

Declaration of Bill Lin in Support of Petition for *Inter Partes* Review of U.S.  
Patent No. 8,228,801

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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RED HAT, INC.  
Petitioner,

v.

COMPETITIVE ACCESS SYSTEMS, INC.  
Patent Owner

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U.S. Patent No. 8,228,801  
**Issued:** July 24, 2012  
**Filed:** October 19, 2009  
**Inventor:** Eric M DeLangis  
**Title:** Broadband Communications Device

**DECLARATION OF BILL LIN IN SUPPORT OF PETITION FOR *INTER*  
*PARTES* REVIEW OF U.S. PATENT NO. 8,228,801  
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

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**LIST OF EXHIBITS<sup>1</sup>**

| <b>Exhibit No.</b> | <b>Description</b>                                                                        |
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| <b>1001</b>        | Declaration of Bill Lin, Ph.D. in support of <i>Inter Partes</i> Review                   |
| <b>1002</b>        | <i>Curriculum Vitae</i> of Bill Lin                                                       |
| <b>1003</b>        | Certified Copy of U.S. Patent No. 11,582,343                                              |
| <b>1004</b>        | Certified File History of U.S. Patent No. 11,582,343                                      |
| <b>1005</b>        | Certified Copy of U.S. Patent No. 11,418,641                                              |
| <b>1006</b>        | Certified File History of U.S. Patent No. 11,418,641                                      |
| <b>1007</b>        | Certified Copy of U.S. Patent No. 10,868,908                                              |
| <b>1008</b>        | Certified File History of U.S. Patent No. 10,868,908                                      |
| <b>1009</b>        | Certified Copy of U.S. Patent No. 9,350,649                                               |
| <b>1010</b>        | Certified File History of U.S. Patent No. 9,350,649                                       |
| <b>1011</b>        | Certified Copy of U.S. Patent No. 8,861,349                                               |
| <b>1012</b>        | Certified File History of U.S. Patent No. 8,861,349                                       |
| <b>1013</b>        | Certified Copy of U.S. Patent No. 8,228,801                                               |
| <b>1014</b>        | Certified File History of U.S. Patent No. 8,228,801                                       |
| <b>1015</b>        | Certified Copy of U.S. Patent No. 7,606,156                                               |
| <b>1016</b>        | Certified File History of U.S. Patent No. 7,606,156                                       |
| <b>1017</b>        | U.S. Patent Application Publication No. 2004/0001512 A1 (“Challener”)                     |
| <b>1018</b>        | U.S. Patent Application Publication No. 2003/0026221 A1 (“Kotzin”)                        |
| <b>1019</b>        | James Carlson, <i>PPP Design, Implementation, and Debugging</i> (2d ed. 2000) (“Carlson”) |
| <b>1020</b>        | Gilbert Held, <i>Network Design Principles and Applications</i> , 2000 (“Held”)           |

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<sup>1</sup> Unless otherwise specified, citations are to the original page, column, and line numbers in exhibits rather than the PDF page. Citations corresponding to the PDF pagination are indicated in [[brackets]]. Unless otherwise noted, all emphases and annotations are added.

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| <b>Exhibit No.</b> | <b>Description</b>                                                                                                                                                |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1021</b>        | U.S. Patent No. 6,917,960 (“Decasper”)                                                                                                                            |
| <b>1022</b>        | Johnny Chen, <i>New Approaches to Routing for Large-Scale Data Networks</i> (Rice University, 1999) (“Chen”)                                                      |
| <b>1023</b>        | Declaration of Sylvia Hall-Ellis                                                                                                                                  |
| <b>1024</b>        | Webster's Ninth New Collegiate Dictionary, 1990                                                                                                                   |
| <b>1025</b>        | Xin, W., Ishihara, S., and Mizuno, T., <i>A QoS-ensured Transmission Scheme with Content-based Priority for Mobile Cluster Users</i> , 2000 (“Xin”)               |
| <b>1026</b>        | U.S. Patent Application Publication No. 2002/0042274 A1 (“Ades”)                                                                                                  |
| <b>1027</b>        | U.S. Patent No. 7,003,580 (“Cook”)                                                                                                                                |
| <b>1028</b>        | U.S. Patent No. 5,625,877 (“Dunn”)                                                                                                                                |
| <b>1029</b>        | U.S. Patent Application Publication No. 2002/010866 A1 (“McCullough”)                                                                                             |
| <b>1030</b>        | Candace Leiden & Marshall Wilensky, <i>TCP-IP for Dummies</i> (3d ed. 1999) (“Dummies”)                                                                           |
| <b>1031</b>        | U.S. Patent Application Publication No. 2003/0223450 A1 (“Bender”)                                                                                                |
| <b>1032</b>        | U.S. Patent Application Publication No. 2004/0022224 A1 (“Billhartz”)                                                                                             |
| <b>1033</b>        | Hung-Yun Hsieh & Raghupathy Sivakumar, <i>A Transport Layer Approach for Achieving Aggregate Bandwidths on Multi-homed Mobile Hosts</i> (2002) (“Hsieh”)          |
| <b>1034</b>        | U.S. Patent No. 6,778,495 (“Blair”)                                                                                                                               |
| <b>1035</b>        | Cisco Systems, Inc., <i>Troubleshooting Async Multilink PPP Operations</i> (2001) (“Cisco”)                                                                       |
| <b>1036</b>        | U.S. Patent Application Publication No. 60/377,631 (“Tucker”)                                                                                                     |
| <b>1037</b>        | Konishi et al., <i>Web SHAKE: A fast WWW access method for mobile terminals on temporary cluster networks</i> , IEEE Proceedings April 28-May 2, 2022 (“Konishi”) |
| <b>1038</b>        | RFC 1990: The PPP Multilink Protocol (MP), August 1996                                                                                                            |
| <b>1039</b>        | <i>Competitive Access Systems, Inc. v. Oracle Corporation, and Oracle America, Inc.</i> , 1:23-ca-00286-ADA, Dkt. 82 (W.D.TX. Aug. 10, 2023)                      |
| <b>1040</b>        | <i>Red Hat, Inc. v. Competitive Access Systems, Inc.</i> , 4:24-cv-00130-D, Dkt. 1 (E.D.N.C. Sep. 3, 2024)                                                        |

