subject to a “protocol?”

As a starting point, the parties (or, at least, Comcast and the RLECs) agree that for purposes of this discussion, a protocol “govern[s] the methods used for packaging the transmitted data in quanta, the rules for controlling the flow of information, and the format of headers and trailers surrounding the transmitted information and of separate control messages.”³⁶ There is no argument that IP, the “Internet Protocol” is a protocol in every sense of the word. It is a method of encapsulating data within logical structures that contain metadata related to the transmission of the data. As described in ITU RFC 791, it controls data transfer between computing endpoints used for communicating data across a packet-switched Internetwork using the Internet Protocol Suite as described in ITU RFC 1122. It corresponds to the Internet Layer of the Internet Protocol Suite, or an OSI Level 3 (Network) service as described in ITU Recommendation X.200.

Regarding TDM, however, the RLECs question whether it is really a “protocol,” at least in the sense that IP is a protocol. TDM is the acronym for “Time Division Multiplexing,” which is a “technique for transmitting a number of separate voice and/or video signals simultaneously

³⁶ *Amendment of Section 64.702 of the Commission’s Rules and Regulations (Second Computer Inquiry)*, Docket No. 20828, 77 F.C.C.2d 384, Final Decision n.33 (1980), *aff’d sub nom.* *Computer and Computer Indus. Ass’n v. FCC*, 693 F.2d 198 (D.C. Cir. 1982) (“*Computer II*”); *see also* Comcast at n. 28.

over one communications medium by interleaving a piece of each signal one after the other.”³⁷

The process “derives multiple channels on a single transmission by connecting bit streams one at a time at regular intervals.”³⁸ Put more technically, TDM is integral to the digital switching hierarchy, i.e. DS1, DS3, *etc.*³⁹ “[T]he line signal is organized into blocks of pulse positions called frames. Each frame is defined as a sequence of time slots made up of one 8-bit code word for each of the 24 channel signals.”⁴⁰ In light of these definitions, then, the phrase “TDM protocol,” while often used in connection with POTS, is a misnomer. It does not fit the FCC definition of a “protocol” that the parties have agreed to for this particular proceeding.

2. If there is a protocol, is it “converted” at any point(s) in the transmission?

While there are certainly specifications, i.e. rules, for TDM transmission and switching equipment, and while it could perhaps be considered that 8-bit blocks of data are “quanta,” there is no higher level organization involving headers, trailers and flow control data. The RLECs submit that it is not unreasonable to state that a time division multiplexed transmission e.g. a DS1, is in every sense a low level collection of *undifferentiated signal streams*, without any higher level organization than a trunk group of 24 copper trunks would have. Technically then, Cable VoIP IP transmissions that terminate to POTS are not so much converted, but “deconstructed” into “not-IP,” that is, TDM signal streams.⁴¹ While there is little question that

³⁷ Newton’s 20th ed. 834 (2004).

³⁸ *Id.*

³⁹ Telecommunications Transmission Engineering, Volume 2, Facilities 550 (AT&T 1977) (attached as Appendix 3).

⁴⁰ *Id.* 552.

⁴¹ The issues around IP and TDM conversions represent the confusion the RLECs mentioned earlier regarding mixing different levels of abstraction. Nothing can illustrate this better than dial-up networking, which entails sending an IP signal stream from the customer’s computer, through a modem, and hence into the POTS network, where the unconverted IP packets are

this deconstruction is a “protocol conversion” as the FCC defines it, it does not result in a “net” protocol conversion because, as discussed in the next section, a comparable conversion occurs on the originating end of the call.

3. If there is a conversion, is there a “net” conversion between each “endpoint” of the transmission, and what constitutes an “endpoint?”

In addressing the various changes that Cable VoIP transmissions indisputably undergo, Comcast has cagily written that the “eMTA *formats* outgoing calls from an analog electric signal into IP, and *formats* incoming calls (which Comcast delivers to customers in IP) from IP into an analog electrical signal for the handset”⁴² but that “[t]his *reformatting* is not a protocol conversion, as mere electric and analog signals, or sounds, are not are not ‘protocols’ under the FCC or standard industry definitions.”⁴³ This is an example of the confusion about terms that the RLECs referred to previously. Comcast is saying that, on its customer’s end of the call, an undifferentiated stream of electromagnetic signals is not a protocol and is merely “reformatted” into IP packets by the eMTA. On the other end, however, when the IP packets are changed *back* into an undifferentiated stream of signals on a TDM facility, this is now a protocol conversion. Comcast cannot have it both ways. The same thing is happening on each end of the Comcast transmission. It is either a protocol conversion or it is not, but it is one or the other, and in either case there is no net protocol conversion.

Anticipating this argument, Comcast has attempted to finesse this issue by relocating the “ends” of the call. Comcast maintains that the eMTA is not on its network, but is the

carried on a TDM facility. Both coexist, because they are not different “protocols,” but merely different levels of the communications, i.e. formatted information vs. unformatted transmission.

⁴² Comcast at 5.

⁴³ *Id.* at 23 (emphasis supplied).

