EXHIBIT G

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF TELECOMMUNICATIONS AND CABLE

Investigation by the Department on its Own Motion to Determine whether an Agreement entered into by Verizon New England, Inc., d/b/a Verizon Massachusetts is an Interconnection Agreement under 47 U.S.C. § 251 Requiring the Agreement to be filed with the Department for Approval in Accordance with 47 U.S.C. § 252	D.T.C. 13-6

REBUTTAL TESTIMONY OF
DAVID J. MALFARA, SR.
ON BEHALF OF
THE COMPETITIVE INTERVENORS

I. INTRODUCTION AND WITNESS QUALIFICATION

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND OCCUPATION.

A. My name is David J. Malfara, Sr. My business address is 7712 Linkside Loop, Reunion, Florida 34747-6767. I am president/CEO of ETC Group, LLC, which is a business management and technology consulting firm.

not more complex. In many cases, they are simpler. Verizon has failed to identify a single *technical* issue that causes IP interconnection and VoIP traffic exchange "to raise the complexity bar" above that associated with circuit-switched technologies. There is, therefore, every reason to believe that these *different* technical issues will be resolved among industry participants as they have in the past.

Q. VERIZON STATES (ON PAGE 37, LINES 18-22) THAT "IF IP INTERCONNECTION FOR VOIP WERE HANDLED THROUGH THE SECTION 252 AGREEMENT PROCESS," THE RESULT WOULD BE "MORE THAN FIFTY DIFFERENT STATE PUBLIC UTILITY COMMISSIONS APPLYING THEIR OWN VIEWS" OF THE TECHNICAL DETAILS ASSOCIATED WITH IP INTERCONNECTION. PLEASE TELL US WHETHER YOU AGREE AND WHY.

A. I disagree. Carriers negotiating IP interconnection agreements should have little difficulty resolving the technical details comprising such interconnection. I have been involved in several such negotiations between competitive carriers and these issues have proven rudimentary and negotiations are concise. This is for several reasons.

For instance, competitive carriers have been exchanging voice traffic in IP on a large scale for, at least, the better part of a decade. These competitive carriers have been proven successful in working out the technical details of IP interconnection arrangements with each other. There is no reason to believe that competitive carriers could not do the same with ILECs, to the extent ILECs are willing participants in such negotiation. In fact, competitive carriers have already been successful in

establishing IP interconnection arrangements with the IXC affiliates of Verizon and other ILECs.

If carriers need to resolve a technical dispute during negotiations, they can develop a test plan and conduct private testing. This is often done when either carrier wishes to support a new feature or function or traffic type (*ex*. introduce a new CODEC or international traffic to a new country) over the POI.

In my experience negotiating interconnection agreements, carriers have been able to resolve the technical issues associated with TDM interconnection and the fact that those agreements were filed under § 252 or were the result of arbitration before a state commission has not resulted in the development of technical standards by "more than 50 different state public utility commissions." Instead, carriers followed industry technical standards for TDM interconnection arrangements and the state commissions accepted them. There is no reason to expect that the experience with IP interconnection agreements will be different.

Q. ARE THERE EFFORTS UNDERWAY TO DEVELOP INDUSTRY STANDARDS FOR THE EXCHANGE OF IP-BASED TRAFFIC?

A. Standards-setting bodies and industry working groups have successfully developed and are continuing to develop technical and operating standards for IP interconnection. The issues on which this work centers include the technical issues raised by Verizon on page 36 of its testimony, such as "*Interconnection,*" "*Codecs*

A. No. Again, IP interconnection is technically feasible. Further, because of the ability to eliminate "layers" of systems necessary in a circuit-switched environment, resolving technical issues is easier. For example, while circuit-switching may invoke discussions (for example) of using in-band, Multi-Frequency signaling, PRI (with or without NFAS), SS7 (in its many iterations) or something else (*ex*. cellular IS-41), IP technologies have standardized on Session Initiation Protocol (SIP) for all such signaling. Call routing, forecasting and testing are all very commonplace in interconnection negotiations regardless of technology, and IP technology poses no special problems in those negotiations. The negotiation points may be different than in the TDM interconnection context, but they are by no means more complex. The technical issues associated with IP interconnection and VoIP technologies are generally understood in the industry and are not greater in number or more complicated than those that have been addressed in TDM interconnection agreement negotiations.

