

August 3, 2010

PUBLIC UTILITIES COMMISSION  
Investigation into Whether Providers of  
Time Warner "Digital Phone" Service and  
Comcast "Digital Voice" Service Must  
Obtain Certificate of Public Convenience  
and Necessity to Offer Telephone Service.

SUPPLEMENTAL EXAMINERS'  
REPORT

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**NOTE: This Report contains the recommendation of the Advisory Staff. Parties may file responses or exceptions to this Report by August 12, 2010.**

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## **I. SUMMARY AND PROCEDURAL BACKGROUND**

In an Examiners' Report issued on May 18, 2010 in this proceeding, the Advisory Staff (Staff) recommended to the Commission that it find that the voice over internet protocol (VoIP) services provided by Time Warner Cable Digital Phone L.L.C., (TWC) and Comcast Phone of Maine, L.L.C., (Comcast) constitute "telephone services" under Maine law and thus are subject to the Commission's regulation, and that it also find that this conclusion is not preempted by federal law. Staff also recommended that the Commission find that, in the context of this investigation into whether TWC and Comcast are required to obtain the Commission's authorization to provide VoIP service in Maine, it is not necessary for the Commission to resolve a question of federal law which the FCC has, to date, left unresolved: whether VoIP service is a "telecommunications" service pursuant to 47 U.S.C. §§ 153(43), (46) or an "information" service pursuant to 47 U.S.C. § 153(20).

The parties, which now include, on a limited basis, the Voice on the Net Coalition, subsequently filed exceptions to the Examiners' Report, and the matter was

placed on the agenda for consideration at the Commission's June 8, 2010 deliberative session. In its exceptions, Comcast asserted that "the Commission must analyze whether CDV is an information service as well as the preemptive consequences that follow from that designation." TWC, for its part, asserted that "it has taken no position on the question" of whether its VoIP service is an information service as defined by federal law but rather that a finding by the Commission that its VoIP service is a telephone service under Maine law would "risk a conflict with the FCC's prerogative to classify interconnected VoIP services under federal law." The Voice on the Internet Coalition's comments suggest that the Commission postpone issuing a final decision on this matter until the resolution by the FCC of various proceedings already before it which "could definitively classify VoIP as an information or telecommunications service."

At its June 8, 2010 deliberative session the Commission adjourned its consideration of the Examiners' Report and instructed the Advisory Staff to provide its written recommendation, in the form of an Examiners' Report, as to whether, under federal law, the VoIP service offered by Comcast and TWC is a telecommunications or an information service.

## **II. ANALYSIS AND RECOMMENDATION**

### **A. Digital Phone and Digital Voice Calls Are Telecommunications Services Under the Federal Telecommunications Act.**

In the view of Advisory Staff, the VoIP services offered by TWC and Comcast meet the definition of "telecommunications" which, pursuant to U.S.C. § 153(43), is 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." The record evidence in this case establishes that the networks owned by

TWC and Comcast and through which they offer, respectively, their digital phone and digital voice services, function in essentially the same way as one another.

Specifically, when one TWC digital phone subscriber (or Comcast digital voice subscriber) calls another such subscriber, the caller specifies the “end” point of the transmission of his digital phone call by entering a telephone number into the touchpad of a phone that is located at his premises (the “beginning” point of the transmission). The signaling multi-frequency tones generated by the touchpad are then “digitized” (converted into a series of 1s and 0s) by a piece of proprietary equipment called an eMTA that TWC (and Comcast) supplies to its customer for this purpose and which is attached to the coaxial (“coax”) cable wiring inside the customer’s premises. The eMTA then communicates with a “soft switch” located elsewhere on TWC’s (or Comcast’s) network by transmitting the “digitized” telephone number to the “soft switch” and obtaining from the “soft switch” the internet protocol (IP) address of the eMTA located at the premises of the intended recipient of the call.<sup>1</sup> As the caller speaks into the mouthpiece of the phone’s handset, the mouthpiece converts the sound waves created by the user’s voice into an analog electrical signal whose measurable characteristics and attributes include, among other things, amplitude, frequency, and harmonics. This electrical signal, with its various characteristics and attributes, is then “digitized” by the eMTA and placed into the “payload” of the IP “packets.” The eMTA also attaches, as a “header” to each packet, routing and control information which includes the destination IP address obtained from the “soft switch” and the IP address of the originating eMTA. The eMTA transmits these IP packets onto TWC’s (or Comcast’s) hybrid fiber-coaxial cable (HFC) network. The transmission path of the packets along the network is

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<sup>1</sup> The “soft switch” conducts an internal database inquiry to obtain the IP address.

directed by and through various routers, cable modem termination system (CMTS) equipment, soft switches, and/or a "Media Gateway" device, until they finally reach the eMTA located inside the premises of the TWC digital phone subscriber (or Comcast digital voice subscriber) who is the intended recipient of the call. The recipient's eMTA then converts the digital "payload" information contained in each packet back into an analog electrical signal representation of the caller's voice. This analog signal is then converted by the earpiece of the recipient's phone handset back into sound waves which the recipient can hear as a voice.<sup>2</sup>

Plainly, such calls satisfy the first part of the definition of "telecommunications" – the "user" specifies the points "between or among" which the transmission is made.

