

Exhibit ___ (RW-1T)
Docket No. UT-031472
Witness: Robert Williamson

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON EXCHANGE
CARRIER ASSOCIATION, et. al.,

Petitioners,

v.

LOCALDIAL CORPORATION, an
Oregon Corporation,

Respondents.

DOCKET NO. UT-031472

DIRECT TESTIMONY OF

Robert Williamson

STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION

February 27, 2004

1 **Q. Please state your name and business address.**

2 A. My name is Robert Williamson, and my business address is 1300 South
3 Evergreen Park Drive Southwest, P.O. Box 47250, Olympia, Washington, 98504.
4 My business e-mail address is bwilliam@wutc.wa.gov.

5
6 **Q. By whom are you employed and in what capacity?**

7 A. I am employed by the Washington Utilities and Transportation Commission as a
8 Utility Engineer in the Telecommunications Section.

9
10 **Q. Please state your qualifications to provide testimony in this proceeding.**

11 A. I have provided a description of my qualifications as Exhibit ____ (RW-2).

12
13 **Q. Have you presented testimony before this Commission in other cases?**

14 A. Yes I have. I testified in Docket UT-011439 concerning a petition for a line
15 extension waiver in Eastern Washington and in Docket UT-030614 concerning a
16 petition by Qwest for competitive classification.

17
18 **Q. What is the purpose of your testimony?**

19 A. This case concerns the regulatory classification of a service that the Respondent,

1 LocalDial, characterizes as “a supplemental phone service for domestic long
2 distance calling.”¹ LocalDial has also characterized its service as a Voice over
3 Internet Protocol (VoIP) service. Therefore, in the first part of my testimony, I
4 provide some background information to help the Commission understand what
5 VoIP means and how it compares with telephony that utilizes the Public
6 Switched Telephone Network (PSTN). There are a number of different services
7 that may be referred to as VoIP. Because the regulatory classification of those
8 services by the Federal Communications Commission (FCC) is likely to differ, I
9 will also explain the categories of VoIP service that the FCC set out in a 1998
10 Report to Congress. In the second section, I describe how LocalDial’s service
11 works, both from the users’ standpoint, and from a technical standpoint. In the
12 third section, I present my conclusion that the service provided by LocalDial is a
13 telecommunications service within the meaning of Title 80 RCW, and that it may
14 be classified by the Commission as a provider of intrastate interexchange (long
15 distance) services.

¹ www.888localdial.com

1 **I. Background:**
2 **Internet Telephony and the Public Switched Telephone Network**

3 **Q. Please explain briefly what is generally meant by “the Internet.”**

4 A. The Internet is a grouping of many large, worldwide computer networks joined
5 over high-speed backbone data links. It began in the late 1960s when the U.S.
6 Department of Defense Advanced Research Projects Agency (ARPA) connected
7 many research organizations in the U.S. over an experimental wide-area
8 computer network. The goal was to share scarce computing resources, and many
9 of the government contractors used the network for collaboration by sharing
10 files, software, and electronic mail (later to become email). As the network grew
11 from a handful to a network of tens of thousands of hosts, the original ARPAnet
12 became the backbone of regional and local networks that we now know as the
13 Internet.

14 In 1988 the publicly funded National Science Foundation (NSF)
15 transitioned the Internet to a commercial network (NSFnet) of multiple
16 backbones run by long distance carriers like MCI, Sprint, and AT&T. The
17 Internet backbone continues to be provided by multiple carriers, the largest of
18 which are AT&T, MCI, Sprint, Qwest, and Level3. Today the Internet connects
19 millions of hosts around the world.

1 It is also helpful to understand the difference between the “Internet” as
2 opposed to “internets.” The capitalized version (the Internet) is the network that
3 began as the ARPAnet and has grown into a network made up of directly or
4 indirectly connected commercial backbones, and is universally available to the
5 general public. The lower case “internet” is any network of multiple smaller
6 networks that does not necessarily connect to the Internet, that may or may not
7 use IP as the standard protocol, and that is not generally available to the public.
8 An “intranet” is a private “internet” used to connect corporate and other
9 institutional users.

10
11 **Q. What is a protocol?**

12 A. A protocol is a rule that guides how an activity should be performed. When
13 used in computing, a protocol is a convention or standard that controls or
14 enables the connection, communication, and data transfer between two
15 computing devices. Protocols may be implemented by hardware, software, or a
16 combination of the two. A number of protocols are used in both the PSTN and
17 the Internet.