“customer’s.”⁴⁴ Under these conditions, presumably, Comcast is really accepting an IP transmission that the customer has prepared for it, using the “customer CPE,” and then is deconverting it at the Media Gateway to interface to a POTS carrier, thus effecting a net protocol conversion. This is quite a stretch. The eMTA may happen to be located on the customer premises, but is not specified, owned or maintained by the customer.⁴⁵ Common sense indicates that the eMTA is no more the “customer’s” than is the LEC NID, and that the eMTA is every much as part of the Comcast network as its soft switches or Media Gateways. This is also in accord with the FCC’s definition of CPE, as “clearly severable from the underlying utility service to which it is attached.”⁴⁶ A key characteristic of CPE is that nothing “necessitates its provision as an integrated part of a carrier’s regulated transmission service.”⁴⁷ Cable VoIP eMTAs are not severable from the Cable VoIP service, are necessary for its function, and thus do not conform to this definition of CPE.

4. If there is a net protocol conversion, is it such that it renders the transmission an “information service?”

Even assuming for the sake of argument, that a net protocol conversion actually occurs in a Cable VoIP call to a POTS customer, this conversion does not amount to one that would render Cable VoIP an information service. The FCC has determined that there are three varieties of net protocol processing that do not comprise information services: 1) those involving communications between an end-user and the network itself (e.g., for initiation, routing, and

⁴⁴ *Id.*

⁴⁵ TWC Digital Phone LLC Responses to First Set of NHTA Data Requests Approved by Staff 1-5. (“TWCDP owns the eMTA and makes it available to the customer at no additional charge.”) (“TWC Staff Response”); *see also* Comcast’s Responses to First Set of NHTA Data Requests Approved by Staff 1-5 (“The eMTA is owned by Comcast’s cable affiliate.”) (“Comcast Staff Response”).

⁴⁶ *Computer II* ¶ 144.

⁴⁷ *Id.*

termination of calls) rather than between or among users; 2) those in connection with the introduction of a new basic network technology (which requires protocol conversion to maintain compatibility with existing CPE); and 3) those involving internetworking (conversions taking place solely within the carrier's network to facilitate provision of a basic network service, that result in no net conversion to the end-user").⁴⁸ There can be little question that the protocol processing that Cable VoIP providers perform is of the second type – to maintain compatibility of their newer technology with the POTS network. Comcast and TWC are not offering their customers interconnection with POTS customers as a "feature" or "option." They are offering phone service – period – which implies the ability to make calls to POTS customers and the requirement by Comcast and TWC to accommodate the existing technology in the POTS network.

The RLECs also reiterate that in cases where the call stays on-net in the Comcast or TWC network, there is no net protocol conversion.⁴⁹ At the very least, then, Comcast and TWC are providing a basic telecommunications service for these calls. While not disputing the facts of this scenario, Comcast still disagrees that this is a telecommunications services. It cites *Pulver.com* for the proposition that IP-to-IP phoning is an information service, and thus so are on-net Cable VoIP calls.⁵⁰ It is surprising to see *Pulver.com* cited – inappropriately – in this manner, because it is generally recognized that *Pulver.com* is *sui generis*, the seminal case

⁴⁸ See *Implementation of the Non-Accounting Safeguards*, CC Docket No. 96-149, Order on Reconsideration, 12 FCC 2297 ¶ 106 (1997) ("*Non-Accounting Safeguards Order*").

⁴⁹ Comcast Direct at 24:6-8; Comcast Staff Response 1-26, Exh. Wimer Direct 1-6 ("Calls that do not leave the Comcast's managed IP network do not experience net protocol conversion."); TWC Staff Response 1-26, Exh. Wimer Direct 1-6 ("A call that remains on TWCDP's network end to end will not undergo a net protocol conversion.").

⁵⁰ Comcast at fn. 64 (referencing *Petition for Declaratory Ruling that pulver.com's Free World Dialup is Neither Telecommunications Nor a Telecommunications Service*, WC Docket No. 03-45, Memorandum Opinion and Order, 19 FCC Rcd 3307 (2004) ("*Pulver.com*").

expressly limited to *computer-to-computer* transmissions where the VoIP provider is only providing routing information, not the underlying transmission services, as Cable VoIP providers do.⁵¹

Comcast also asserts that even in the case of on-net calls, it is providing an information service because it is “offering the capability” for protocol conversion in every call.⁵² The picture this conjures, of customers consciously availing themselves of such a capability, is ridiculous. It is the same as saying that Verizon Wireless customers choose Verizon because Verizon can convert their CDMA signal into a GSM signal that AT&T customers can receive. Cable VoIP providers are not “offering,” nor are their customers buying, a “protocol transformation” service.

This is not a trivial distinction. It should be remembered that one of the reasons that the FCC determined that protocol conversion was an enhanced (information) service was that it was, at that time, a discrete service offering of third party enhanced service providers. “The marketplace to date demonstrates that users are able to choose among an increasing number of alternatives—all of which are external to the basic transmission network—for performance of all levels of protocol conversion. These include providers of enhanced services, equipment manufacturers, and firms that provide specialized protocol converters.”⁵³ In other words, protocol processing was not incidental and transparent to the service being offered, as with Cable VoIP, but was expressly purchased by the customer. In contrast, Cable VoIP customers are purchasing telephone service, not protocol conversion service.

⁵¹ *Pulver.com* ¶ 9 (holding that the Internet-based service at issue was not “telecommunications” because the provider “neither offers nor provides transmission to its members” and “acts as a type of directory service”).

