

Exhibit No.:
Issue:
Witness: Gerard J. Howe
Sponsoring Party: Big River Telephone
Company, LLC
Type of Exhibit: Direct Testimony
Case No.: TC-2012-0284

BIG RIVER TELEPHONE COMPANY, LLC

DIRECT TESTIMONY

OF

GERARD J. HOWE

TC-2012-0284

September 28, 2012

**PRE-FILED DIRECT TESTIMONY
OF
GERARD J. HOWE**

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A. My name is Gerard J. Howe. My business address is 24 So. Minnesota Ave., Cape
3 Girardeau, Missouri, 63703.

4 **Q. BY WHOM AND IN WHAT CAPACITY ARE YOU EMPLOYED?**

5 A. I am the CEO of Big River Telephone Company and have been employed there in that
6 capacity since December 21, 2001.

7 **Q. PLEASE DESCRIBE YOUR WORK EXPERIENCE.**

8 A. Prior to joining Big River, I worked in the telecommunications industry for 23 years, 18
9 of which as an executive with Southwestern Bell Telephone Company, now known as
10 AT&T. Immediately prior to joining Big River, I was the President and Chief
11 Operating Officer of Gabriel Communications, which was a full service
12 telecommunications company that operated in 13 states, which was later acquired by
13 Windstream. Prior to joining Gabriel, I was the Senior Vice President in charge of
14 Financial Operations at Brooks Fiber Properties. Brooks Fiber was a leading full-
15 service provider of competitive local and long distance communications services in 44
16 metropolitan areas across the U.S. Brooks constructed and operated digital fiber
17 networks providing high speed data, voice and video services to businesses and

1 governmental entities. During my tenure at Southwestern Bell, I held a variety of
2 positions in finance, regulatory, Information Technology and Customer Service. From
3 1993 through 1995, I served as the Chief Financial Officer of SBC Cablecomms, U.K.,
4 a competitive cable/telephone service provider in the United Kingdom. I have a B.S. in
5 Mathematics from Southern Illinois University and an MBA from St. Louis University.

6 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

7 A. To describe the nature of our network and some of its capabilities to explain why we
8 instructed AT&T that 100% of the traffic coming from our network is enhanced.

9 **Q. YOU INDICATED YOUR TRAFFIC IS ENHANCED, WHY IS THAT**
10 **RELEVANT?**

11 A. Pursuant to our Interconnection Agreement (“ICA”) with AT&T, both parties agreed
12 that we shall exchange enhanced/information services traffic, including without
13 limitation Voice Over Internet Protocol (“VOIP”) traffic and other enhanced services
14 traffic and compensate each other applying the same elements used by the parties for
15 the exchange of ISP-bound traffic whose dialing patterns would otherwise indicate the
16 traffic is local traffic. This is laid out in Paragraph 13.3 of Attachment 12: Intercarrier
17 Compensation.

18 The Interconnection Agreement goes further to explain ‘enhanced traffic’ is

19 i) traffic that undergoes a net protocol conversion, as defined by the FCC,

1 between the calling and called parties, and/or

2 ii) traffic that features enhanced services that provide customers a
3 capability for generating, acquiring, storing, transforming, processing,
4 retrieving, utilizing, or making available information.

5 By the nature of our network, our traffic qualifies as ‘enhanced’ by virtue of meeting
6 both standards listed above, and does so, regardless of the fact that our traffic is VOIP.

7 We further agreed that each party would provide the other with a jurisdictional factor
8 indicating the percent of our traffic considered enhanced relative to all of the traffic
9 exchanged. And, of course, our ICA provides each party with the right to audit the
10 reported jurisdictional factor reported by the other party and for both parties to proceed
11 with the assurance that any difference would be raised and settled pursuant to an audit
12 of the reported jurisdictional factor.

13 **Q. DID AT&T, TO YOUR KNOWLEDGE, EVER REQUEST AN AUDIT OF**
14 **YOUR REPORTED JURISDICTIONAL FACTOR?**

15 **A.** No, not that I am aware.