The beginning point of the call, which is established as the IP address of the eMTA at the user's premises, is specified when the user picks up his phone and begins dialing.

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<sup>2</sup> In addition to calls made between two customers of Time Warner or Comcast, which are generally known as "on network" calls, customers of the two cable companies can place calls to or receive calls from customers served by local exchange carriers (LECs) and wireless (a/k/a cellular) carriers. LECs provide traditional circuit switched service over a network of switches and copper wires and/or fiber cables that is generally referred to as the public switched telephone network (PSTN). Wireless carriers usually use the transport services of the PSTN to assist in routing voice traffic to and from the cell towers and switches that provide service to the wireless callers. In order for a Time Warner or Comcast digital phone customer to communicate with a customer on the PSTN, a physical connection must be established between the two networks. To establish the connection that allows traffic to flow between the cable companies' networks and the PSTN, the cable companies employ a "Media Gateway" device, which essentially functions as a conversion mechanism between the IP packets of the cable networks and the Time Division Multiplex (TDM) protocol used most generally on the PSTN. The Media Gateway is managed by the soft switch, and it contains both the hardware and software to convert the data from IP to TDM or vice versa, depending on the destination of the call. From the PSTN's point of view, a call to or from a cable company's network appears no different from a call that originates or terminates on the PSTN.

Nearly all calls on the PSTN undergo a form of protocol conversion, in that the analog signal produced by the customer's phone is almost always converted to a digital signal, either at the central office or the remote terminal that serves the customer's location.

The destination point is specified when the user enters the telephone number assigned to the intended recipient of the call into the keypad. The second part of the definition of "telecommunications" is also satisfied – the "user" chooses the information that is to be transmitted. The language of the statutory definition of "telecommunications" focuses on the perspective of the user ("between or among points *specified by the user*"; "information *of the user's choosing*"), 47 U.S.C. § 153(43)(emphasis added), and from that perspective it is difficult to conclude that the information that a user chooses to have transmitted is anything other than his or her voice transmitted in a fashion so that the recipient of the information hears a voice at the other end of the call through the use of an ordinary telephone device.

The third part of the statutory definition of "telecommunications" requires that the information be transmitted such that there is "no change in the form or content of the information *as sent and received.*" § 153(43)(emphasis added). Traditional "switched" telephone service falls within this definition of telecommunications because, even through such a calls require the conversion of the sound waves generated by a user's voice into analog electrical signals, that conversion is reversed when the recipient of the call picks up the handset on the telephone. Likewise, in the case of the VoIP calls that Time Warner digital phone (or Comcast digital voice) subscribers place, the information begins and ends as sound waves with no net change in form or content. It is immaterial that in addition to the conversion from sound waves to analog electrical signals the information of the user's choosing is also converted in "form" to digitized information placed into IP packets because those conversions are also reversed. As the FCC itself found when confronted with the question of whether the conversion by AT&T of transmitted information into IP format resulted in a change of the form of that

information such that it was no longer telecommunications as defined by the statute, a conversion to IP packets is not a "net protocol" conversion when, as in the case of the AT&T service at issue, the form of the information, "voice", is the same when sent and received. *Petition for Declaratory Ruling that AT&T's Phone-to-Phone IP Telephony Services are Exempt from Access Charges ("AT&T IP Telephony Order")*, WC Docket No. 02-361, FCC 04-97, *Order*, para. 12 (April 14, 2004).

Comcast takes pains to highlight the fact that, in order for its digital voice customers to place calls, they must use the proprietary eMTA device that the Company supplies because the eMTA "is deployed by Comcast" to connect the user to the Company's network, reformat analog voice signals into IP packets, and supply the home IP address of the caller. Comcast also takes pains, on the other hand, to highlight the fact that the "customer's eMTA" is placed inside its customer's premises and is, according to Comcast, not a part of Comcast's network. In Comcast's view, the initial conversion of voice information occurs *before* that information reaches Comcast's network (which, according to Comcast, begins at a "point at (or about) twelve inches outside of where the cable wire enters the subscriber's premises." According to Comcast, the significance of the placement of the eMTA on the customer's side of this demarcation point is that the call information enters Comcast's network in the form of IP packets.<sup>3</sup>

Even if Comcast were correct to characterize eMTA as a type of customer premises equipment (CPE) that stands apart from its network (a conclusion with which we do not concur), such a characterization does not lead to the conclusion that digital voice calls are not "telecommunications." Even if the "protocol" by which the user's