⁵² Comcast at 24.

⁵³ *Amendment of Section 64.702 of the Commission’s Rules and Regulations (Second Computer Inquiry)*, Docket No. 20828, 84 F.C.C.2d 50, Memorandum Opinions and Order ¶ 26 (1980).

B. Relevant Case Law does not Support the Assertion that Cable VoIP is an Information Service.

In addition to their technical arguments, Comcast and TWC also cite a few federal lower court cases in support of their argument that Cable VoIP is an information service. These cases, while unavoidable in a case like this, are not truly authoritative and are certainly not binding on the Commission.⁵⁴

Chief among these cases is *Southwestern Bell*,⁵⁵ a decision from the federal Eastern District of Missouri. This case came to the court on appeal of an interconnection arbitration decision by the Missouri commission. Many issues were raised in this appeal, including the issue of reciprocal compensation, which incidentally involved the question of whether VoIP is a telecommunications service or an information service. The court determined that “federal access charges are inapplicable to IP-PSTN traffic because such traffic is an ‘information service’ or an ‘enhanced service’ to which access charges do not apply.”⁵⁶ Comcast and TWC rely heavily on this case, but its persuasive authority is undermined by significant legal and technical weaknesses.

First, it is important to emphasize the limited jurisdiction of this case, which applies only to part of Missouri. While it is true that it was affirmed at the circuit court, the case was affirmed on other grounds; the circuit court never addressed the lower court decision regarding VoIP

⁵⁴ Two of the cases that Comcast refers to, *Vonage Holdings Corp. v. Minnesota P.U.C.*, 290 F. Supp. 2d 993 (D. Minn. 2003) and *Vonage Holdings Corp. v. New York P.S.C.*, No. 04 Civ. 4306, 2004 WL 3398572 (S.D.N.Y. July 16, 2004), both precede the *Vonage Order* and subsequent FCC Orders in which the FCC limits the scope of its preemption and expressly reserves judgment on whether VoIP constitutes an information service. While these cases may still have some precedential authority in their respective districts, they have little bearing on the present proceeding.

⁵⁵ *Southwestern Bell Tel. Co. v. Missouri P.S.C.*, 461 F. Supp. 2d 1055 (E.D. Mo. 2006), *aff’d* on other grounds, 530 F.3d 676 (8th Cir. 2008), cert. denied, 129 S. Ct. 971 (2009) (“*Southwestern Bell*”).

⁵⁶ *Id.*, 461 F. Supp. 2d at 1079.

traffic. Thus, this particular decision is not even the law of the circuit.⁵⁷ Second, at the time that this decision was issued in 2006, it was well known that the FCC had assiduously avoided making a determination regarding the nature of VoIP traffic and was holding such a decision in abeyance pending the outcome of the IP-Enabled proceeding. Nevertheless, the court plowed ahead, purporting to divine the intentions of the FCC. “Although the FCC has not yet ruled whether IP-PSTN is such a service, the orders it has issued lead to the conclusion that IP-PSTN is an ‘information service.’”⁵⁸ Given the FCC’s clearly communicated agnosticism on the subject, it is unclear as to what orders the court considered so dispositive.

The *Southwestern Bell* court’s decision was based on its determination that “IP-PSTN traffic is an information service within the meaning of the Act . . . because it involves a net protocol conversion from the digitized packets of the IP protocol to the TDM technology used on the PSTN.”⁵⁹ This conclusion is supported by analysis that, with due respect to the court, demonstrates such an unfamiliarity with the basic concepts that it must be rejected as the definitive word on IP-to-TDM “protocol conversion.”

The *Southwestern Bell* court asserted that “[t]he communication originates at the caller’s location in IP protocol, undergoes a net change in form and content when it is transformed at the CLEC’s switch into the TDM format recognized by conventional PSTN telephones, and ends at the recipient’s location in TDM.”⁶⁰ As short as this statement is, it is incorrect in three respects as it applies to this case. First, at the originating end, the communication does not originate in IP

⁵⁷ The appellate court’s scope of review is limited to issues that were raised both at the district court level *and* on appeal. *See generally*, *Bethea v. Levi Strauss and Co.*, 916 F.2d 453, 455 (8th Cir. 1990). Only issues *actually decided* by the appellate court become the law of the case. *Id.* at 456.

⁵⁸ *Southwestern Bell Tel. Co.*, 461 F. Supp 2d at 1081.

⁵⁹ *Id.*, 461 F. Supp 2d at 1082.

⁶⁰ *Id.* *See also* Comcast at 23.

protocol, but is converted to such by the Cable VoIP provider at the eMTA. Second, at the terminating end, it is the general case that the communication does not “end at the recipient’s location in TDM.” As explained in preceding sections, TDM is a technique for multiplexing multiple signal streams on to one transmission facility. However, most POTS recipient locations are serviced by single channel facilities – there is nothing to multiplex, so there can be no TDM. Third, the form and content are not transformed at the certificated CLEC’s switch, but at the Cable VoIP provider’s Media Gateway – a factual scenario that is different from this proceeding, contrary to Comcast’s assertion that *Southwestern Bell* is “squarely on point.”⁶¹

The *Southwestern Bell* decision is jurisdictionally narrow, legally myopic⁶² and technically weak. The RLECs respectfully suggest that it should not factor in the Commission’s analysis. The Commission instead should maintain its attention on the facts of this proceeding and on more authoritative FCC decisions.