16 **Q. PLEASE EXPLAIN HOW YOUR TRAFFIC QUALIFIES AS ENHANCED PER**
17 **THE STANDARD REFERENCED FROM THE INTERCONNECTION**
18 **AGREEMENT, ABOVE.**

1 **A.** Our interface, or point of demarcation, between our network and AT&T's network is a
2 network element on Big River's network called a media gateway. On the AT&T side
3 of Big River's media gateway, we convert all media and signaling to the format of
4 AT&T's network for information that we send to AT&T and convert it from that format
5 on information we receive from AT&T. On AT&T's side of Big River's gateway, all
6 signaling is in SS7 format and all media is Time Division Multiplexed ("TDM") using
7 a Pulse Code Modulation ("PCM") format; these are all standard PSTN settings that
8 have been use in the PSTN for about the last 40 years, or so. All conversions are done
9 by Big River's media gateway; AT&T uses the same format it has for the past 40 years.

10 Further, our network features enhanced services that provide our customers the
11 capability for generating, acquiring, storing, transforming, processing, retrieving,
12 utilizing, and making available information by making various protocol changes to the
13 information that we receive from AT&T's network. And it does so, on every call that
14 our customers make to AT&T customers that are included in the traffic at issue in this
15 case.

16 **Q. PLEASE EXPLAIN THE EXTENT OF THE CONVERSION, OR**
17 **TRANSFORMATION THAT BIG RIVER MAKES TO THIS TRAFFIC.**

18 **A.** First, all traffic on Big River's network uses one of three signaling protocols:

19 i) Session Initiation Protocol ("SIP"), as defined by the Internet
20 Engineering Task Force ("IETF") in RFC 3261 (RFC stands for
21 "Request For Comments" and are standards published by the IETF),

- 1 ii) Media Gateway Control Protocol (“MGCP”), as described in RFCs 2805
- 2 and 3435, or
- 3 iii) MEGACO (also referred to Media Gateway Control Protocol) as
- 4 defined by the ITU standard H.248.

5 Thus, all signaling information exchanged with AT&T has to be converted by Big
6 River to/from the SS7 format that AT&T uses.

7 Second, all media (i.e. the sounds of the telephone call) exchanged between AT&T and
8 Big River undergoes transformation on Big River’s media gateway.

9 **Q. WHY IS THAT?**

10 **A.** Big River transforms the media in various ways to take advantage of the efficiencies
11 and capabilities of our network that enable Big River to offer differentiated and
12 enhanced services.

13 For instance, first, we convert all media from the PCM format used by AT&T to a
14 format specified by ITU standard G.729, which we use on our network. This
15 conversion, like all of the transformations made, is made by the digital signal
16 processors (“DSPs”) that are embedded in Big River’s media gateways. This change in
17 protocol takes the PCM code exchanged with AT&T’s network and converts it to
18 G.729 code used by our network, thereby significantly reducing the amount of
19 information it takes to transmit audio across our network. This change significantly
20 reduces the demand on our core network, thereby reducing our costs, while maintaining

1 toll quality audio.

2 We also packetize the information in RTP (“Real Time Protocol”) packets for delivery
3 on our network as opposed to the use of the TDM protocol that is used on AT&T’s
4 network. Again, this protocol change allows for a much more efficient use of our
5 network as opposed to the TDM protocol.

6 **Q. BUT AREN’T THESE TRANSFORMATIONS JUST PART OF THE VOICE**
7 **OVER IP PROTOCOL?**

8 A. No. None of these changes are part of Voice Over IP, but instead are made on our
9 network for the reasons I mentioned above and could be performed with or without
10 Voice Over IP. We could use Voice Over IP and not make the aforementioned
11 protocol changes. Conversely, we could use protocols other than Voice Over IP, such
12 as Asynchronous Transfer Mode (“ATM”) or Frame Relay, and still make the changes
13 to the signaling, codecs and packetization protocols mentioned above. These changes
14 are not synonymous with or part of Voice Over IP but are made in conjunction with Big
15 River’s use of Voice Over IP.