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| Exhibit No. | Description                                                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1041</b> | <i>Red Hat, Inc. v. Competitive Access Systems, Inc.</i> , 4:24-cv-00130-D, Dkt. 1-10 (E.D.N.C. Sep. 3, 2024)                                                                          |
| <b>1042</b> | Lai et al., <i>Measuring Bandwidth</i> , IEEE (1999)                                                                                                                                   |
| <b>1043</b> | RFC 2663: IP Network Address Translator (NAT) Terminology and Considerations, August 1999                                                                                              |
| <b>1044</b> | U.S. Patent No. 5,878,040 (“Peirce”)                                                                                                                                                   |
| <b>1045</b> | “A Novel Mechanism for Data Streaming Across Multiple IP Links for Improving Throughput and Reliability in Mobile Environments,” IEEE INFOCOM 2002 (“Phatak”)                          |
| <b>1046</b> | RFC 2543: SIP: Session Initiation Protocol, March 1999                                                                                                                                 |
| <b>1047</b> | RFC 2131: Dynamic Host Configuration Protocol, March 1997                                                                                                                              |
| <b>1048</b> | RFC 1945: Hypertext Transfer Protocol – HTTP/1.0, May 1996                                                                                                                             |
| <b>1049</b> | Endler, David, <i>Brute-Force Exploitation of Web Application Session IDs</i> , iALERT White Paper, Nov. 1, 2001 (“Endler”)                                                            |
| <b>1050</b> | Rappaport, Theodore S., et al., <i>Wireless Communications and Application Above 100 GHz: Opportunities and Challenges for 6G and Beyond</i> , IEEE Access, Vol. 7, 2019 (“Rappaport”) |
| <b>1051</b> | Reex. Control No. 90/019,265                                                                                                                                                           |
| <b>1052</b> | Gast, Matthew S., <i>802.11 Wireless Networks – The Definitive Guide</i> , 2002                                                                                                        |
| <b>1053</b> | Shoemake, Matthew B., <i>Wi-Fi (IEEE 802.11b) and Bluetooth CoExistence Issues and Solutions for the 2.4 GHz ISM Band</i> , Texas Instruments, Feb. 2001, Ver. 1.1                     |
| <b>1054</b> | Furuskär, Anders, et al., <i>EDGE: Enhanced Data Rates for GSM and TDMA/136 Evolution</i> , IEEE Personal Communications, June 1990                                                    |
| <b>1055</b> | RFC 2326: Real Time Streaming Protocol (RTSP), April 1998                                                                                                                              |
| <b>1056</b> | Random House Webster’s Computer & Internet Dictionary, 3 <sup>rd</sup> ed., December 1998                                                                                              |
| <b>1057</b> | Andrew S. Tanenbaum, <i>Computer Networks</i> , Chps. 1 & 5 (3d ed. 1996)                                                                                                              |
| <b>1058</b> | Adolfo Rodriguez <i>et al.</i> , <i>TCP/IP Tutorial and Technical Overview</i> , Chps. 1 & 14 (Prentice Hall PTR 2002)                                                                 |

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| Exhibit No. | Description                                                                                                                 |
|-------------|-----------------------------------------------------------------------------------------------------------------------------|
| 1059        | Richard O. LaMaire, et al., <i>Wireless LANs and Mobile Networking: Standards and Future Directions</i> , IBM, May 31, 1996 |

I, Bill Lin, hereby declare as follows:

**I. ASSIGNMENT**

1. I have been retained as an expert witness on behalf of Red Hat, Inc. (“Red Hat”) to offer technical opinions regarding whether the claims of U.S. Patent No. 8,228,801 (“the ’801 Patent”) (Ex. 1013), would have been invalid to one of ordinary skill in the art as of October 15, 2002 in connection with the above-captioned Petition for *Inter Partes* Review (“IPR”).

2. For the purposes of my Declaration, I have been asked to assume that the priority date of the alleged invention recited in the ’801 Patent is October 15, 2002 (hereinafter the “Priority Date”).

3. I am not currently, and never have been, an employee of Red Hat. I received no compensation for this Declaration beyond my normal hourly compensation based on my time actually spent analyzing the ’801 Patent, the prior art cited below, and issues related thereto. I will not receive any added compensation based on the outcome of any IPR or other proceeding involving the ’801 Patent. I have no financial interest in Red Hat.

4. In forming the opinions expressed in this Declaration, I have also relied on my academic and professional experience. I also considered the viewpoint of a person having ordinary skill in the art as of the time of the alleged invention of the Challenged Patents. I also relied on the ’801 Patent and its file history, the reference

and other documents cited in the petition and in the declaration, as well as on the exhibits in the exhibit list.

## **II. BACKGROUND AND QUALIFICATIONS**

5. I am an expert in the field of computer engineering and have been an expert in that field since before the Asserted Patents were filed. A copy of my curriculum vitae and prior testimony is attached to this report (Ex. 1002) and provides a comprehensive description of my relevant experience, including my academic and employment history, publications, professional activities, and speaking engagements.

6. I received a B.S. in Electrical Engineering and Computer Sciences from the University of California, Berkeley, in 1985. I received an M.S. in Electrical Engineering and Computer Sciences in 1988 and a Ph.D. in Electrical Engineering and Computer Sciences in 1991, both from the University of California, Berkeley.

7. I am currently a Full Professor and the Department Chair of Electrical and Computer Engineering at the University of California, San Diego (“UCSD”), where I have been a professor since 1997.

8. At UCSD, my teaching and research has focused on computer architecture and computer networking problems, including the design of multiprocessor and multi-core processor architectures, multiprocessor and multi-core processor interconnection buses and networks, network processors, system-on-

chips, and data networks. I regularly teach senior-level design courses on advanced FPGA designs and the design of advanced processors, and I have taught graduate courses in hardware/software co-design and advanced special topics in computer architecture.

9. At UCSD, I am a Principal Investigator in the UCSD Center for Wireless Communications (CWC). CWC brings together researchers to work on a range of challenges in the design of future wireless communications systems. My contribution to CWC has been expertise in the design of multi-core processor architectures for wireless communications and mobile computing. I am also a Principal Investigator in the UCSD Center for Networked Systems (CNS). CNS brings together researchers to work on a range of challenges in the design of computer architecture solutions for packet processing and computer networking.

10. Before joining UCSD, I led the System Control and Communications Group at IMEC, Europe's largest independent microelectronics and information technology research center. At IMEC, I led a research team working on VLSI architecture, system design, and circuit techniques for system-on-chip applications. I also previously held positions at Hewlett Packard, Hughes Electronics, and Western Digital.

11. During my career, I have received or worked on research efforts that received millions of dollars in research funding from both government agencies and

industry, including funding for research in multi-core processor design, hardware/software co-design, packet processing, and computer networks.

12. I have authored numerous publications, including books, chapters in books, and journal papers, and I have presented numerous invited lectures and keynote presentation around the world. A number of my publications have received best paper awards or distinguished paper citations, including best paper awards in the IEEE Transactions on VLSI Systems and the ACM/IEEE Design Automation Conference, and I have also been awarded five patents.

13. I have served as an Associate or Guest Editor for several prestigious journals published by the Association for Computer Machinery (“ACM”) and the Institute of Electrical and Electronics Engineers (“IEEE”). I have also served on the Editorial Board of the International Journal of Embedded Systems. Further, I have served as General Chair of several ACM/IEEE conferences, and on the Organizing or Steering Committees of many ACM/IEEE conferences, including the ACM/IEEE Symposium on Networks-on-Chips (NOCS) and the ACM/IEEE Symposium on Architectures for Networking and Communication Systems (ANCS). I have served on the Technical Program Committees of over 45 ACM/IEEE conferences.

### III. UNDERSTANDING OF PATENT LAW

14. I am not an attorney, but I have been provided with an understanding of the patent law relevant to conducting the analysis given in this report. The following represents a summary of my understanding of these issues.

15. I have been informed and understand that patent claims are construed from the perspective of a person of ordinary skill in the art (“POSITA”) at the time the claimed invention was made and that, during this proceeding, terms are ordinarily to be given their plain and ordinary meaning as would be understood by a POSITA. I understand that this is the same standard as would be applied in District Court litigation.

16. I understand that claims in an IPR are construed under the case *Phillips v. AWH Corp.*, 415 F.3d 1303, decided by the Federal Circuit in 2005. I understand that under the rule in *Phillips*, words of claims are given their plain and ordinary meaning as understood by a person of ordinary skill in the art in view of the specification and prosecution history, unless those sources show an intent to depart from such meaning. No terms need to be construed for the purposes of this declaration. I reserve the right to respond to any constructions offered by the Patent Owner or adopted by the Board.

17. I understand that in IPR a claim is unpatentable if it is anticipated or obvious. Anticipation of a claim requires that every element of a claim be disclosed

expressly or inherently in a single prior art reference, arranged in the prior art reference as arranged in the claim. An element is inherent if it is necessarily present in the reference.