III. A CALL IS A CALL (ADDITIONAL FEATURES OF FIOS DIGITAL VOICE)

Q. LET'S DISCUSS VERIZON'S DESCRIPTION OF ITS VOIP SERVICES IN ITS TESTIMONY. WHAT IS YOUR UNDERSTANDING OF VERIZON'S FIOS DIGITAL VOICE?

A. My understanding is that FiOS Digital Voice (FDV) is a "packaged" product comprised, primarily, of a "two-way, real-time voice communications"[5] service that

[5] See Verizon Direct Testimony, page 9 at 1-2

transmits voice traffic using VoIP technologies. "Packaged" is a term used here to describe the offering of two or more different services under a single product label.

Q. DO THE VERIZON AND COMCAST SERVICES AT ISSUE TRAVEL OVER THE PUBLIC INTERNET?

A. No. Importantly, while FDV uses IP technologies and protocols, FDV traffic is not carried over the public Internet (as I discuss below). The same is true of the Comcast VoIP service at issue in this proceeding as well as the VoIP service offerings of virtually any other facilities-based service provider, including CLECs.

Q. HOW AND WHY DO VERIZON, COMCAST, AND OTHER FACILITIES-BASED VOIP SERVICE PROVIDERS TRANSMIT VOIP CALLS?

A. All of these providers use private "managed" IP networks to carry this voice traffic as a means to ensure acceptable performance and security. For example, as Verizon states in its news release explaining how its FDV service works (emphasis added): "To understand the features and quality of FiOS Digital Voice, you first need to know that the service is not the same as the services you get with a little Internet adapter for your modem and phone, and it does not ever touch the public Internet." The subtitle of the news release itself – "Verizon's Private, Managed IP Network Links Customers' Homes to Softswitch..." – further assures customers of the service's isolation from the Internet. A true copy of Verizon's news release is Exhibit DJM-3.

Q. HOW DOES THE USE OF THESE MANAGED IP NETWORKS CHANGE THE CHARACTER OF CALLS MADE OR RECEIVED BY END USERS?

A. Not at all. Though provided over new network technology, this two-way voice communications service provides the same basic functionality as traditional TDM-based telephone service – the transmission of voice signals without any fundamental alteration of the voice signals, as sent and received by the customer. Like the telephone exchange service provided by traditional TDM-based service providers, it gives users the ability to make and receive local calls (*i.e.*, to communicate with each other within a defined area similar to a local exchange). And like the exchange access service provided by traditional TDM-based service providers, it allows the origination and termination of long-distance calls. From the perspective of a user making or receiving a call, FDV service is functionally indistinguishable from traditional TDM-based telephone service.

Q. ON PAGES 6-9, VERIZON DESCRIBES MANY FEATURES OF ITS FDV PRODUCT. DO THESE FEATURES SUGGEST THAT FDV IS A FUNDAMENTALLY NEW AND DIFFERENT MEANS OF VOICE COMMUNICATION AS COMPARED TO TRADITIONAL TDM-BASED VOICE SERVICE?

A. Absolutely not. Though Verizon explains, at length, through its testimony that this service also includes an "Account Manager," the Account Manager merely acts as a graphical user interface (GUI) that allows users to set up their own voice service features and that facilitates use of the voice communications service. (A "Graphical User Interface" or GUI is a type of user interface that allows users to interact with electronic devices through graphical icons and visual indicators represented on a display screen.) More specifically, the Account Manager provides a user portal to

access other services and applications which, in part, are used to report on, configure or invoke the voice communications service. The Account Manager is not a component of, or integrated with the voice service itself, but is instead an adjunct to it. In fact, the voice communications service does not require the Account Manager in order to originate or to answer a call.