16 **Q. ARE THERE ANY OTHER CHANGES OR TRANSFORMATIONS MADE BY**
17 **BIG RIVER AT THE POINT OF DEMARCATION AT ITS MEDIA**
18 **GATEWAYS THAT SUPPORT YOUR CLAIM OF PROVIDING ENHANCED**
19 **SERVICES TRAFFIC?**

1 A. Yes. The DSPs on our media gateways perform other functions that transform the
2 information we get from AT&T in a manner that improves the capabilities on our
3 network. I'll review two.

4 First, getting fax information across our network is accomplished using a codec other
5 than the G.729 standard that I mentioned above. The fax codec we use is called T.38,
6 another ITU standard. But as I mentioned above, G.729 is our standard codec that all
7 calls to and from AT&T are established. However, it is the DSPs on our media
8 gateways that have the intelligence to 'listen' for the standard fax tones that fax
9 machines send to one another to establish a connection for fax transmission. These
10 DSPs are 'listening' on every telephone call made between AT&T and Big River's
11 networks to determine if the G.729 codec should be disengaged for a call and replaced
12 by using the T.38 codec on our network. Again, remember, all faxes on AT&T's
13 network will be transmitted using their standard PCM format over a TDM connection,
14 Big River will transform that data to T.38 for transmission on our network.
15 Conversely, Big River must transform a fax originated on its network from the T.38
16 codec to PCM to be delivered on AT&T's network.

17 The T.38 codec is specifically designed for a data network, like ours, and is much more
18 reliable and cost effective in transmitting faxes across our network. Again, we don't
19 have to use this codec, but we do so to enhance our ability of getting this fax
20 information across our network. In fact, one of the improvements in the T.38 codec is

1 the fact that it sends the fax information across our network in duplicate. The reason
2 for this is that a fax transmission is a real time event; we have to get the information
3 across our network immediately. We have no time to try to re-transmit the fax
4 information, so Big River has set a standard of sending two streams of the fax
5 information so that if any data is lost, there is a duplicate set of data that allows us to
6 reconstruct the fax on the other end of our network without interruption or error. This
7 redundancy capability is not available on standard TDM networks and is only
8 accomplished through the enhanced capabilities of our network, made available after
9 we transform the information exchanged with AT&T.

10 Again, this T.38 capability is inherent in every call to and from AT&T's network and
11 engaged when the DSPs on our media gateways 'hear' the standard fax tone on a call.
12 Moreover, this capability forms the basis of our Virtual Fax service.

13 **Q. WHAT IS YOUR VIRTUAL FAX SERVICE?**

14 **A.** Our Virtual Fax, or V-Fax, service allows our customers to receive faxes on our
15 network without the need for an actual fax machine. Our customer designates a
16 telephone number that they will use for fax transmissions. Our network includes fax
17 processing capabilities that allow us to take the incoming fax transmission data and
18 convert it to an electronic PDF document, attach the PDF file to an email and send the
19 email to the pre-determined e-mail address of our customer. For customers that
20 subscribe to our Secure V-Fax service, the PDF document is saved to our cloud storage

1 system for immediate and secure access to our customer via their Big River Secure V-
2 Fax web portal which is accessible by standard web browsers over an Internet
3 connection.

4 **Q. YOU MENTIONED TWO TRANSFORMATIONS THAT TAKE PLACE AT**
5 **YOUR MEDIA GATEWAYS THAT OCCUR, OR ARE CAPABLE OF**
6 **OCCURRING ON EVERY CHALL EXCHANGED WITH AT&T, WHAT IS**
7 **THE OTHER TRANSFORMATION?**

8 **A.** The other transformation is the conversion of DTMF signals in the traffic exchanged
9 with AT&T. (DTMF stands for Dual Tone Multi-Frequency and is the standard sound
10 emitted from a telephone when any of the buttons of the keypad are depressed – there is
11 a standard combination of two tones that are emitted simultaneously for every button
12 on a telephone keypad). Remember, when an AT&T customer presses a button on their
13 phone during a call, their telephone emits an audible sound that will be encoded as an
14 audible sound in the PCM data stream that AT&T transmits to Big River. However,
15 when that information reaches Big River’s media gateway in the PCM data stream, the
16 DSPs are alerted to the presence of the ‘sound’ of one of the standard DTMF tones and
17 converts the data to a an RTP (Real-time Transport Protocol) message that contains the
18 value of the DTMF signal that was sent, i.e. if the ‘2’ button was pushed, Big River’s
19 network will transmit the DTMF value of ‘2’ in an RTP message. Transmitting a value
20 of ‘2’ in an RTP packet is much more efficient and reliable on our network than