18. It is my understanding that a patent claim is unpatentable for obviousness if the claimed invention would have been obvious at the time the invention was made to a person having ordinary skill in the art.

19. I understand that, for the purpose of an IPR, the Board may only consider anticipation or obviousness based on prior printed publications or prior patents and patent applications. I understand that a publication is prior art under § 102(a) if that publication was known or used by others in the U.S., or was patented or published anywhere, prior to the date of invention of the '801 Patent. I understand that a publication is prior art under § 102(b) if that publication was patented or published anywhere, or was in public use, on sale, or offered for sale in this country, more than one year prior to the earliest U.S. filing date of the '801 Patent. I understand that a patent or patent application is prior art under § 102(e) if that patent or published patent application has an effective filing date that is prior to the date of invention of the '801 Patent.

20. I have been informed and understand that the subject matter of a patent claim is obvious if the differences between the subject matter of the claim and the prior art are such that the subject matter as a whole would have been obvious at the

time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. I have also been informed that the framework for determining obviousness involves considering the following factors: (i) the scope and content of the prior art; (ii) the differences between the prior art and the claimed subject matter; (iii) the level of ordinary skill in the art; and (iv) any objective evidence of non-obviousness.

21. I further understand that a claim can be found obvious if it unites old elements with no change to their respective functions or alters prior art by mere substitution of one element for another known in the field, with that combination yielding predictable results. While it may be helpful to identify a reason for this combination, common sense should guide, and there is no rigid requirement for a teaching, suggestion, or motivation to combine. When a product is available, design incentives and other market forces can prompt variations of it, either in the same field or different one. If a person having ordinary skill in the relevant art can implement a predictable variation, obviousness likely bars patentability. Similarly, if a technique has been used to improve one device, and a person having ordinary skill in the art would recognize that the technique would improve similar devices in the same way, use of the technique is obvious. I further understand that a claim may be obvious if common sense directs one to combine multiple prior art references or add missing features to reproduce the alleged invention recited in the claims.

22. I also understand the following rationale may support a finding of obviousness:

- a. Combining prior art elements according to known methods to yield predictable results;
- b. Simple substitution of one known element for another to obtain predictable results;
- c. User of known technique to improve similar devices (methods, or products) in the same way;
- d. Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- e. “Obvious to try” — choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- f. Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;
- g. Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

23. I also understand that it is impermissible to use the claimed invention itself as a blueprint for piecing together elements in the art. In other words, it is impermissible to use hindsight reconstruction to pick and choose among disclosures in the prior art to reconstruct the claimed invention.

24. I understand that so-called “secondary considerations of nonobviousness,” must be considered in an obviousness analysis. I understand that an analysis including these secondary considerations helps to prevent the forbidden use of hindsight in determining whether a patent claim is obvious. I understand that secondary considerations of non-obviousness include, among others: (a) a long-felt but unresolved need for the invention; (b) commercial success of the invention; (c) copying of the invention; (d) praise and recognition of the invention by others; (e) licensing of the rights to the invention; and (f) unexpected results.

25. In rendering my opinions, I followed these guidelines.

#### **IV. SUMMARY OF OPINIONS**

26. I have reviewed and agree with the analysis in the Petition for IPR of the '801 Patent. It is my opinion that each and every Challenged Claim would have been obvious to a person of ordinary skill in the art (“POSITA”) at the time of the alleged invention in view of the knowledge of a POSITA and prior art cited in the Petition and as further explained in this declaration.

27. It is my opinion that claims 1–17 are obvious in view of Challenger (Ex. 1017) (Ground IA).

28. It is my opinion that claims 5–6, 11–13, 16–17 are obvious in view of Challenger (Ex. 1017) and Held (Ex. 1020) (Ground IB).

29. It is my opinion that claims 1–17 are obvious in view of Kotzin (Ex. 1018) (Ground IIA).

30. It is my opinion that claims 5–6, 11–13, 16–17 are obvious in view of Kotzin (Ex. 1018) and Held (Ex. 1020) (Ground IIB).

## **V. OVERVIEW OF THE TECHNOLOGY**

31. I have read and agree with the technology overview in the Petition.

## **VI. THE '801 PATENT**

### **A. Claims**

32. The '801 Patent titled “Broadband Communications Device” issued from U.S. Patent Application No. 12/581,852 (“’852 Application”) on July 24, 2012. The '801 Patent claims priority to Provisional Application No. 60/418,521 (“’521 Application”), filed on October 15, 2002. The '801 Patent discloses devices and methods for combining voice, data, and video communications and transmitting these communications over multiple paths, thereby increasing available bandwidth and data throughput.

33. The '801 Patent has 17 claims of which claims 1, 10, and 15 are independent claims. The independent claims are directed to devices capable of providing broadband communications services.

34. Independent claim 1 of the '801 Patent claims a communications device that is capable of providing broadband communications services. Claim 1 is reproduced below:

A communications device that is capable of providing  
broadband communications services, comprising:

at least one connection for connecting to a  
communications network;

at least one wireless interface for connecting wirelessly to  
at least one remote communications device; and

a processor that requests the at least one remote  
communications device to assist in transferring data,

sends a request to the at least one remote communications  
device for requesting use of a portion of unused bandwidth  
of the at least one remote communications device,

receives a response from the at least one remote  
communications device, the response containing  
information about the portion of unused bandwidth,

selects the at least one remote communications device  
with unused bandwidth,

sends control information to the at least one remote  
communications device for participating in a multilink  
connection,

receives packets from the at least one remote communications device and

aggregates the data from the at least one remote communications device with data transfers from the at least one connection to increase data bandwidth for the communications device.

Ex. 1013, claim 1.

35. Independent claim 10 of the '801 Patent claims a communications device that is capable of providing broadband communications services. Claim 10 is reproduced below:

A communications device that is capable of providing broadband communications services, comprising:

at least one connection for connecting to a network;

at least one wireless interface for connecting wirelessly to remote communications devices; and

a processor that requests the remote communications devices to transfer portions of data,

sends a request to the remote communications devices for requesting use of a portion of unused bandwidth of each of the remote communications devices,

receives a response from each of the remote communications devices, the response containing information about the portion of unused bandwidth for each of the remote communications devices,

selects a group of the remote communications devices with a larger, combined, unused bandwidth,

sends control information to the selected remote communications devices for participating in a multilink transfer, and

receiving packets from the selected remote communications devices and combines and sequences the portions of the data from the remote communications devices with second data transferred from the at least one connection

to increase data bandwidth for the communications device.

Ex. 1013, claim 10.

36. Independent claim 15 of the '801 Patent claims a communications device that is capable of providing broadband communications services. Claim 15 is reproduced below:

A communications device that is capable of providing broadband communications services, comprising:

at least one connection for connecting to a communications network;

at least one wireless interface for connecting wirelessly to at least one cellular phone; and

a processor that requests the at least one cellular phone to assist in transferring data,

sends a request to the at least one cellular phone for requesting use of a portion of unused bandwidth of the at least one cellular phone,

receives a response from the at least one cellular phone, the response containing information about the portion of unused bandwidth,

selects the at least one cellular phone with unused bandwidth,

sends control information to the at least one cellular phone for participating in a multilink connection,

receiving packets from the at least one cellular phone and aggregates the data from the at least one cellular phone with data transfers from the at least one connection

to increase data bandwidth for the communications device.

Ex. 1013, claim 15.