1 **Q. What is Internet Protocol?**

2 A. Internet Protocol (IP) is the software protocol on which the Internet is based. It
3 was developed in the early 1980s and soon became the standard protocol for
4 ARPAnet. IP keeps track of the Internet's addresses for different nodes, routes
5 outgoing messages, and recognizes incoming messages. It allows a "packet" to
6 traverse multiple networks on the way to its final destination. A packet is a small
7 amount of data sent over a network together with the address of its origin and
8 destination, and information that connects it to the related packets being sent.

9

10 **Q. What is Voice over Internet Protocol (VoIP)?**

11 A. VoIP is a technology that allows voice traffic to be packetized and transported
12 and routed as data, without the need for the traditional circuit switching of the
13 PSTN. The data packet traffic (voice) is directed (i.e. routed) to the desired
14 location using IP addressing. The data packet traffic may be routed over the
15 Internet or a corporate intranet or a combination of both. The term "Internet
16 Telephony" is sometimes used interchangeably with VoIP even though the voice
17 transmission may never touch the Public Internet. In all cases Internet Protocol is
18 used. At the present time, the focus of development for VoIP is to replicate the

1 basic functionality and quality of the PSTN, but by utilizing IP networks (either
2 the Internet or internets).

3
4 **Q. Briefly compare the Internet and the PSTN as media for transmitting voice**
5 **conversations.**

6 A. All voice communication starts as natural acoustic compression waves that
7 transmit voice through the air. When you speak into a telephone handset, a
8 microphone converts these compression waves to an analog electrical signal that
9 represents the acoustical waves with an analog (similar to or analogous) electrical
10 signal. At some point in the PSTN (such as at the local exchange company's end
11 office), the analog signal is sampled, most commonly 8000 times a second, then
12 encoded into a binary (digital) number consisting of zeros and ones. In
13 computer-to-computer and computer-to-phone VoIP services (discussed in detail
14 below), the same kind of analog sampling occurs on equipment (such as a
15 personal computer or a "SIP" phone) at the user's location. In other words, both
16 the PSTN and IP networks transmit voice digitally.

17 An IP network uses IP addresses (unique, 32 bit numbers for each host on
18 the Internet) to route packets, while the PSTN uses telephone numbers to route
19 calls through circuits. Unlike the protocols utilized on the PSTN (such as time

1 division multiplexing or “TDM”), IP was designed to facilitate the transportation
2 of packet data rather than real time voice communications. With IP there is no
3 practical distinction between voice, video, or data since they are all transmitted
4 within similar packets.

5 Using the TDM protocol, the PSTN creates dedicated circuits between
6 users through a maze of switches and connecting trunks ensuring sufficient
7 bandwidth between the two users for the length of a call. Once that call is
8 terminated, the switches release all of the interconnected circuits so that the
9 bandwidth can be used for other calls. The PSTN is a “connection” oriented
10 network and as such, circuit bandwidth is allocated for the length of the call even
11 if no conversation is taking place. When all the circuits are in use, subsequent
12 call attempts are blocked and given a busy indication.

13 In contrast to the PSTN, packet-switching (such as those using IP)
14 networks divide voice (or any other information) into individual packets of
15 digital bits which are individually transmitted. The packets may take different
16 routes but ultimately arrive at the destination where they are reassembled. IP
17 networks are “connectionless”, meaning there is no end-to-end PSTN-like circuit
18 created for each call. Because IP networks are “connectionless” no calls are
19 blocked as they can be in the “connection” oriented PSTN. However, as the

1 traffic load builds, the quality of a voice transmission over an IP network will
2 degrade to the point that conversation is impossible or the call is dropped. Thus,
3 as mediums for transmitting voice, both the PSTN and IP networks have capacity
4 limitations, though an end-user experiences the consequences of exceeding that
5 limitation in different ways. Under heavy traffic conditions the PSTN blocks
6 voice traffic by denying access to the network whereas the IP network may
7 degrade voice traffic by causing long delays between transmission and receipt of
8 data packets.

9 The PSTN uses North American Numbering Plan (NANP) telephone
10 numbers to locate customers, complete and bill calls. Geographic local dialing
11 areas determine which calls are “free” (i.e., covered by flat rated local service)
12 and which will be billed. Computer-to-computer and computer-to-phone VoIP
13 rely on IP addresses—which are not based on geography—to locate and
14 complete a call. Thus, where telephone numbers are geographic in nature, IP
15 addresses are not.