Therefore, the Account Manager feature, in its entirety, is nonessential to the "two-way, real-time voice communications" that comprises the principle function of FDV service. The same is true of many of the other features offered with FDV, including three-way calling, call forwarding, call scheduling, call waiting, speed dialing, Do Not Disturb, Simultaneous Ring, voicemail, and Voice Mail Screening. These features are not a necessary component of the basic voice communications service and they do not alter the fundamental nature of the voice communications service.

Q. PLEASE EXPLAIN WHY THE PACKAGE OF FEATURES OFFERED WITH FDV DOES NOT MODIFY OR ALTER THE UNDERLYING TWO-WAY REAL-TIME VOICE COMMUNICATION SERVICE.

A. The packaging or bundling of multiple services is popular in today's technology environment. So much so that what, in reality, are several distinct and independent services are often mistaken as components of a single service. In communications, this is facilitated by the GUI, which I described above. The FDV Account Manager provides an example of just such an interface. Verizon describes these features as an

integrated part of FDV,[6] but that is not correct. These features are not at all integrated or required for the "two-way, real-time voice communications" service that is its primary function.

Q. PLEASE EXPLAIN WHY THE "ACCOUNT MANAGER" FEATURES ARE NOT AT ALL INTEGRATED OR REQUIRED FOR REAL-TIME, TWO-WAY VOICE COMMUNICATIONS.

A. Users can place or receive telephone calls over the FDV service without ever accessing the Account Manager.

Q. ARE THE ACCOUNT MANAGER AND OTHER FEATURES THAT VERIZON DESCRIBES UNIQUE TO VOIP TECHNOLOGY OR SERVICES?

A. No. The Account Manager and other features offered with Verizon's FDV are not unique to VoIP technology or services. Features like those in Verizon's Account Manager have been available with TDM-based telephone service for years.

Q. PLEASE GIVE AN EXAMPLE.

A. When I was president of Z-Tel Network Services, Inc. in 1999, we created a two-way real-time voice communications service using the popular Unbundled Network Element Platform (UNE-P) available at that time, comprising the TDM network elements of Regional Bell Operating Companies, such as Verizon. We also created a GUI-based "Personal Communications Center" (PCC) which could be used to report

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[6] See Verizon Direct Testimony, page 6 at 12 – page 9 at 4

on, configure or invoke the voice communication service. Those services were packaged together as a product called a "Z-Line."

Q. PLEASE DESCRIBE Z-LINE AND ITS FEATURES.

A. Z-Tel's PCC was analogous in function to the Verizon Account Manager but was built entirely to support and interoperate with TDM-based voice communication services on the PSTN. The attached Exhibit DJM-4 describes Z-Line and its features. Significantly, virtually all of the functionality currently provided by Verizon's Account Manager was provided by Z-Tel's PCC in 1999. Z-Line features (among other things) voicemail with email notification, email attachment of the voice message file for playback on any computer, call scheduling, simultaneous ring, wireless notification, group messaging, call log viewing, GUI-based call origination (using TDM not VoIP) and remote configuration and activation/deactivation of services and features such as call blocking, call forwarding, scheduling of availability for the reception of calls, etc.. In other words, the functions and features of Z-Tel's 1999 PCC and Verizon's FDV Account Manager are virtually identical.

Q. ARE THERE OTHER FEATURES OF FDV THAT HAVE BEEN AVAILABLE WITH TDM-BASED TELEPHONE SERVICE IN THE PAST?

A. Yes.

Q. PLEASE EXPLAIN.

A. Many of the other features offered with FDV are features of or evolutionary improvements on features that have been offered with TDM-based voice service for

years. For instance, users of TDM-based voice service have long been able to "choose a telephone number from area codes and exchanges that do not on the PSTN serve [their] town." Service providers have offered such "foreign exchange" service since even well before local exchange competition. New technologies make this process considerably easier and less expensive but the appearance of the voice communications service being provided is exactly the same to the user. In another example, Verizon's Call Forwarding All Calls with Scheduling feature and Call Forwarding Selective with Scheduling are simply improvements or incremental upgrades to the call forwarding that has long been available with TDM-based voice service. And "accessing and playing back . . . voice mail messages" on "a computer or wireless device" is merely an advancement on voicemail service available with traditional TDM-based telephone service and was available with Z-Tel's service as early as 1999.