**B. Specification**

37. According to the specification, Local Exchange Companies, (“LECs”) had a “strangle hold” over “the ‘last mile’ of copper over which almost all residential customers receive their communications services.” Ex. 1013, 1:17-21. Competitive Local Exchange Companies (“CLECs”) worked to resell existing services offered by LECs but were not able to truly compete in the market. *Id.* 1:35-54. To attract customers, companies were attempting to provide Voice Over IP services (VoIP) “over high-speed or broad-band backbones just as DSL and cable modems, over Internet connections via a computer.” *Id.* 2:5-8. However, as the specification explains, the high-speed services required enhancing infrastructure to the local telephone companies’ facilities and cable plants, which is very expensive. *Id.* 2:8-11. The high-speed services also required installing expensive modems at the

customer's end. *Id.* These services were also difficult to install and were hard to use for the average user so were primarily provided to corporate markets rather than residential users. *Id.* 2:11-20. While residential users could obtain high speed services through DSL and cable modems, the specification deems these solutions a failure because they "reach only a small segment of the population" and many DSL service providers failed during the collapse of the internet boom. *Id.* 2:21-29. Accordingly, the specification identifies a need for residential customer access to higher speed connections that do not require DSL, cable modems, or replacing last mile communication infrastructure.

38. To address this problem in the art, the '801 Patent proposes using a specialized Residential Communications Gateway ("RCG"), which is a stand-alone external device that having the capabilities and features of "IP routers, Class 5 circuit switches and wireless LANs in a small stand-alone external modem like device." *Id.* 2:32-34. The RCG has additional capabilities of a hands-free speakerphone device with a touch display, which can provide video telephone services. *Id.* 2:34-39.

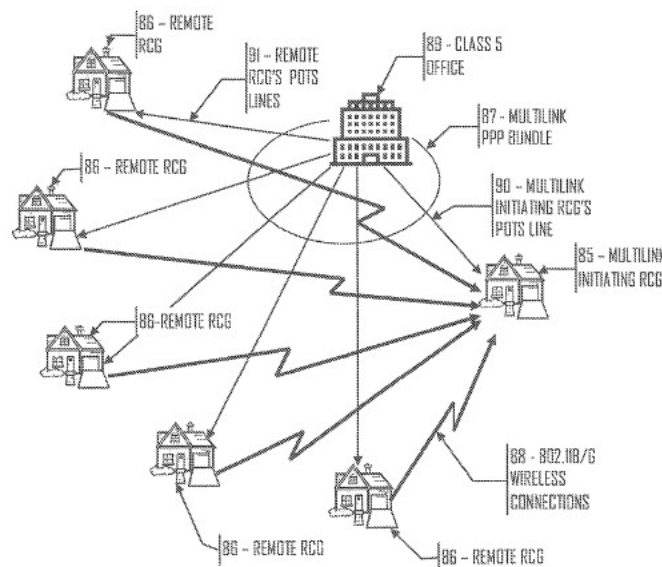
39. The alleged benefit of the RCG is that a Competitive Local Exchange Company (CLEC) can offer a variety of services to customers using the existing POTS line, and it doesn't require the expensive enhancements of the network infrastructure like DSL and Cable services. The specification further explains that the RCG can be readily deployed to quickly expand CLEC customer bases because

extra equipment is not needed. *Id.* 3:4-17. Indeed, the specification states that “[t]he RCG is designed to enhance, not replace, the existing phone line, enabling it to provide new combined packetized voice and data services” and will “continue to work seamlessly” with “all existing telecommunications infrastructure.” *Id.*, 3:18-22.

40. The specification describes an RCG receiving data over at least two separate communication paths and combines the paths to increase bandwidth. *Id.*, Abstract. It further indicates that the RCG has “a main system processor that is responsible for all house keeping and traffic routing tasks.” *Id.* 2:65-67. The specification further explains that the RCG can be placed in a residence and be connected to a POTS line (a telephone line) coming from the Local Exchange Carrier (LEC). *Id.* Devices like telephones, FAX machines, computers, or Local Area Network (LAN) can be connected to the RCG via the built in Universal Serial Bus (USB) or the Ethernet interface. *Id.*, 2:40-47.

41. The RCG also “implements broadband” over POTS by using an 802.11b/g wireless interface to configure a PPP multilink bundle. *Id.* 11:4-6. The specification, however, clarifies that “[a]ny wireless interface scheme can be used to implement this device” and “[t]here is nothing special or specific to the 802.11 wireless interface that makes it particularly suited to this application.” *Id.* 11:17-20. The specification also explains that an individual RCG is also “used to provide a

peer-to-peer wireless home networking environment to other 802.11 compatible wireless component within the residence” while also “acting as an always on dialup Internet gateway.” *Id.* 11:21-26. During data transmission, in order to gain greater bandwidth, an RCG can request that other RCGs assist in transferring data by using their respective POTS lines. *Id.* 11:26-35. For example, Figure 7 shows “an ad-hoc wireless LAN configuration with ppp multilink data distribution and wireless connectivity.”



*Id.*, 4:10-11, Fig. 7.

42. Elements like wired and wireless networks, residential voice and data services, including IP routers, Class 5 circuit switches, and wireless LANs, sharing and dynamically routing and allocating bandwidth including through standardized methods like Multilink PPP, sending packets and allocating bandwidth through

protocols like the Link Control Protocol for Multilink PPP, and routing tables such as those available in IP router devices were well known in the art at that time. Indeed, the specification itself confirms these elements were widely used in the communications field. *See id.*, 2:48-63 (describing wired and wireless networks and stating an RCG can be connected to a telephone line, LAN through a USB, firewire, or Ethernet ports and various devices through 802.11b/g interface for wireless communication), 1:15-18, 2:5-20, 2:32-34 (stating an RCG's primary function is to compete with existing companies for residential voice and data services and explaining that an RCG combines capabilities of IP routers, Class 5 circuit switches and wireless LANs), 11:4-20 (describing a well-known 802/11 b/g interface used to configure multilink PPP bundle consistent with RFC 1990 protocol to share and dynamically route and allocate bandwidth), 11:48-13:52 (describing well-known Link Control and Multilink PPP protocols for sending packets and allocating bandwidth), 14:50-62 (describing routing tables used by IP router devices).

### **C. Prosecution History**

43. I have reviewed the prosecution history of the '801 Patent. The '852 Application was filed on Oct. 19, 2009, with nine apparatus claims (one independent, eight dependent) all directed to Residential Communications Gateway (RCG) devices capable of providing broadband communications services. Ex. 1014 ('801

Patent File History). Claim 1 in the version that was originally submitted by the applicant is reproduced below:

A Residential Communications Gateway (RCG) device that is capable of providing broadband communications services over a plurality of standard Plain-Old-Telephone-Service (POTS) lines, the RCG device comprising:

at least one POTS connection capable of connecting to a Public Switched Telephone Network (PSTN)

a wireless interface capable of connecting to at least one of wireless devices, wireless Local Area Networks (LANs) and other RCGs;

one of a USB, firewire, Ethernet and other physical layer connections capable of physically connecting to other equipment;

at least one POTS circuit capable of connecting to a standard telephone device; and

a processor capable of

creating an ad-hoc wireless network via direct wireless connections between devices,

hopping said wireless connections among other RCGs to create a network of wirelessly connected RCGs to increase bandwidth for a requesting RCG device wherein an aggregated POTS bandwidth is faster than the speed of a single POTS line device,

utilizing Voice over IP (VoIP), voice/data compression and IP packet routing and switched circuit techniques to communicate multiple derived telephone POTS circuits over a single POTS

telephone line connected to a Local Exchange  
Company (LEC), and over a wireless network[;],

assigning individual and unique telephone numbers,  
as those used by the PSTN, to the derived virtual  
POTS circuits that are carried over a single POTS  
circuit from the LEC[.]