16
17 **Q. Is there more than one type of VoIP?**

18 **A.** Yes. The FCC, in a 1998 Report to Congress on Universal Service (frequently

1 called the “Stevens Report”)² posited three distinct types of VoIP services:

2 1.) **“Computer-to-computer”**, where users on separate computers hold
3 a voice communications session over a packet network using IP. The
4 PSTN is never used, nor are telephone numbers from the North American
5 Numbering Plan. The voice connection may be over the public Internet or
6 a private IP intranet. Pulver.com’s Free World Dialup is an example of this
7 type of VoIP³. On February 12, 2004, the FCC declared that Free World
8 Dialup is an unregulated information service.⁴

9 2.) **“Computer-to-phone”** or **“phone-to-computer”**, which bridges the
10 different worlds of IP and the PSTN. The ability to connect a voice call
11 between a computer user and a customer on the PSTN became possible
12 with the advent of IP gateways—computer hardware that IP telephony
13 providers use to convert digital packets originated on an IP network into
14 TDM (the most common protocol used by the PSTN) so that the call can
15 be completed via the existing PSTN. The reverse is also possible using an
16 IP gateway: a call may be originated on the PSTN and terminated on the
17 public Internet or a private IP intranet. NANP telephone numbers are

² In the Matter of Federal-State Joint Board on Universal Service cc Docket No. 9645, 13 FCC RD 11501, release Number 98-67 released April 10, 1998.

³ FCC Docket No. WC 03-45.

⁴ FCC 04-27 Petition for Declaratory Ruling that pulver.com’s Free World Dialup is Neither Telecommunications Nor a Telecommunications Service, released February 19, 2004.

1 used at both ends of the call. The service provided by Vonage is an
2 example of this type of VoIP.⁵

3 3.) **“Phone-to-phone”**, in which the user simply dials a local
4 traditional NANP telephone number using the user’s existing telephone
5 and is then prompted to dial the desired NANP long distance telephone
6 number that the user wishes to be connected to. The call is transported to
7 an IP gateway, which converts the digital TDM voice representation to
8 digital IP packets and routes the IP packets to another IP gateway where
9 the process is reversed. The call is completed via the PSTN to the called
10 NANP telephone number. The call may be routed over the public Internet
11 or a private IP intranet but all calls are originated and terminated on the
12 PSTN. Because calls using this type of service originate and terminate on
13 the PSTN with some of the transport occurring via IP, this service may be
14 referred to as “IP-in-the-middle.”

15 Unlike both computer-to-computer and computer-to-phone VOIP,
16 with phone-to-phone VOIP the conversion from TDM to IP and back to
17 TDM is transparent to the originating and terminating customers. The call
18 is originated using the ordinary touch-tone phone that virtually every
19 residential customer already owns, over the analog loop that is already

⁵ FCC Docket No. WC 03-271.

1 connected to most residences, and is terminated to a NANP telephone
2 number just like any long distance call to another analog touch-tone
3 phone. AT&T's⁶ phone-to-phone VoIP offering is an example of this type
4 of VoIP service.

5
6 **Q. Which type of VoIP is employed by the LocalDial?**

7 A. As I will explain below, LocalDial's service is phone-to-phone, "IP-in-the-middle"
8 VoIP service.

9
10 **II. How LocalDial's Service Works**

11 **Q. From a customer's perspective, how does LocalDial's service work?**

12 A. LocalDial advertises its service as providing "[u]nlimited long distance calling
13 for a flat rate." "[L]ocalDial is ... a supplemental phone service for domestic long
14 distance calling."⁷

15 To access LocalDial's long distance service, the customer dials a local
16 access number issued by LocalDial. The customer receives a prompt, and then
17 dials the long distance destination telephone number. The destination telephone
18 number can be any telephone number in the 48 continental United States. Users

⁶ FCC Docket No. WC 02-361.

⁷ www.888localdial.com.

1 of LocalDial's phone-to-phone VoIP service find that the service is
2 indistinguishable from traditional telephone long distance service.