Q. DO EITHER Z-TEL'S PCC OR VERIZON'S ACCOUNT MANAGER MODIFY OR ALTER THE UNDERLYING TWO-WAY VOICE COMMUNICATION?

A. No. Neither Verizon's Account Manager nor Z-Tel's Personal Communications Center is capable of modifying or altering the two-way real-time voice communications service with which it is packaged because both the Verizon Account Manager and Z-Tel Communications Center are separate and operate independently from that service.

Q. IN ITS DIRECT TESTIMONY, VERIZON STATES (PAGE 7, LINES 14-16) THAT "ADDITIONAL [FDV] FUNCTIONS UNTETHER THE SERVICE FROM THE SINGLE GEOGRAPHIC LOCATION OF THE CUSTOMER'S SERVICE ADDRESS." DO YOU AGREE WITH VERIZON'S STATEMENT?

A. Absolutely not. I will explain. To begin, the user interface to Verizon's FDV service is not an IP interface and a FDV subscriber cannot use his or her own VoIP telephone (such as a digital phone or a SIP phone) to access the service. Verizon, in its news release attached as Exhibit DJM-3, says (emphasis added): "Right at the home, in the Optical Network Terminal, or ONT, that provides FiOS services in the home, the call is created *using a Session Initiation Protocol (SIP) process built into the ONT*. In IP talk, a 'session' is an activity using IP language and signals the IP network that a phone call is being made."

Rather, the FDV user interface is the same type of registered jack (RJ11) that traditional TDM-based telephone service subscribers have been using for years. In other words, the only way for an FDV subscriber to access the primary functionality of the service – *i.e.*, two-way real-time voice communications capability – is through the analog RJ11 interface to Verizon's Optical Network Terminal (ONT). And importantly, the ONT is permanently anchored to the customer's residence. So, the FDV service cannot be considered "untethered" from the customer's location. Because there is no IP user interface to FDV, there can be no nomadic VoIP capability (such as that found in Vonage's VoIP service) whereby the customer could, for example, take a device to different location and conduct two-way real-time voice communications through an Internet broadband connection. Unlike Vonage's VoIP

service and other nomadic VoIP services, the two-way voice communications service provided by Verizon's FDV is not geographically untethered, but rather is inextricably tied to the customer's location.

Verizon's carefully-worded testimony describing FDV, therefore, seems to leverage well-accepted traits of VoIP service, to which FDV service does not ascribe, in an apparent attempt to differentiate the service from Plain Old Telephone Service. The result is that many of Verizon's statements can be misleading, and can cause the reader to conclude that FDV is something it is not *(i.e.*, functionally different than the Plain Old Telephone Service provided using TDM circuit-switched technology, as perceived by the customer).

IV. TECHOLOGY INTERWORKING AND PROTOCOL CONVERSION

Q. PLEASE REFER TO PAGE 27 OF VERIZON'S TESTIMONY. THERE, VERIZON TALKS ABOUT CONVERTING ONE PROTOCOL TO ANOTHER. WHAT DOES THAT SUGGEST TO YOU?

A. It's not totally clear, but in a letter to the Department on November 26, 2013, Verizon stated that it was entitled to argue that a "net protocol conversion" rendered its FDV an information service. Though vague, I believe this is what Verizon is referring to on page 27.