C. Ancillary Information Services do not Render Cable VoIP an Information Service.

In their briefs, both Comcast and TWC tout their various ancillary services as evidence

⁶¹ Comcast at 19.

⁶² In one additional error of law, to which Comcast subscribes, Comcast at 21, the court noted that “[i]t does not matter that there is a “voice” at both ends of an IP-PSTN call. The same is true of voicemail, which the FCC has long recognized is an information service.” *Southwestern Bell Tel. Co.*, 461 F. Supp 2d at 1082. The court was mistaken to equate real-time voice and voicemail (which is a stored message), and thus conclude that both were information services. Indeed, voicemail has been the quintessential example of the distinction between an enhanced service (voicemail) and a basic service (voice). “It is plain,’ for example, that a local telephone company ‘cannot escape Title II regulation of its residential local exchange service simply by packaging that service with voice mail.’ That is because a telephone company that packages voice mail with telephone service offers a transparent transmission path-telephone service-that transmits information independent of the information-storage capabilities provided by voice mail.” *Nat’l Cable and Telecomms. Ass’n v. Brand X Internet Services*, 545 U.S. 967, 997-998 (2005) (“Brand X”) (quoting *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Report to Congress, 13 FCC Rcd 11501 ¶ 60 (1998)).

that their Cable VoIP offerings are information services.⁶³ In regard to these ancillary services, Comcast quotes the *Vonage Order* as stating that “[t]hese functionalities in all their combinations form an integrated communications service,” and implies from the context that the “referenced functionalities” are the multi-platform features that it listed in the previous sentence of its brief.⁶⁴ This is out-of-context and misleading. Rather than the information service features that Comcast references, the FCC was instead referring to the nomadic features of the service, i.e. those designed to “*overcome geography, not track it*”⁶⁵ – precisely those characteristics that distinguish Cable VoIP from the Vonage service.

As the RLECs explained in their Initial Brief, these ancillary services do not act on the content of the voice transmission and are not components of the telephone messaging service itself but are merely incidental services designed to improve the marketability of the underlying service. In the words of the FCC, they are not “computer processing applications that act on the format, content, code, protocol or similar aspects of the subscriber's transmitted information.”⁶⁶ None of these features and functions is required for a customer to originate or terminate calls.

In dissertations about their additional services that are long on promotional descriptions (and out-of-context references to certain FCC decisions), but are short on a thorough analysis of the relevant law, Comcast and TWC seem to be proposing a “contamination” doctrine by which merely bundling a basic service with an enhanced service transforms the entire bundle into an enhanced service. However, the FCC has long maintained that there is no such “contamination” doctrine. In situations where there is a distinct, transparent transmission path for telephone service that is independent of the enhanced services, the telephone service remains a

⁶³ See, e.g. Comcast at 5, 27.

⁶⁴ Comcast at 28.

⁶⁵ *Vonage Order* ¶ 25.

⁶⁶ *Computer II* ¶ 5.

telecommunication service subject to common carrier regulation while the associated enhanced service is considered an information service.⁶⁷ This is consistent with FCC holdings going back to the establishment of the basic/enhanced regime, in which it stated that “we are not here foreclosing telephone companies from providing to consumers optional services to facilitate their use of traditional telephone service. Any option that changes the nature of such telephone service is subject to the basic/enhanced dichotomy *and their respective regulatory schemes*.”⁶⁸

IV. COMCAST’S AND TWC’S POLICY ARGUMENTS ARE UNAVAILING, TO THE EXTENT THAT THEY ARE RELEVANT.

Comcast and TWC make a number of statements regarding the purported benefits to consumers of unregulated Cable VoIP service,⁶⁹ but these are irrelevant to the legal question of whether Cable VoIP is an intrastate telephone messaging service. The issue in this case is not one of whether the Commission *should* have regulatory authority over Cable VoIP services, but whether it does as a matter of law, under statute. Even TWC would appear to endorse this statement. “The question of whether a particular entity is a public utility ‘is not a constitutional one nor one of public policy but rather one of statutory interpretation.’”⁷⁰

Comcast and TWC both attempt to deflect attention by the Commission with self-congratulatory discussions of how their purported CLEC affiliates have submitted to regulation by the Commission, with all that entails.⁷¹ (TWC coyly avers that it is “a non-dominant provider, [lacking] market power,”⁷² as if the Commission would overlook the fact that TWC and Comcast are the monopoly providers of cable television service in their respective territories,

⁶⁷ Brand X, 545 U.S. at 998.

⁶⁸ *Computer II* ¶ 98.

⁶⁹ *See, e.g.* Comcast at 9.

⁷⁰ TWC at 6 (*citing to Allied Gas*, 107 N.H. at 308).

⁷¹ Comcast at 13; TWC at 10.