3
4 **Q. From a technical standpoint, how does LocalDial provide its service?**

5 A. On its website LocalDial states: "LocalDial uses a Voice-over-IP system that ends
6 your call by means of digitally compressed and encrypted packets over our own
7 private network to *bypass long distance tolls*" (emphasis added). In truth, the
8 service originates and terminates switched inter-exchange calls between
9 traditional touch-tone telephones on the PSTN with no net change to form or
10 content. The only difference between this LocalDial service and traditional long
11 distance service is that LocalDial inserts IP in a small portion of the transmission
12 path and converts it back to TDM before handing the call to the LEC for final
13 delivery as a local call.

14 LocalDial leases T1 PRI (Primary Rate ISDN) facilities from a competitive
15 local exchange company (CLEC). The CLEC has a switch in Seattle from which it
16 provides local exchange access services in a number of Qwest wire centers
17 throughout the state. Through this arrangement, LocalDial is able to provide its
18 customers in many parts of Washington with a telephone number in their local
19 calling area that connects them to LocalDial's leased T1 trunk facility via CLEC's

1 switch. The T1 trunks connect to LocalDial's Integrated Access Devices (IAD),
2 Gateways, and routers, which are located at the Westin Building in Seattle.

3 Calls to and from Spokane and Western Washington as far south as
4 Centralia/Chehalis use the LocalDial Seattle facility at the Westin Building, and
5 calls to and from Western Washington south of Centralia/Chehalis to the Oregon
6 border use a LocalDial facility in Portland. The leased T1 PRI's are bundled in
7 DS3's (28 DS1s or T1s). The IADs de-multiplex each DS3 into the separate T1
8 PRIs, which then connect to the Gateways. The gateway verifies the caller's
9 number against a database of known subscribers to LocalDial's service and then
10 prompts the customer to dial the long distance telephone number that they want
11 to reach. If the called number is in an area served by the LocalDial network in
12 Washington, the gateway converts the call to IP format and routes the call
13 packets to the router and a particular IP address. The call packets are then
14 routed to the IP address dedicated to the appropriate port associated with the
15 terminating trunk via an internal LAN. The gateway converts the IP packet
16 format back to TDM and sends the call to the T1 PRI associated with the correct
17 terminating area. For a call from Seattle to Spokane or from Olympia to
18 Bellingham, this whole process of converting the call from TDM to IP and back to
19 TDM again occurs in the room at the Westin Building. The T1 PRI terminates in

1 the CLEC office which, after receipt of the called telephone number, routes the
2 call over local interconnection trunks to the terminating ILEC central office, or
3 intermediate local tandem, as a local call.

4 Calls that terminate at the Portland facility are sent from the router in
5 Seattle over the Internet to an IP address in Portland. Some interstate calls and
6 calls that cannot be terminated on the intrastate LocalDial/Competitive Local
7 Exchange Carrier (CLEC) network are sent to Long Distance resellers
8 (approximately four) for termination (access charges are paid on these calls).
9 Interstate calls that can be completed over the extended LocalDial network are
10 routed over the Internet to the appropriate LocalDial gateways.

11
12 **Q. Please explain why the LocalDial network is classified as phone-to-phone**
13 **VoIP.**

14 A. The FCC defined phone-to-phone IP Telephony as a service that: 1) holds itself
15 out as providing voice telephony service; 2) does not require the customer to use
16 CPE different from that necessary to place an ordinary touch-tone call over the
17 public switched telephone network; 3) allows the customer to call telephone

1 numbers assigned in accordance with the North American Numbering Plan;
2 4) transmits customer information without net change in form or content.⁸

3 LocalDial's "supplemental Long Distance" service passes all of the above
4 tests set forth by the FCC and is a phone-to-phone service.

5
6 **III. LocalDial's Service Is "Telecommunications"**
7 **Under Title 80 RCW And Is The Same For All Practical Purposes,**
8 **As Any Long Distance Service That Is Subject To Access Charges**

9 **Q. Does the service offered by LocalDial meet the definition of**
10 **"telecommunications" that is set out in Title 80 RCW?**

11 **A.** Yes it does. RCW 80.04.010 defines "telecommunications" as "[t]he transmission
12 of information by wire, radio, optical cable, electromagnetic, or other similar
13 means. As used in this definition, 'information' means knowledge or intelligence
14 represented by any form of writing, signs, signals, pictures, sounds, or any other
15 symbols." Under the same statute, "telecommunications company" is defined to
16 include "[e]very corporation, company ... owning, operating or managing any
17 facilities used to provide telecommunications for hire, sale, or resale to the
18 general public within this state."