Ex. 1014, at [[36]].

44. I understand that during prosecution of the '801 Patent, the Examiner considered several prior art references, including Gerszberg (U.S. Patent No. 6,307,839), Gallagher (U.S. Patent Application No. 2006/0079274 A1), Chen (U.S. Patent No. 7,257,106), and Riddle (U.S. Patent No. 7,385,924). During the prosecution of the '801 Patent, the references presented in Grounds I–II of the Petition were not submitted by the Applicant to the USPTO, nor were they independently considered by the Examiner.

45. On June 17, 2010, the applicant filed a preliminary amendment canceling original claims 1–9 and adding new claims 10–28. Ex. 1014 at 36–40. The amendment included nineteen apparatus claims (three independent, sixteen dependent) all directed to communications devices providing broadband communications services. Ex. 1014 at [[86]]–[[90]]. Claim 10 in the amended version submitted by the applicant is reproduced below:

A communications device that is capable of providing  
broadband communications services, comprising:

at least one connection for connecting to a  
communications network;

at least one wireless interface for connecting wirelessly to  
at least one remote communications device; and

a processor that requests the at least one remote  
communications device to assist in transferring data and  
aggregates the data from the at least one remote  
communications device with data transfers from the at  
least one connection to increase data bandwidth for the  
communications device.

Ex. 1014 at [[87]].

46. On March 19, 2012, the Examiner initiated a telephonic interview in  
which the then-pending claims 10, 17, 20, 25, and 26 were discussed. *Id.*, [[101]]-  
[[102]]. During this call, the Examiner “proposed [that the applicant] amend  
independent claims with dependent claims having allowable subject matter.” *Id.* at  
[[102]].

47. On March 20, 2012, the applicant filed a second preliminary  
amendment on March 20, 2012, that canceled claims 17 and 25 and amended claims  
10, 20, and 26 to include additional limitations. The limitations required the  
processor “that requests the at least one remote communications device to assist in  
transferring data” to further “send[] a request to the remote communications devices  
for requesting use of a portion of unused bandwidth of each of the remote  
communications devices, receive[] a response from each of the remote

communications devices, the response containing information about the portion of unused bandwidth for each of the remote communications devices, select[] a group of the remote communications devices with a larger, combined, unused bandwidth, sends control information to the selected remote communications devices for participating in a multilink transfer, and receiv[e] packets from the selected remote communications devices.” Ex. 1014 at [[95]]-[[98]].

48. On March 29, 2012, the Examiner issued a Notice of Allowance. Ex. 1014 at [[104]] (Notice of Allowance, March 29, 2012). The Patent issued on July 24, 2012. *Id.* at [[122]] (Issue Notification, July 24, 2012).

**D. Person of Ordinary Skill in the Art**

49. I understand that there are multiple factors relevant to determining the level of ordinary skill in the pertinent art, including the educational level of active workers in the field at the time of the alleged invention, the sophistication of the technology, the type of problems encountered in the art, and the prior art solutions to those problems.

50. In determining the characteristics of a hypothetical person of ordinary skill in the art of the ’801 Patent at the time of the alleged invention, I considered several factors, including the type of problems encountered in this field, the swiftness with which innovations were made, the sophistication of the technology involved, and the educational background that would be necessary to understand the

'801 Patent. Finally, I placed myself back in the relevant periods of time and considered the state of the art and the level of skill of those working in this field at those times.

51. In my opinion, taking all of the factors into account, a person of skill in the art for the '801 Patent would have had at least a bachelor's degree in electrical engineering, computer science, or a related field, and at least one year of experience with network design. Individuals with different education and additional experience could still be of ordinary skill in the art if that additional experience compensates for a deficit in their education and experience.

52. I also note that my opinions provided in this Declaration would not change in view of any minor modifications to this level of skill.

## **VII. CLAIM CONSTRUCTION**

53. I understand that for the purposes of this *inter partes* review, the claims are to be construed under the so-called *Phillips* standard, under which claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in light of the specification and prosecution history, unless the inventor has set forth a special meaning for a term.

54. I further understand that pursuant to 37 C.F.R. § 1.906, in *IPR* proceedings, claims are evaluated based on the requirements of 35 U.S.C. § 112 only with respect to subject matter added or deleted in the reexamination proceedings

themselves. For example, it is my understanding that indefiniteness of a claim term cannot be raised in an *IPR*. Accordingly, I have not considered §112 challenges for this declaration, but I reserve the right to do so in litigation or any other forum. The fact that I have sought to express a meaning for each claim, or not otherwise challenged the definiteness of any terms, is not a concession that the term is not indefinite, and I reserve the right to render my opinion in litigation that certain limitations are indefinite.

55. In my view, there is no need to construe any terms for the purpose of the Petition or my Declaration. If Patent Owner raises claim construction arguments, I reserve the right to respond. Additionally, I reserve the right to render my opinion on claim construction in litigation.

#### **VIII. OVERVIEW OF THE PRIOR ART**

56. I have read the and agree with the characterization of the prior art in the Petition.

#### **IX. SPECIFIC GROUNDS FOR PETITION UNDER 37 C.F.R. § 42.104(B)**

57. I do not provide in this Declaration a mapping of each claim limitation to the prior art. I have read and agree with the prior art mapping provided in Section IX of the petition, and incorporate this mapping herein by reference.

58. Instead, for each Ground, I discuss herein specific claim limitations where I believe context from the perspective of a POSITA would be helpful the Board.

**A. Ground IA and IB: Claims 1-17 Are Obvious Under § 103 In View of Challenger Alone or In View of Challenger and Held**

**1. Independent Claim 1**

- a. Limitation 1.6: selects the at least one remote communications device with unused bandwidth,*

59. It is helpful for me to explain here the term “selecting” a BSD to share bandwidth. At the outset, a POSITA would have found it obvious that devices in order to begin sharing their bandwidth, have to be selected to participate in the connection. Indeed, Challenger explains that upon receiving a response that a slave BSD has available bandwidth, the master BSD will opt to use the slave BSD’s *unused* (available) *bandwidth* via one of two modules: either the sharing module 410, in which a single master BSD is “allowed to use the entire amount of bandwidth available” from the slave BSD, or the pro rata sharing module 412, in which “two or more master [BSDs] are communicating with a single slave [BSD].” EX1017, ¶¶ [0050]-[0051]. Challenger also explains that when potential slave BSDs are detected, “[t]hese other devices are then *configured to operate in slave mode*, controlled by instructions from the master device.” *Id.*, ¶ [0020] (emphasis added); *see also id.* ¶ [0021] (“[T]he method continues with bandwidth sharing arbitration and bandwidth

sharing between [BSDs].”). In my opinion, a POSITA would have understood and found obvious that the master BSD’s use of the slave BSD’s bandwidth is a *selection* of that slave BSD.