Q. DOES THE PROVISION OF VERIZON'S FDV SERVICE INVOLVE WHAT IS KNOWN AS A "NET PROTOCOL CONVERSION"?

A. No. ***Begin Claimed Highly Sensitive Confidential*** [redacted] ***End Claimed Highly Sensitive Confidential***no net protocol conversion occurs. It is important to point out that when Verizon sends voice traffic from a FDV customer to a called party that uses TDM-based telephone service or *vice versa*, a net protocol conversion does not occur either. This is because, as discussed, Verizon FDV customers are precluded from using an IP interface to access the service. By contrast, when a subscriber to a VoIP service that uses an IP interface (*i.e.*, a digital or SIP phone) calls a party that uses TDM-based telephone service or *vice versa*, a net protocol conversion does occur.

Q. IS THAT SIGNIFICANT TO THE ISSUES IN THIS CASE?

A. No. A TDM-to-IP or IP-to-TDM protocol conversion is nothing new and does not alter the basic nature of the voice communications service that is being provided to the user (*i.e.*, the user does not perceive any change in the form or content of the voice message being transmitted). The protocol conversions occur merely to allow the incremental introduction of IP technology into the PSTN as carriers transition from TDM technology to IP. These TDM-to-IP or IP-to-TDM protocol conversions can also be thought of as internetworking conversions. That is, they occur solely within the carriers' network to facilitate the provision of the voice communications service being provided to the end user. The introduction of TDM itself required an

analog-to-digital protocol conversion in order to interconnect the analog channel-carrier systems of the old transmission facilities to the "new" (at the time) TDM facilities during the period of transition.

Q. HAVE "NET PROTOCOL CONVERSIONS" OCCURRED IN THE PAST WHEN NEW TECHNOLOGY WAS INTRODUCED INTO THE TELEPHONE SYSTEM?

A. Yes.

Q. PLEASE EXPLAIN WHAT OCCURED.

A. For example, during the transition from analog to digital technology in the 1980s, service providers needed to conduct net protocol conversions between callers using analog service and callers using digital service. Those net protocol conversions were needed simply to facilitate the introduction of digital technology into the PSTN, such as Integrated Services Digital Network (ISDN). The ISDN Primary Rate Interface (PRI) is a common interface used today to provide digital voice communications interconnections to the customer equipment (*ex.* PBXs) of commercial customers. ISDN also afforded residential subscribers access to digital technology by way of the Basic Rate Interface (BRI). BRI is also capable of providing a voice communications service interface to subscribers of the PSTN. Any of these digital services can be used to place or receive telephone calls to customers of analog voice communications service today, with the commensurate "net protocol conversion" necessarily performed by the PSTN.

Q. PLEASE GIVE OTHER EXAMPLES OF PROTOCOL CONVERSION IN VOICE CALLS.

A. Again, there is nothing unusual about voice calls undergoing net protocol conversions. Another example is that today, voice traffic among cell phones and between cell phones and wireline phones are often converted between various protocols (for example, GSM, CDMA, TDM and all-IP 4G). In fact, Verizon has announced that its wireless service is transitioning to a technology framework called Long Term Evolution (LTE) and that its wireless voice service will, in 2014, begin transitioning to Voice over LTE (VoLTE).[7] VoLTE provides support for voice communications using native IP technology. Therefore, in order for Verizon's VoLTE subscribers to reach analog or TDM-based digital subscribers, a net protocol conversion of IP-TDM will need to be accomplished. And that conversion will not change the fundamental nature of the voice service being provided.

Q. ARE THERE OTHER EXAMPLES OF WHAT YOU CONSIDER TO BE MISLEADING TECHNICAL REPRESENTATIONS IN VERIZON'S DIRECT TESTIMONY?

A. Yes. Another example of this type of misleading generalization is found in the statement (emphasis added):

> "As described more fully below, VoIP converts a customer's voice into digital data packets and routes the packets over IP networks, which allows

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[7] See *THOMSON REUTERS STREETEVENTS EDITED TRANSCRIPT VZ - Q3 2013 Verizon Earnings Conference Call*, page 11, available at http://www.verizon.com/investor/DocServlet?doc=3q_13_vz_transcripts.pdf