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<sup>3</sup> Time Warner also requires the use of an eMTA at the customer's premises.

voice is taken by Comcast at the point of demarcation and is transmitted from one point to another (in this case, IP packets) constitutes the “form or the content” of the “information of the user’s choosing,” the fact remains that a call from one Comcast digital voice (or Time Warner digital phone) subscriber to another is sent and received in precisely the same form and content (as digital information contained in an IP packet). Therefore, assuming that the eMTA device is not a part of the TWC (or Comcast) network, and that the “information of the user’s choosing” is an IP packet containing a digitized conversion of the user’s voice and an IP address for routing purposes, it is plain that the transmission satisfies the third element of the definition of telecommunications – that the transmission of such information be accomplished “without change in the form or content of the information as sent” -- because the IP packet, including the payload information containing the digitized voice information, that is ultimately “received” by the intended recipient’s eMTA is of precisely the form and content as when it was sent.

B. Digital Phone and Digital Voice are not Information Services

As noted above, in order to assemble and transmit the IP packet, the eMTA first digitizes the telephone number entered by the user and transmits that information to a soft switch which, in turn, queries a database to obtain (and then transmit back to the eMTA) the IP address associated with the called telephone number. This series of transactions undoubtedly involves, at the least, the “acquiring,” “retrieving,” “transforming,” or “making available information via telecommunications,” and thus would appear, at first blush, to fit comfortably within the statutory definition of “information service.” Indeed, the operative language of the definition of the term

“information service”, as set forth in 47 U.S.C. § 153 (20), is “the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications.” However, the statutory definition of “information service” excludes any such capability that would otherwise fall within the meaning of the term “information service” when that capability is used “for the management, control, or operation of a telecommunications system.” Thus, the “pre-transmission” activities of the user’s eMTA and, indeed, the activities of the soft switch, routers, CMTS equipment, and Media Gateway devices which participate in the routing of the IP packets over their transmission path to the recipient’s eMTA, are all activities which are used “for the management, control, or operation of a telecommunications system,” and are therefore not the sort of activities that serve to characterize TWC’s digital phone (or Comcast’s digital voice) service as an information service.

In the same matter in which the FCC found that the intermediary conversion by AT&T of information into IP packets does not change the form or content of information such that a voice call that is transmitted in IP fails the third prong of the definition of “telecommunications” (no change in form or content), the FCC also found that transformation of the voice call information into digitalized IP packets so that the information could traverse AT&T’s “internet backbone” for a portion of its transmission path is a transformation undertaken for the purpose of “internetworking” in order to facilitate the provision of basic voice service and thus are information service capabilities used “for the management, control, or operation of a telecommunications system or the management of a telecommunications service.” Consequently, according to the FCC, the conversion by AT&T of voice call information into digitized IP packets to facilitate their transmission over the telecommunications system is not an “information

service.” See *AT&T IP Telephony Order*, para. 12 (noting that “internetworking” protocol conversions are telecommunications services), citing *Implementation of the Non-Accounting Safeguards of Sections 271 and 272 of the Communications Act of 1934, as Amended*, CC Docket No. 96-149, First Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 21905, 21957-58, para. 106 (*Non-Accounting Safeguards Order*) (“protocol processing services are information service capabilities used ‘for the management, control, or operation of a telecommunications system or the management of a telecommunications service,’ they are excepted from the statutory definition of information service. Thus, ‘no-net’ protocol conversion services constitute telecommunications services, rather than information services, under the 1996 Act.”)

In Staff’s view, the rationale underlying the FCC’s conclusion in the *AT&T IP Telephony Order* that the protocol conversion from analog electrical signal to digitized IP packets and then back to analog electrical signal when employed in the context of voice service is a conversion used “for the management, control, or operation of a telecommunications system or the management of a telecommunications service,” and therefore not an “information service,” applies with equal force to the conversion of digitized IP packets to analog electrical signals that Time Warner Digital Phone (or Comcast Digital Voice) performs when one of its users place a call to a person who receives phone service from a traditional circuit switched provider. In both cases, protocol conversion is used for the “management, control, or operation of a telecommunications system,” because without the conversion within the telecommunications system, interconnected carriers would be incapable of completing

the voice calls between all of the users of the system.<sup>4</sup> Indeed, if the rationale of *AT&T IP Telephony Order* is not construed as to establish a rule of general applicability focusing on the purpose of the protocol conversion, such a cramped reading of that decision would create the anomalous result whereby a conversion from analog electrical signal to digitized IP packets (but not back to analog electric signal) could be considered an “information service.” If that were the case, the placement of a call by a customer of a traditional circuit switched provider to a Time Warner or Comcast VoIP customer could be classified as an information service (and not a telecommunications service) merely because the eMTAs deployed by Time Warner and Comcast are incapable of accepting incoming analog electrical signals.