60. Additionally, Challenger further discloses that the master BSD can dynamically add or remove slave BSDs from a given communication session. *Id.* ¶¶ [0056] (disclosing that the master BSD’s arbitration module can “add[] or remov[e] bandwidth sharing devices to and from the current sharing method and structure”); [0061] (“The arbitration [module] 514 of the bandwidth sharing also necessitates frequent and regular re-evaluation of device and bandwidth availability status.”). In my opinion, a POSITA would have understood and found obvious that when a new slave BSD is added to a communication session, that slave BSD is *selected* by the master BSD. *Id.* ¶¶ [0048] (“Following detection of an available last mile telecommunications line 110, the bandwidth definition module 508 is configured to allow a slave [BSD] 202 to communicate the amount of bandwidth that will be made available to the master [BSD] 202.”), [0059] (“If an available last mile telecommunications line 110 is detected 508, then the master [BSD] 202 employs 504 the slave module 404 of the second [BSD] 202 and connects 510 the slave [BSD] 202 to the corresponding available last mile telecommunications line 110.”). In my opinion, a POSITA would have understood and found obvious that the master BSD’s decision to configure the detected BSDs into slave mode constitutes a *select[ion]*

of *the at least one remote communications device* (slave BSD) with unused bandwidth (available bandwidth).

**2. Dependent Claim 3**

- a. “The communications device of claim 1, wherein the at least one remote communications device is at least one of a residential communications gateway, a cable modem, a digital subscriber line, a wireless device, a neighborhood access point device, a Wi-Fi device and a cellular phone.”

61. In my opinion, Challenger discloses or at least renders obvious the additional limitation of claim 3. Specifically, Challenger discloses that its BSDs are *wireless devices*. See *id.*, Abstract (“The master [BSD] **wirelessly** communicates with slave [BSDs]”), ¶ [0014] (explaining that Challenger’s improved BSD “**wirelessly** aggregate[s] and arbitrate[s] available bandwidth”) (emphasis added), ¶ [0020] (“Through **wireless** communications, the master [BSD] detects other [BSDs]”) (emphasis added), ¶ [0021] (“The bandwidth sharing performs all functions necessary . . . using **wireless** transmission techniques known in the art.”) (emphasis added). Moreover, Challenger discloses that its BSDs are capable of operating through “wireless communications over wireless networks as commonly known in the prior art,” including in accordance with the 802.11 WiFi standards, rendering Challenger’s BSDs also *WiFi devices*. *Id.* ¶ [0039]. Furthermore, in my opinion, a POSITA would have understood and found obvious that the additionally

enumerated devices were well-known in the art and that any of the claimed devices would have been obvious to use as the *communications device* of claim 1. Thus, a POSITA would have found it obvious that Challenger discloses *the at least one remote communications device* (slave BSD(s)) as satisfying the requirement that it is *at least one of a . . . wireless device . . . [or] a Wi-Fi device*.

**3. Dependent Claim 4**

- a. “The communications device of claim 1, wherein the processor allocates the at least one remote communications device into a multilink group transfer.”*

62. It is helpful for me to explain the term “multilink connection” in light of Challenger’s disclosure. A POSITA would have understood that the connections between the BSDs upon which the bandwidth sharing occurs constitutes the claimed *multilink connection*, as the connections between the BSDs comprise at least two links (one link to the master BSD and at least one link to the slave BSD(s)). In my opinion, a POSITA would have understood that these at least two links satisfy the requirement of *multilink group transfer*, *i.e.*, two or more devices involved in a multilink transfer.

63. Furthermore, the master BSD in Challenger aggregates its own bandwidth with available bandwidth from one or more slave BSDs by “adding or removing [BSDs] to and from the current sharing method.” *Id.* ¶ [0056]. In my opinion, a POSITA would have found it obvious that adding slave BSDs to a

bandwidth sharing session amounts to assigning the slave BSDs to a master BSD, and that assigning in this context means the same thing as *allocat[ing]*. Furthermore, a POSITA would have understood that in assigning or *allocat[ing]* the slave BSDs to a master BSD, the logic unit 310 (claimed *processor*) effectively creates a *multilink group*.

64. Finally, the master BSD receives data over a multilink connection. Because the master BSD's processor selects a slave BSD to share its bandwidth with the master BSD, enabling the master BSD to receive packets over multiple links, a POSITA would have understood and found obvious that the master BSD allocates the slave BSD into a *multilink group transfer* comprised of at least the master BSD and the slave BSD. Accordingly, Challenger discloses *wherein the processor* (logic unit 310) *allocates* (assigns or adds) *the at least one remote communications device* (slave BSD) *into a multilink* (more than one link) *group* (more than one BSD) *transfer* (sending or receiving data).

#### 4. **Dependent Claim 5**

- a. “*The communications device of claim 1, wherein the processor creates and updates routing tables with the at least one remote communications device.*”

65. It is helpful for me to provide more context regarding the use of routing tables. Challenger discloses a master BSD with a logic unit 310 that sends commands, or *control information*, to its slave BSD(s) to create a multilink connection across

which data can be transferred between the master and slave BSD(s). In another paragraph, Challenger discloses that TCP/IP is a preferred protocol for the BSDs' transmission of data. *Id.* ¶ [0015] (“[T]he logic unit is preferably configured to allow for packet transmission among multiple bandwidth sharing devices using commonly employed protocol families, such as **TCP/IP** and ATM.”) (emphasis added); *see also id.* ¶ [0052] (“[T]he wireless communication 204 preferably uses transfer protocols such as **TCP/IP** and ATM[.]”). In my opinion, a POSITA would have known that TCP/IP is a commonly used networking protocol and that it uses *routing tables*. *See* Ex. 1020, 276.

66. Moreover, *routing tables* were widely known at the time of the alleged invention. Challenger explicitly discloses that the “bandwidth sharing [module] performs all functions necessary to format, transmit, receive, and reconstruct packets and messages using **wireless transmission techniques known in the art.**” Ex. 1017 ¶ [0021]. I have identified Held as a reference that confirms that routing tables have been known and used in the art since at least before the year 2000. *See* Ex. 1020, 276 (“There are many routing protocols **in the industry** . . . that can be used to build its **routing tables.**”) (published in 2000). Accordingly, a POSITA would have understood and found it obvious that routing tables could be used in Challenger’s invention for tracking and updating the slave BSDs that the master BSD uses for sharing bandwidth at any given time. Additionally, given that Challenger’s precise

aim is to optimize the unused bandwidth available to a master BSD, Ex. 1017, ¶ [0024], a POSITA would have understood that routing tables would have been the obvious choice for Challenger’s packet transfers to the Internet (*i.e.*, sending data) in order to ensure that the proper slave BSDs are selected for optimum bandwidth and link quality.

67. In my opinion, a POSITA at the time of the claimed invention would have understood that routing tables were *create[d]* and *update[d]* for transmitting and receiving packets and/or messages to and from multiple devices. Multiple references published before the alleged time of invention of the ’801 Patent mention *routing tables* in their description of common network concepts. *See* Ex. 1030, 369 (defining “routing table” as “[a] table that lists all the possible paths data can take to get from source to destination. The routing table is stored in memory on routers, gateways, and computers.”); Ex. 1019, 254 (identifying “**routing tables**” as a feature that should generally be checked when debugging common network-layer problems) (emphasis added); *id.*, 260 (describing that “[c]ommon [PPP] implementation errors” can cause an error in which “**routing tables** . . . [are] not yet [] operational”) (emphasis added); Ex. 1020, 275 (“The routing table is the key to the routing process, especially in routers. It contains the mappings that associate destination subnetworks with the address of a local router that can forward packets to, or toward, that network.”).

68. A POSITA would have also understood that the role of a routing table is to store information regarding available paths for transferring data from its source to its intended destination, and that routing tables can be dynamically updated to reflect changing network conditions. *See* Ex. 1030, 369. A POSITA would have understood, for example, that a routing table is capable of storing information about parameters such as the next hop, and can be dynamically updated on quality metrics such as the number of hops, packet loss, network delay, bandwidth, etc. *See* Ex. 1020, 276. A POSITA would have found it obvious that a routing table is a commonly used method for determining the optimal path between network devices for transferring data.