⁷² TWC at 10.

backed by the resources of their respective multi-billion dollar media parents.) What they both fail to reflect on is that these regulated entities each have *one* wholesale customer, their captive Cable VoIP affiliate. As for their thousands of Cable VoIP end user customers, however, they are outside the protection of the Commission. In their Initial Brief, the RLECs warned of an environment in which there are two different regulatory treatments of residential landline telephone service based solely upon the technology used to deliver that service, with different regulatory protections based on either the chosen telephone provider or the geographical location in which subscriber lives. If allowed to persist, it will only get worse. Other LECs will have to adopt similar strategies, leaving the Commission with authority to protect a mere handful of telephone company wholesale “customers,” while most of the general public lies outside its reach.

Comcast presents a false dilemma when it states “there is simply no practical way for Comcast to offer a competitive, deregulated interstate CDV service using specialized CPE in accordance with federal policy unless it combines it with a service capable of making and receiving local calls over the same device,”⁷³ as if it does not already do so. *Every* telephone company combines both services over the same devices. Furthermore, companies like Verizon, AT&T, Qwest, Frontier, FairPoint, *etc.* have been offering interstate telecommunications services for many years now in combination with “additional sets of different economic regulations in each state”⁷⁴ with no ill affect. It is ludicrous to believe that neither Comcast or TWC is up to the same task.

Throughout their briefs, Comcast and TWC sound a steady drumbeat that state

⁷³ Comcast at 35.

⁷⁴ *Id.*

regulations would “frustrate” and “burden” Cable VoIP providers,⁷⁵ imperil the FCC’s “policy to encourage rapid, national entry of VoIP providers”⁷⁶ and “stifle new and innovative services;”⁷⁷ that federal preemption “encourages innovation in the information services market”⁷⁸ and promotion of competition.⁷⁹ For almost two generations, these platitudes have been fossilized into articles of faith, to be recited in connection with any number of advances in telecommunications technology. It is now thirty years since *Computer II*. Today, Comcast, by its own admission, is the *third largest* telephone company in the country,⁸⁰ with over 7 million customers⁸¹ and, like TWC, is the monopoly provider of cable television service in its New Hampshire markets. *How much help and “encouragement” does an operation like that still need?*

The RLECS believe that Comcast and TWC can take care of themselves in the face of “burdensome” regulation that other telephone companies in New Hampshire have conformed to for years. The communities served by both the RLECs and Cable VoIP providers will benefit from a regulatory regime in which all providers of voice services are subject to regulatory oversight by the Commission and all customers have equal access to the remedies that the Commission can provide. Customers will be assured of equal standing before this Commission and before their chosen provider regardless of what their choice of provider may be.

⁷⁵ Comcast at 8,

⁷⁶ *Id.* at 9.

⁷⁷ TWC at 12.

⁷⁸ Comcast at 15.

⁷⁹ *Id.* at 31.

⁸⁰ See <<http://www.comcast.com/About/PressRelease/PressReleaseDetail.ashx?PRID=844>> (lasted visited Jan. 28, 2010).

⁸¹ Comcast at 9.

Respectfully submitted,

BRETTON WOODS TELEPHONE COMPANY,
INC.

DIXVILLE TELEPHONE COMPANY
DUNBARTON TELEPHONE COMPANY, INC.

GRANITE STATE TELEPHONE, INC.

HOLLIS TELEPHONE COMPANY, INC.

KEARSARGE TELEPHONE COMPANY

MERRIMACK COUNTY TELEPHONE
COMPANY

WILTON TELEPHONE COMPANY, INC.

By Their Attorneys,

DEVINE, MILLIMET & BRANCH,
PROFESSIONAL ASSOCIATION

Dated: January 29, 2010

By: 

Frederick J. Coolbroth

Patrick C. McHugh

Harry N. Malone

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Appendix 1

**Letter to Kathryn A Zachem
Vice President, Regulatory Affairs, Comcast Corporation
File No. EB-08-IH-1518 (January 18, 2009)**



Federal Communications Commission
Washington, D.C. 20554

January 18, 2009

VIA FACSIMILE
AND FIRST CLASS MAIL

Kathryn A. Zachem
Vice President, Regulatory Affairs
Comcast Corporation
2001 Pennsylvania Ave. NW, Suite 500
Washington, DC 20006
FAX: (202) 466-7718

Re: In the Matters of Formal Complaint of Free Press and Public Knowledge
Against Comcast Corporation for Secretly Degrading Peer-to-Peer
Applications; Broadband Industry Practices: Petition of Free Press et al.
for Declaratory Ruling that Degrading an Internet Application Violates the
FCC's Internet Policy Statement and Does Not Meet an Exception for
"Reasonable Network Management," File No. EB-08-IH-1518, WC
Docket No. 07-52.

Dear Ms. Zachem:

The Commission has received your submission of September 19, 2008, detailing Comcast's broadband network management practices, Comcast's planned deployment of protocol-agnostic network management practices, and Comcast's plan for complying with the *Comcast Network Management Practices Order*, and your submission of January 5, 2009, certifying Comcast's fulfillment of the compliance plan.

We seek clarification with respect to an apparent discrepancy between Comcast's filing and its actual or advertised practices. Specifically, in Appendix B of your September 19 submission, Comcast notes that if a consumer uses 70% of his provisioned bandwidth for 15 minutes or more when his neighborhood Cable Modem Termination System (CMTS) node has been near capacity for a period of 15 minutes or more, that consumer loses priority when routing packets through congested portions of the network. See Letter from Kathryn A. Zachem, Vice President of Regulatory Affairs, Comcast Corporation, to Marlene H. Dortch, Secretary, FCC, App. B at 8-10 (filed Sept. 25, 2008). If such a consumer then places a Voice over Internet Protocol (VoIP) call along a route experiencing actual congestion, Comcast states that consumer may find that his "VoIP call sounds choppy." *Id.* at 13. Critically, the Appendix draws no distinction between Comcast's VoIP offering and those offered by its competitors.