1 transmitting the G.729 coded information containing the audible sound. The reverse is
2 true for DTMF signals emanating from a Big River customer to an AT&T subscriber.
3 In that case, the RTP message must be stripped from the data stream at our media
4 gateway and converted to an audio sound representing the DTMF tone. Further, all of
5 Big River's advanced network elements like audio conferencing and voice mail
6 platforms have been built to process RTP messages as opposed to processing audible
7 DTMF tones.

8 Again, this data transformation on Big River's media gateways is in place, and engaged
9 when DTMF tones are detected, on all calls to and from AT&T's network.

10 **Q. DO OTHER TELEPHONE NETWORK OPERATORS, LIKE BIG RIVER, USE**
11 **SOME OF THE PROTOCOLS AND TECHNIQUES YOU DESCRIBED**
12 **ABOVE?**

13 **A.** Yes. While traditional local exchange telephone companies have not adopted, or have
14 been slow to adopt, these new protocols and techniques, other advanced
15 telecommunications operators use similar protocols that improve cost efficiencies and
16 reliability across networks. For instance, we use multiple carriers for termination of
17 long distance traffic outside of our service territory. In most cases, we use carriers
18 where we exchange traffic in the same protocols that we use on our network. Thus, we
19 exchange traffic with these other carriers in a G.729 format that is switched to T.38
20 when a fax is detected; encode DTMF tones in a coded RTP message; and signal using

1 Session Initiation Protocol, as opposed to SS7. The quality of the connections is
2 excellent while providing for more cost effective use of our networks. We not only
3 connect to long distance carriers in this manner but with our Operator Services and
4 Directory Assistance provider as well.

5 **Q. HAVE ANY LOCAL EXCHANGE COMPANIES OFFERED TO EXCHANGE**
6 **ACCESS TRAFFIC IN THE FORMAT INHERENT IN YOUR NETWORK?**

7 **A.** Yes, AT&T – Missouri has. So, in late June of this year, we have started to send our
8 access traffic to AT&T using their AVOICS service. AT&T's AVOICS service
9 supports the G.729 codec, T.38 for fax transmission, and uses Session Initiation
10 Protocol signaling just as we do on our network. The cost savings are substantial
11 compared to regular access termination and the reliability of using these protocols
12 across our networks is greatly enhanced. Further, the small cost we do pay to terminate
13 using AVOICS is outweighed by the savings achieved by eliminating the cost to
14 connect to a TDM network and avoiding, among other things, the SS7 signaling costs.
15 Eventually, we hope to eliminate the media gateway that we now use to connect to
16 AT&T's network.

17 **Q. BUT DO THE AFOREMENTIONED CAPABILITIES REALLY MEET THE**
18 **STANDARD SET IN THE INTERCONNECTION AGREEMENT 'PROVIDING**
19 **CUSTOMERS A CAPABILITY FOR GENERATING, ACQUIRING, STORING,**
20 **TRANSFORMING, PROCESSING, RETRIEVING, UTILIZING OR MAKING**

1 **AVAILABLE INFORMATION?**

2 **A.** Yes. Each of the examples cited above will result in the generation, transformation
3 and/or processing of information generated by our customers on all of the calls that
4 originate on Big River's network that terminate on AT&T's network. Further, the
5 aforementioned network capabilities, protocols and codecs used by Big River enable
6 other enhanced services available to our customers.

7 **Q. PLEASE EXPLAIN.**

8 **A.** For instance, while one of our customers is on a call they have made to an AT&T
9 customer (generating traffic subject to dispute in this proceeding) that customer may
10 gain access to other information made available through the enhanced nature of our
11 network.