Staff recognizes and appreciates that in its *AT&T IP Telephony Order* the FCC sought to resolve the “telecommunication / information services” characterization question narrowly and as applied to the specific attributes of the AT&T service at hand, and that the term “no-net” accurately describes the fact that AT&T was converting analog electrical signals to digitized IP packets and then back to analog electrical signals within its network. See *AT&T IP Telephony Order*, ¶ 10 (noting that that the FCC has commenced a comprehensive rulemaking proceeding to address IP services generally -- the still pending matter *IP-Enabled Services*, WC Docket No. 04-36, FCC 04-28 – and that the *AT&T IP Telephony Order* “represents our analysis of one specific type of service under existing law based on the record compiled in this proceeding

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<sup>4</sup> Other transformations of information may occur in the course of a telephone call regardless of whether the call is ever transformed into IP. For example, analog electric signals and digitized IP packets are routinely converted by carriers from electrical impulses (travelling over wires or coaxial cables) into light waves which traverse fiber optical cables. When utilized for the purpose of the “management, control, or operations of a telecommunications system,” such transformations are also not information services.

[which]...in no way precludes the Commission from adopting a fundamentally different approach when it resolves the IP services rulemaking”). Here, however (and in the absence of a ruling by the FCC in the *IP-Enabled Services* docket), this Commission is called upon to consider whether the characterization of a protocol conversion as a “no-net” conversion is a necessary consideration in applying the statutory definition of “information service” in the context of protocol conversions performed by Time Warner and Comcast to provide their VoIP services. Staff finds that the performance of a protocol conversion, regardless of whether the conversion is a “net” or “no-net” conversion, constitutes the “transforming” of information and that the offering of a capability for conducting such a transformation falls within the operative portion of the statutory definition of “information services.” See 47 U.S.C. § 153(20) (“the term ‘information service’ means the offering of a capability for....transforming...information”). However, Staff also finds that the use to which both Time Warner and Comcast put this capability to transform information (by converting digitized IP packets into analog electrical signals so that a call from a digital phone or digital voice user can be received by a customer who’s service is provided by a circuit-switched telephone carrier) is “for the management, control, or operation of a telecommunications system or the management of a telecommunications service,” and thus falls within the carve-out, or exception, set forth in the statutory definition of “information service.” See 47 U.S.C. § 153(20) (“the term ‘information service’ means the offering of a capability for....transforming...information....*but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service*”) (emphasis added).

In short, Staff finds that the correct way to construe the text of the statutory term “telecommunications” is literally, as Congress wrote it, and that a voice call is telecommunications because: 1) the user specifies the end points of the transmission by picking up the phone and dialing the number of the person he wishes to call, 2) the user selects the form of the information to be transmitted by using his voice to speak into his phone and selects the content of the information by deciding what, through his voice, he wishes to say; and (3) the form and content of what the user speaks into the phone is unchanged when it is received and heard by the recipient of the call. We also find that the correct way to construe the text of the statutory term “information service” is literally, as Congress wrote it, and that the VoIP services offered by Time Warner and Comcast are not information services because even though they do employ the capability of transforming information, such as the conversion of information to or from digitized IP packets, and they route transmissions by employing the capability of “acquiring,” “retrieving,” or “making available information via telecommunications,” such capabilities are all used to “manage, control, or operate a telecommunication system or manage a telecommunications service.”

Finally, Staff is not persuaded that the various features and capabilities that are bundled as part of the package which Time Warner and Comcast offer to their VoIP customers, such as the ability to access voicemail over an internet web portal and to receive caller-id information over a television set or computer screen upon activation of that service via an internet web portal, to establish distinctive rings for different callers, and to establish different “rules” for handling different incoming calls, are materially different than similar services which the FCC has recognized do not so contaminate voice service when it is offered in service bundles that include information service

capabilities as to change the essential “telecommunications service” characterization of the offering. See *In the Matter of Federal-State Joint Board on Universal Service*, FCC 98-67, CC Docket No. 96-45, 13 FCC Rcd. 11501, ¶ 60, Report to Congress (released April 10, 1998) (“It is plain, for example, that an incumbent local exchange carrier cannot escape Title II regulation of its residential local exchange service simply by packaging that service with voice mail”).

### III. CONCLUSION

For the foregoing reasons, Staff supplements its May 18, 2010 Examiner's Report with its recommendation that the Commission find, in addition to the recommended findings set forth therein, that the Time Warner Digital Phone and Comcast Digital Voice services are “telecommunications services” and not “information services” pursuant to 47 U.S.C. § 153.

Respectfully submitted,

Dated at Hallowell, Maine, this 3<sup>rd</sup> day of August, 2010.

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Andrew Hagler  
Hearing Examiner