Comcast's website, however, suggests that such a distinction does in fact exist. The website claims that "Comcast Digital Voice is a separate facilities-based IP phone

service that is not affected by this [new network management] technique.” Comcast Help & Support, Frequently Asked Questions about Network Management, at <http://help.comcast.net/content/faq/Frequently-Asked-Questions-about-Network-Management> (last visited Jan. 12, 2009) (“*Frequently Asked Questions*”). It goes on to state, by contrast, that customers of other “VoIP providers that rely on delivering calls over the public Internet . . . may experience a degradation of their call quality at times of network congestion.” *Id.*

We request that Comcast explain why it omitted from its filings with the Commission the distinct effects that Comcast’s new network management technique has on Comcast’s VoIP offering versus those of its competitors. We also ask that you provide a detailed justification for Comcast’s disparate treatment of its own VoIP service as compared to that offered by other VoIP providers on its network. In particular, please explain how Comcast Digital Voice is “facilities-based,” how Comcast Digital Voice uses Comcast’s broadband facilities, and, in particular, whether (and if so, how) Comcast Digital Voice affects network congestion in a different manner than other VoIP services.

To the extent that Comcast maintains that its VoIP offering is a telephone service offering transmission facilities for VoIP calls distinct from Comcast’s broadband offering, then it would appear that the fee Comcast assesses its customers for VoIP service pays in part for the privileged transmission of information of the customer’s choosing across Comcast’s network. As we have stated before, the “heart of ‘telecommunications’ [under the Act] is transmission.” *Pulver.com Order*, 19 FCC Rcd 3307, 3312, para. 9 (2004) (holding that the Internet-based service at issue was not “telecommunications” because the provider “neither offers nor provides transmission to its members”); see 47 U.S.C. § 153(43) (defining “telecommunications” as “the transmission, between or among points specified by the user, of information of the user’s choosing, without change in the form or content of the information as sent and received”). And offering “telecommunications for a fee directly to the public” is the statutory definition of a telecommunications service. 47 U.S.C. § 153(46); cf. *Cable Modem Order*, 17 FCC Rcd 4798, 4823, para. 40 (2002) (classifying cable modem service as an information service only because the “telecommunications component is not . . . separable from the data-processing capabilities of the service” and because no cable modem service provider made a “stand-alone offering of transmission for a fee directly to the public”). Given that Comcast apparently is maintaining that its VoIP service is a “separate facilities-based” telephone service that is distinct from its broadband service and differs from the service offered by “VoIP providers that rely on delivering calls over the public Internet,” *Frequently Asked Questions*, it would appear that Comcast’s VoIP service is a telecommunications service subject to regulation under Title II of the Communications Act of 1934, as amended.

We thus request that Comcast explain any reason the Commission should not treat Comcast’s VoIP offering as a telecommunications service under Title II — a service subject, among other things, to the same intercarrier compensation obligations applicable to other facilities-based telecommunications carriers. See *IP-in-the-Middle Order*, 19 FCC Rcd 7457, 7466–67, para. 15 (2004) (holding that access charges apply to AT&T’s IP-in-the-middle telephony, given that “[e]nd users place calls using the same method” as

they would otherwise, that the service provides no "enhanced functionality," and that the service "imposes the same burdens on the local exchange as do circuit-switched interexchange calls"). We understand that Comcast's VoIP service is not yet complying with such intercarrier compensation obligations.

Please submit your response by the close of business on Friday, January 30, 2009.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Shaffer", with a long horizontal flourish extending to the right.

Dana R. Shaffer
Chief
Wireline Competition Bureau

A handwritten signature in black ink, appearing to read "Matthew Berry", with a stylized flourish at the end.

Matthew Berry
General Counsel
Federal Communications Commission

Appendix 2

**Letter from Nandan M. Joshi, Office of General Counsel, FCC
to Michael E. Gans, Clerk
Nos. 05-1069 *et al.* (8th Cir. filed July 11, 2006)**



Federal Communications Commission
Washington, D.C. 20554

July 11, 2006

Michael E. Gans, Clerk
United States Court of Appeals
for the Eighth Circuit
Thomas F. Eagleton Courthouse
Room 24.329
111 South 10th Street
St. Louis, MO 63012

Re: Minnesota Public Utilities Comm'n et al. v. FCC & United States,
Nos. 05-1069 et al.

Dear Mr. Gans:

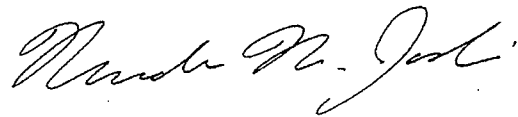
Pursuant to Federal Rule of Appellate Procedure 28(j), the FCC responds to the July 6 letters of the National Association of Regulatory Utilities Commissioners (NARUC) and the New York Public Service Commission (NYPSC). These parties argue that the FCC's order in *Universal Service Contribution Methodology*, WC Docket No. 06-122, FCC 06-94 (the *USF Order*) supports their challenge to the order under review in this case (the *Vonage Order*). They are mistaken.