⁸ In the Matter of Federal-State Joint Board on Universal Service cc Docket No. 9645, 13 FCC RD 11501, release Number 98-67 released April 10, 1998, Para. 88.

1 The terms of the statute are broad and does not distinguish between
2 technologies. It seems clear that if the modern PSTN fits this definition of
3 telecommunications (as the “transmission of information by wire, radio, or
4 optical cable”) then LocalDial’s service should, too.

5 It is my understanding that LocalDial owns and operates the gateways,
6 servers, and other equipment I mention above and, therefore, Staff concludes
7 that the company is a “telecommunications company” under the statute.

8
9 **Q. What has the FCC said about phone-to-phone IP telephony?**

10 A. In the 1998 Stevens Report, the FCC stated: “[W]e note that, to the extent we
11 conclude that certain forms of phone-to-phone IP telephony service are
12 ‘telecommunications services’, and to the extent the providers of these services
13 obtain the same circuit-switched access as obtained by other inter-exchange
14 carriers, and therefore impose the same burdens on the local exchange carriers,
15 we may find it reasonable that they pay similar access charges.”⁹

16 The FCC stated that a carrier offering a simple, transparent transmission
17 path, without the capability of providing enhanced functionality, offers
18 telecommunications.¹⁰ The FCC also noted that certain protocol processing

⁹ *Id.* Para. 91.

¹⁰ *Id.* Para. 39.

1 services that result in no net protocol conversion to the end user are deemed
2 telecommunications services.¹¹ “[T]he protocol processing that takes place
3 incident to phone-to-phone IP Telephony does not affect the service’s
4 classification, under the Commission’s current approach because it results in no
5 protocol conversion to the end user.”¹²

6 The FCC concluded that the nature of the service being offered to
7 customers determined its classification. If a user can receive nothing more than
8 pure transmission, the service is a telecommunications service; if the user can
9 receive enhanced functionality, such as manipulation of information and
10 interaction with stored data, the service is an information service.¹³

11 From a functional standpoint, the FCC found that users of phone-to-
12 phone IP telephony services (such as those provided by LocalDial) obtain only
13 voice transmission services, rather than information services such as access to
14 stored files.¹⁴

¹¹ *Id.* Para. 39.

¹² *Id.* Para. 52.

¹³ *Id.* Para. 59.

¹⁴ *Id.* Para. 89.

1 **Q. Please summarize the reasons why you conclude the phone-to-phone service**
2 **provided by LocalDial is a telecommunication service and that it may be**
3 **classified as a provider of intrastate long distance (interexchange) service.**

4 A. All of the reasons identified by the New York Public Service Commission¹⁵ in a
5 proceeding to determine the regulatory classification of a company providing a
6 service similar to that of LocalDial apply here as well:

- 7 1) LocalDial holds itself out as providing voice telephony service.
- 8 2) LocalDial does not provide enhanced functionality to its customers, such
9 as storing, processing or retrieving information.
- 10 3) LocalDial's customers are not required to use Customer Provided
11 Equipment (CPE) different from the CPE used to place ordinary calls over
12 the PSTN.
- 13 4) LocalDial's customers place calls to telephone numbers assigned in
14 accordance with the NANP.
- 15 5) The use of IP is incidental to LocalDial's own private network and does
16 not result in net protocol conversion to the end user.
- 17 6) LocalDial uses the same circuit switched access as obtained by IXC's and
18 imposes the same burdens on the local exchange as do IXC's.

¹⁵ Case 01-C-1119 Complaint of Frontier Telephone of Rochester Against US DatNet Corporation
Concerning Alleged Refusal to Pay Intrastate Carrier Access Charges, May 31, 2002.

1 The phone-to-phone service as provided by LocalDial is a simple,
2 transparent, long distance telephone service, virtually identical to traditional
3 circuit-switched carriers. LocalDial's service fits the definition of
4 "telecommunications" contained in RCW 80.04 and the 1998 FCC Stevens Report
5 To Congress¹⁶. It is not an "information service" or an "enhanced service". Thus,
6 LocalDial's traffic is access traffic identical to other IXC traffic.

7

8 **Q Does this complete your testimony?**

9 A. Yes it does.

10

11

12

13

14

15

16

17

18

¹⁶ In Matter of Federal-State Joint Board on Universal Service cc Docket No. 9645, 13 FCC RD 11501, release Number 98-67 released April 10, 1998.