12 As an example, our voice mail platform accepts inbound call messages and changes the
13 format of the information yet again, from the G.729 format used to transport the media
14 across our network and converts the information to a WAV file (which is an audio file
15 format playable on most PCs and smartphones) and places the file in a MIME
16 ("Multipurpose Internet Mail Extension") format. That WAV file is emailed to the pre-
17 determined e-mail address of our customer and simultaneously saved to our cloud
18 storage system for immediate access to our customer via their Big River web self-care
19 page. This requires significant format and protocol conversions to accomplish but
20 provides our customers access to current voice mail messages that they can play on

1 their computer while they are still on a call which caused the busy situation and the
2 other calling party's message to go to voice mail. Since our customer can see the
3 number and name of the calling party leaving the message on the subject line of the
4 inbound email message and on the voice mail page of our web self-care system, the
5 customer can determine if and when the message might be timely to review while still
6 on the original call. This voice mail handling capability is engaged when an incoming
7 call experiences a busy signal caused by our customer being on a call with an AT&T
8 customer.

9 Further, we make critical network parameters available to our customers for immediate
10 modification to their service via our customer web self-care system. So, if our
11 customers desire to make any immediate changes to their services, they need only
12 access our customer web self-care system via a standard web browser and make
13 changes to this stored information. The changes they make will result in immediate
14 changes made to their service. These types of changes include:

- 15 i) Voice mail settings,
- 16 ii) Call forwarding settings,
- 17 iii) Incoming call feature settings (i.e. Selective Call Acceptance, Selective Call
18 Rejection, Do Not Disturb),
- 19 iv) Simultaneous ring settings, and
- 20 v) Find-Me / Follow-Me settings

21 **Q. DO THE ENHANCED CAPABILITIES OF YOUR NETWORK GO BEYOND**
22 **THE AFOREMENTIONED SERVICES?**

1 **A.** Yes, they include:

- 2 i) **HD Phone Calls** – where Big River delivers calls in a CD quality audio format.
- 3 ii) **HD Conferencing** – where Big River provides voice conference calls where the
4 audio is transmitted in a CD quality audio format.
- 5 iii) **Big River Softphone App** – actual telephone operating from Big River’s
6 network that runs on an iPhone or Android smart phone (supports HD quality
7 audio).
- 8 iv) **Mass Announcement Service** – provides the ability for our customers to record
9 a message and call a pre-set list of telephone numbers in a set period of time and
10 play the recorded message.
- 11 v) **Direct Media** – allows a customer connection to route signaling messages on
12 one connected path and media on another connected path such that the path
13 taken by the media allows the quality of the connection to be maximized.
- 14 vi) **Fire Bar** – allows our customers to establish a ‘Fire Bar’ number which when
15 called will simultaneously call a pre-set list of telephone numbers and establish
16 a conference call with all parties that answer the call from the Fire Bar number.
- 17 vii) **Privacy Defender** – allows our customers to screen calls coming from an
18 ‘Anonymous’ Caller ID, will request information from the caller, record the
19 information and provide the information to our customer to determine whether
20 they want to accept or reject the call.
- 21 viii) **Auto Attendant** – allows our customers to establish an auto attendant that is set
22 up and managed via a web-based user interface where audio prompts are
23 generated using ‘text-to-speech’ capabilities as opposed to relying on actual
24 recordings.
- 25 ix) **Intelligent Routing (“Store Code Dialing”)** – allows our customers, across a
26 number of locations, to use a common set of dialing codes (usually 2 – 4 digits)
27 to dial pre-set telephone numbers.

28 **Q.** **DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?**

29 **A.** Yes.


STATE OF MISSOURI)
)
COUNTY OF ST. LOUIS) SS:

VERIFICATION

Gerard J. Howe, being duly sworn upon his oath deposes and states that he is the Chief Executive Officer of Big River Telephone Company, LLC, that he has prepared and reviewed the foregoing, *Direct Testimony*, and that the statements contained therein are true and correct to the best of his knowledge, information and belief.


Gerard J. Howe

Subscribed and sworn to before me on this 28 Day of September, 2012.


Notary Public

My commission expires:

5/31/2014

ANDREW THOMAS SCHWANTNER
Notary Public - Notary Seal
STATE OF MISSOURI
Jefferson County
Commission Number 10893376
My commission expires May 31, 2014