First, NARUC emphasizes paragraph 56 of the *USF Order*, in which the FCC recognized that "some interconnected VoIP providers do not currently have the ability to identify" interstate and intrastate calls. That is fully consistent with the Commission's rationale for preempting Minnesota's regulation of Vonage's service. See FCC Br. 41-52; *Vonage Order* ¶¶ 23-32. NARUC's suggestion that the *Vonage Order* did not consider Vonage's ability to identify interstate and intrastate calls is incomprehensible in light of the FCC's extensive analysis of this issue.

Second, contrary to NARUC's contention, the *USF Order* does not show that "a proxy is a reasonable method of separating interstate and intrastate VoIP traffic." The *USF Order* (¶ 53) creates a percentage proxy that VoIP providers can use as a safe harbor in calculating their contributions to the federal universal-service fund. The question here, however, is whether Vonage can use a percentage proxy to distinguish interstate and intrastate traffic so that conflicting federal and state policies governing entry and tariffing of VoIP communications can coexist. As our brief explains (44-45 n.18), the FCC reasonably found that a percentage proxy would not be useful for that purpose.

Finally, nothing in the *USF Order* makes ripe the FCC's prediction that state regulation of VoIP services that "share similar basic characteristics" as Vonage's service would be preempted. *See* FCC Br. 61-66. Contrary to the suggestions of NARUC and the NYPSC, the possibility that *some* VoIP providers might develop the technological capability for accurately distinguishing interstate and intrastate communications does not call into question the FCC's authority to preempt state regulation of VoIP providers that do not have that capability. *See* FCC Br. 55-56.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Nandan M. Joshi", written in a cursive style.

Nandan M. Joshi
Counsel

cc: Counsel of record

Appendix 3

Telecommunications Transmission Engineering Volume 2, Facilities (AT&T 1977)

The terminal equipment units are referred to as D-type banks and provide the interface between analog circuits and digital multiplex equipment and/or transmission lines. Analog signals are processed into a digital form and multiplexed for digital system transmission in one direction and demultiplexed and processed for analog transmission in the other direction. Other types of banks are used at the terminal locations of digital systems for processing digital data signals. In some cases, these banks are arranged to multiplex a number of data signals into a single bit stream for transmission. In other cases, the data signals are multiplexed with various combinations of processed analog signals.

A number of equipment arrangements are available to provide the interface between transmission systems and electronic switching systems (ESS). The processing of signals for time division switching by the No. 4 ESS is so similar to that used in D-type banks that in some of these arrangements signals may be switched without processing to an analog format. In other arrangements, analog circuits similar to those of the D-type bank have been used directly as the trunk circuit terminations at an analog ESS. Both of these arrangements have resulted in substantial cost savings at the point of interconnection between digital transmission systems and electronic switching systems.

The flexibility that has been provided in the digital hierarchy permits future expansion to include higher transmission rates and a number of other features. For example, an experimental coder-decoder (codec) has been developed to permit the translation from an analog to digital (and digital to analog) format of 720 telephone channels. This digital mastergroup signal is transmitted at the DS3 rate [1]. The mastergroup and other broadband codecs will permit the efficient use of new technology such as waveguide and optical fiber (lightwave) communications systems by providing economical means for interconnecting these and existing analog systems.

21-1 THE DIGITAL MULTIPLEX HIERARCHY

Just as the development of J- and K-type carrier systems established the 12-channel group as the first and basic building block in the frequency division multiplex (FDM) hierarchy, the development of the 24-channel T1 carrier system established the basic building block in the time division multiplex (TDM) hierarchy. In TDM, the basic unit is the DS1 signal with a digital transmission rate of 1.544 Mb/s,

a rate suitable for the time division multiplexing of 24 digitally-encoded voice-frequency signals. Other levels of the hierarchy are related to the basic DS1 rate but, as previously mentioned, not by integral multiples. However, all the rates are integral multiples of 8 kb/s. The hierarchical levels and the types of multiplexing equipment used for the translation of signals between levels are shown in Figure 21-1.

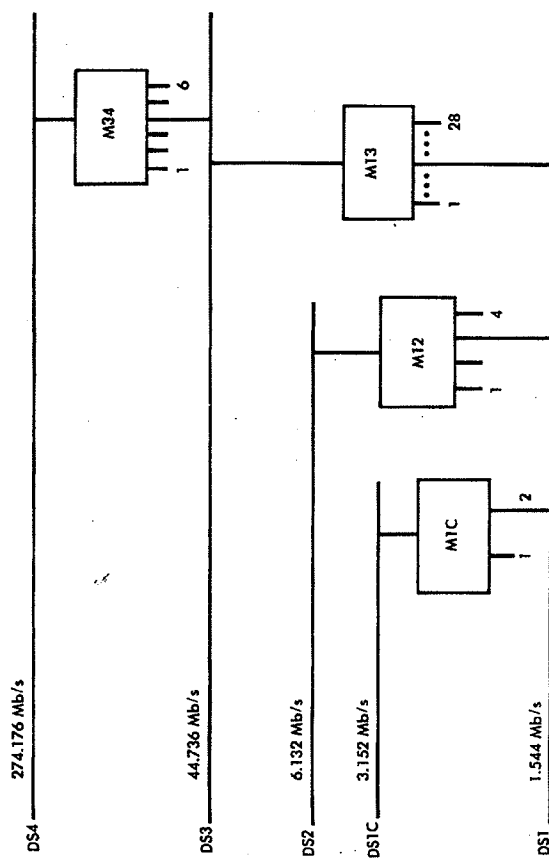


Figure 21-1. Digital hierarchy and multiplexing plan.