69. Additionally, a POSITA would have understood that these routing tables could not only be created, but could also be dynamically, or automatically, updated through routing protocols whenever there were changes to the network. *See* Ex. 1020, 276 (“Routing protocols are responsible for providing the dynamic entries in a routing table. It is the routing protocol that monitors the network and alters the routing table when network changes occur.”). The data points of this routing table would be used to determine and update the optimal path for transmitting data packets between network devices whenever network changes occur. This is true of TCP/IP, which uses dynamically updated routing tables. Accordingly, a POSITA at the time would have understood and found it obvious to use *routing tables* with Challenger’s

system that would be *create[d] and update[d]* to ensure the data packets are transmitted to the designated designation over the optimal path.

70. In light of the widespread knowledge of the usefulness and advantages of routing tables, it is my opinion that a POSITA would have been motivated to use dynamically updatable *routing tables* in Challener’s method to keep track of both which slave BSD(s) the master BSD is using and how much bandwidth the slave BSD(s) are sharing with the master BSD at any given time. Challener explains its method for managing the bandwidth sharing devices as follows: “Bandwidth sharing arbitration 514 is conducted for the connected bandwidth sharing devices and includes initial configuration of the bandwidth sharing system, which is characterized by the number of active bandwidth sharing devices 202 and the corresponding amount of available bandwidth for each device. The arbitration 514 of the bandwidth sharing also necessitates *frequent and regular re-evaluation of device and bandwidth availability status*. Any changes to the availability of devices and/or bandwidth may require *dynamic reconfiguration* of the bandwidth sharing system.” Ex. 1017, ¶ [0061] (emphasis added). Combining Challener’s disclosure of “frequent and regular re-evaluation of device and bandwidth availability status” allowing “dynamic reconfiguration” according to network changes with Challener’s disclosure that it employs “*wireless transmission techniques known in the art*,” *id.* ¶ [0021] (emphasis added), in my opinion a

POSITA would have found dynamically updatable *routing tables* to be a logical and straightforward, even intuitive, method for monitoring and changing the configuration of the bandwidth sharing device system. In my opinion, using dynamically updatable routing tables in Challenger's invention would have been obvious to try, as it requires nothing more than combining prior art elements according to known methods and applying a known technique to a known device ready for improvement to yield a predictable result. Indeed, Held explains the well-known advantages and value of using dynamically updatable routing tables to execute routing decisions and route packets based on those decisions. Specifically, Held discloses the implementation of routing tables as "the key to the routing process, especially in routers. It contains the mappings that associate destination subnetworks with the address of a local router that can forward packets to, or toward, that network. The routing table lists the next hop only and typically indicates a total cost to reach that subnetwork. Cost is a reflection of the quality of the route. In general, a smaller cost means a better route. The specific meaning of the number differs from environment to environment." Ex. 1020, 275. Held additionally explains that routing tables can be beneficially optimized dynamically to account for changes in network conditions. *Id.* Held explains that this information can be used to dynamically update routing tables, including parameters such as number of hops, packet loss, network delay, path, bandwidth, and network associations. *Id.* 276.

Importantly, TCP/IP, disclosed by Challenger, is a routing protocol known to benefit from the use of dynamic routing tables. Ex. 1017, ¶¶ [0015], [0052].

71. Additionally, in my opinion, a POSITA would have had a reasonable expectation of success in implementing the common and well-known technology of *routing tables* through the use of routine software programming with no required hardware modifications. Thus, in my opinion, Challenger alone discloses the *creat[ing] and updat[ing] of routing tables with the at least one remote communications device* (slave BSD(s)).

72. A POSITA would also find using routing tables obvious in light of Held. Held discloses the implementation of routing tables as “the key to the routing process, especially in routers. It contains the mappings that associate destination subnetworks with the address of a local router that can forward packets to, or toward, that network. The routing table lists the next hop only and typically indicates a total cost to reach that subnetwork. Cost is a reflection of the quality of the route. In general, a smaller cost means a better route. The specific meaning of the number differs from environment to environment.” Ex. 1020, 275. Held additionally explains that routing tables can be beneficially optimized dynamically to account for changes in network conditions. *Id.* Held explains that this information can be used to dynamically update routing tables, including parameters such as number of hops, packet loss, network delay, path, bandwidth, and network associations. *Id.* 276.

Importantly, TCP/IP, disclosed by Challenger, is a routing protocol known to benefit from the use of dynamic routing tables. Ex. 1017, ¶¶ [0015], [0052].

73. Given that Challenger expressly discloses TCP/IP protocol, a routing protocol that uses routing tables, and expressly discloses routing packets in a network, in my opinion it would have been obvious to a POSITA to use Held's routing tables with Challenger's bandwidth aggregation system. Moreover, given that Held teaches on the importance of routing tables and the benefits of dynamically updating routing tables to reflect changes in network conditions, in my opinion a POSITA would have been motivated to implement Held's teachings of dynamic updating of routing tables using quality of service metrics, including packet loss, network delay, number of hops, path bandwidth, and network associations. Challenger even explains exactly how its bandwidth sharing system is dynamically updated and re-configured during use, stating that "[b]andwidth sharing arbitration 514 is conducted for the connected bandwidth sharing devices and includes initial configuration of the bandwidth sharing system, which is characterized by the number of active bandwidth sharing devices 202 and the corresponding amount of available bandwidth for each device. The arbitration [module] 514 of the bandwidth sharing also necessitates frequent and regular re-evaluation of device and bandwidth availability status. Any

changes to the availability of devices and/or bandwidth may require dynamic reconfiguration of the bandwidth sharing system.” Ex. 1017, ¶ [0061].

74. Given Challenger’s express teaching of this dynamic optimization, in my opinion a POSITA would have found a routing table to be a logical and straightforward choice to keep track of and update the configuration of the bandwidth sharing system. Using routing tables and dynamic updating as taught by Held with Challenger’s system would have been a known technique to “improve similar devices [and methods] in the same way” and a “combination of familiar [prior art] elements according to known methods . . . [to] yield predictable results.” Further, in my opinion, combining Challenger and Held would have required only routine experimentation and would have a predictable result—coordinated allocation and aggregation of available bandwidth across multiple BSDs using well-established routing protocols. In my opinion, a POSITA would have also had a reasonable likelihood of success in making this combination, given that it involves well-known routing protocols and routine programming techniques.

**5. Dependent Claim 6**

- a. *“The communications device of claim 5, wherein the processor uses the routing tables to determine routing efficiencies based on at least one of quality of service, total connection speed of the at least one remote communication device, a number of data hops, available unused bandwidth of the at least one remote communication device, wireless transfer speeds and*

*signal strength between the at least one remote  
communication device and the communication device.”*

75. It is helpful for me to explain using routing tables to determine routing efficiencies. As I explained in Section IX.A.4, a POSITA would have understood or found it obvious to use a dynamically updatable *routing table* in Challenger’s master BSD to determine efficient routes using quality metrics including *available unused bandwidth* from the slave BSD(s) in the network. In fact, Challenger expressly discloses that “[t]he arbitration [module] 514 of the bandwidth sharing also necessitates frequent and regular re-evaluation of device and bandwidth availability status. Any changes to the availability of devices and/or bandwidth may require dynamic reconfiguration of the bandwidth sharing system.” Ex. 1017, ¶ [0061]. Furthermore, as explained in Section IX.A.4, a POSITA would have understood that routing tables may determine routes based on enumerated metrics such as bandwidth, hop count, delay, or packet loss. Ex. 1020, 276. Alternatively, a POSITA would have found it obvious to use Held’s dynamically updatable routing table in Challenger’s master BSD for the same purpose. *See* § IX.A.4.