The organization of the bit stream and the format of the transmitted signal must simultaneously satisfy two sets of criteria at any level in the hierarchy. First, the signal must satisfy interconnection and transmission requirements imposed by the transmission facility to be used. These requirements are expressed in terms of signal characteristics observed at a cross-connect frame. Included are such parameters as the transmission rate, the signal format (i.e., whether the signal is polar, bipolar, or multilevel), the location in the bit stream of parity bits required by the transmission system, pulse amplitude, allowable number of consecutive zeroes, etc.

The second set of requirements imposed on the bit stream is a function of the methods of multiplexing and the message signal, fram-

ing, and signalling formats. They are imposed to assure compatibility of the signal with terminal equipment used at the ends of the facility.

The 24-Channel DS1 Signal

The DS1 is a bipolar 50-percent duty cycle signal made up of 1.544 million time slots per second in each of which one bit, a 0 (no pulse) or a 1 (pulse), may be transmitted. This signal may be processed in a number of ways to make it suitable for transmission over a particular type of facility or for multiplexing with other DS1 signals.

The 1.544 Mb/s transmission rate for the DS1 signal was originally derived to satisfy transmission constraints imposed by repeater design and cable characteristics for the T1 carrier system. The objective was to provide a transmission rate that could accommodate a number of voice-frequency (VF) signals that had been suitably processed for digital transmission. The number of VF channels that was shown to be feasible was 24, sometimes called a digroup. The basic requirement is that of sampling an analog signal at a rate at least twice that represented by the channel bandwidth in hertz. Thus, each 4-kHz channel signal had to be sampled at a rate of 8000 per second to produce a pulse amplitude modulated (PAM) signal.

The next requirement to be satisfied was derived from the combination of processes in pulse code modulation (PCM), i.e., the representation of each amplitude sample by a quantized voltage and the conversion of that voltage into a pulse code in which a constant number of bits were assigned to represent the various quantized voltages. To satisfy initial local trunk transmission quality and signalling requirements, each of 128 quantum levels and the signalling state of the channel being sampled are portrayed by an 8-bit code word. In channel banks of later design, 256 quantum levels are coded 5/6 of the time. Signalling information is carried in the 8-bit code word 1/6 of the time.

The third requirement to be fulfilled is that of providing a pulse sequence that can be used to decode the received signal. For this purpose, the line signal is organized in blocks of pulse positions called frames. Each frame is defined as a sequence of time slots made up of one 8-bit code word for each of the 24 channel signals. Thus, a frame consists of 24 channel samples \times 8 bits per sample = 192 bits. At the end of each frame, an extra bit is added to the signal to

identify the frame sequence and to synchronize the channel bank circuit operations. When the frame rate is combined with the sampling rate of 8000 per second, the DS1 signalling rate is determined to be $193 \times 8000 = 1,544,000$ bits per second, 1.544 Mb/s.

In a complete signal, the eight bits representing each VF signal amplitude sample and signalling state are random sequences of 1s and 0s. Thus, each sequence of 192 bits in a frame is made up of random 1s and 0s. In early equipment designs, the framing bits that follow each 192-bit sequence are transmitted as alternate 1s and 0s thus providing a coded sequence of framing pulses (1 0 1 0 1 0 . . .) that can be recognized by the receiving terminal. In later designs, the framing pulses are coded as a repeating sequence the basic combination of which is the series 1 1 0 1 1 0 0 1 0 0 0.

Coding is sometimes modified for improved performance and, when other than speech signals are to be transmitted, the code format is modified as necessary for the particular signals involved. However, the basic rate of 1.544 Mb/s is maintained in all cases in order to satisfy the requirements for transmission over T1 repeated line facilities.

The DS1C Signal

Two DS1 signals are combined to form a DS1C signal but, as received, they are generally not synchronized with one another nor with the new DS1C signal. The transmission rate for each of the DS1 signals is nominally 1.544 Mb/s while the transmission rate for the DS1C signal is 3.152 Mb/s. Thus, there are approximately $3152 - 2 \times 1544 = 64$ kb/s used for synchronization and framing of the DS1C signal. The synchronization of the two DS1 signals to make them alike in repetition rate and of a rate suitable for incorporation into a single DS1C bit stream is accomplished by a process called *pulse stuffing*. In this process, time slots are added to each signal in sufficient quantity to make the signal operate at a precise rate controlled by the clock circuit in the transmitter. Pulses are inserted (or stuffed) into these time slots but carry no information. Thus, it is necessary to code the signal in such a manner that these noninformation bits can be recognized and removed at the receiving terminal. This coding is incorporated at the point where the two DS1 signals are multiplexed together to form the DS1C signal. For convenience, the two signals are designated No. 1 and No. 2.