**6. Dependent Claim 8**

- a. “The communications device of claim 1, wherein the communications network is at least one of a public wired network, a private wired network, a public wireless*

*network, and a private wireless network.”*

76. It is helpful for me to discuss the terms public and private networks. Challenger discloses that its last mile telecommunications lines 110 establish connectivity to telecommunications providers 102, which in turn interface with the Internet 104 via broadband telecommunications lines 106. Ex. 1017, ¶¶ [0034]-[0035], Fig. 2. A POSITA would have recognized that the Internet is inherently composed of a combination of interconnected networks, encompassing public wired networks, private wired networks, public wireless networks, and private wireless networks. Ex. 1057 at 9-16, 52. Consequently, by virtue of connecting to the Internet, Challenger’s bandwidth sharing device (BSD) is capable of interfacing with each of these network types.

77. Additionally, Challenger discloses that its telecommunication provider networks are accessed by subscribers.” Ex. 1017, ¶ [0009]. Because one needs to be a subscriber, the network is private. It was well understood that connections may be classified as either private or public, depending on factors such as whether a subscription is required for access, or firewall or gateway configurations, which restrict or permit access to specific user groups. Ex. 1057 at 410-412. Further, Challenger’s telecom networks are accessed through dedicated physical connections such as copper lines to individual residences, further confirming that they are private. EX1017, ¶¶ [0006], [0035]. Thus, Challenger’s system renders it apparent to a

POSITA that the first network may be a private or public, wired or wireless network, consistent with established networking practices.

78. Furthermore, Challenger discloses wireless or wired networks. Ex. 1017, ¶ [0039]. It states that “[i]n the preferred embodiment, the communications between the end user terminals 108 and the [BSDs] 202 can occur over land lines, as in the case of a hardwired local area network, as well as through *wireless communications over wireless networks* as commonly known in the prior art.” Thus, Challenger also renders obvious the *communications network* being a *private wireless network* or a *private wired network*.

**7. Dependent Claim 9**

*a. “The communications device of claim 1, wherein the communications network is at least one of a public switched telephone network, a cable network, a wireless network and a fiber network.”*

79. It is helpful for me to explain the terms “public switched telephone network, a cable network, a wireless network and a fiber network.” Challenger discloses that its last mile telecommunications lines 110 establish connectivity to telecommunications providers 102, which in turn interface with the Internet 104 via broadband telecommunications lines 106. *Id.*, ¶¶ [0034]-[0035], Fig. 2. A POSITA would have recognized that the Internet is inherently composed of a combination of interconnected networks, encompassing public switched telephone network, a cable

network, a wireless network and a fiber network. *See* Ex. 1057 at 9-16, 52-53. Consequently, by virtue of connecting to the Internet, Challenger’s bandwidth sharing device (BSD) is capable of interfacing with each of these network types.

80. Indeed, Challenger explains that its embodiment has “typical telephone, computer, and service provider equipment and connectors,” and are thus part of a *public switched telephone network*. Ex. 1017, ¶ [0016]. Challenger also discloses that “broadband telecommunications lines 106 may be fiber optic, coaxial, or other cables capable of high bandwidth transmission rates.” *Id.* ¶ [0034]. Challenger therefore also teaches a *cable network* and *fiber network*. *Id.*

## 8. Independent Claim 10

- a. Limitation 10.6: “ ... *selects a group of the remote communications devices with a larger, combined, unused bandwidth*”

81. It is helpful for me to provide additional explanation of terms “group of the remote communications devices” and “larger, combined, unused bandwidth.” While claim 1 refers to at least one remote communications device with unused bandwidth, claim 10 refers to a group of the remote communications devices with a **larger, combined**, unused bandwidth. Such configuration is disclosed by Challenger, which states that its master BSD “aggregates the available bandwidth” of multiple slave BSDs, Ex. 1017, Abstract, which “allows for increased bandwidth transmissions” to the master BSD, *id.* ¶ [0024]. A POSITA would have understood

that Challenger can include one master BSD and at least two slave BSDs. Accordingly, a POSITA would have understood or found it obvious that a system containing one master BSD and at least two slave BSDs constitutes a group of the remote communications devices (slave BSDs, plural). Furthermore, as I explained above, a POSITA would have understood or found it obvious that Challenger's aggregation of the master BSD's own bandwidth with the collective unused bandwidth of the multiple slave BSDs results in increased bandwidth, because adding bandwidth capacity means increased capacity. Accordingly, Challenger discloses this limitation that the group of the remote communications devices (slave BSDs, plural) provides a larger, combined, unused bandwidth (increased bandwidth).

- b. Limitation 10.8: "receiving packets from the selected remote communications devices and combines and sequences the portions of the data from the remote communications devices with second data transferred from the at least one connection"*

82. I explain here combining and sequencing the data packets to provide further context to the analysis in the petition. A POSITA would have understood that after the data packets are divided and successfully sent over multiple links, they have to be sequenced and combined to create a complete data set. Let us assume, for example, that a user wants to send a message "CAT" using multiple links. The user's device will send letter "C" over link "1," letter "A," over link "2," and letter "C,"

over link “3.” In order for the recipient to be able to decipher the message, recipient’s device has to aggregate (assemble) the three letters into a word “CAT.” This is particularly true of voice packets, a form of data packets expressly disclosed in Challenger, because voice packets must be assembled in the correct order to be understood. Ex. 1017, ¶¶ [0016], [0041]. Challenger discloses that it utilizes TCP/IP protocol. *See id.* ¶ [0015] (“[T]he logic unit is preferably configured to allow for packet transmission among multiple bandwidth sharing devices using commonly employed protocol families, such as *TCP/IP* and ATM.”) (emphasis added); ¶ [0052] (“[T]he wireless communication 204 preferably uses transfer protocols such as *TCP/IP* and ATM[.]”) (emphasis added). A POSITA would have understood that TCP/IP packets have sequence numbers that must be combined and/or rearranged in the proper sequence in order to impart their original meaning.

**9. Dependent Claim 12**

- a. “The communications device of claim 10, wherein the processor uses the routing tables to determine routing efficiencies based on quality of service and selects a group of the remote communications devices for optimizing the routing efficiencies.”*

83. In my opinion, Challenger alone (Ground IA) or Challenger in view of Held (Ground IB) renders obvious claim 12 for the same reasons I explained for the nearly identical parts of the limitations of claims 5 and 6. *See* Sections IX.A.4 and IX.A.5. The difference between claim 6 and claim 12 is that claim 6 refers to *at least*

*one of quality of service, total connection speed of the at least one remote communication device, a number of data hops, available unused bandwidth of the at least one remote communication device, wireless transfer speeds and signal strength* whereas claim 12 merely refers to *quality of service*, a phrase used in the '801 Patent to refer to packet delay. See Ex.1013, 2:12-15 (“Internet based VoIP services suffer from Internet delays caused by a lack of true Quality of Service (QOS) capabilities across the Internet.”).

84. Held explains this concept: “To select between several possible routes, a router needs a way to compare their quality. Some routers use simple hop count (*i.e.*, the number of links or routers along the path to the destination). Others use metrics such as *delay*, bandwidth, or packet loss. Some protocols can even use a combination of several metrics. Delay is commonly accepted as one of the better metrics a router can use.” Ex. 1020, 276 (emphasis added).

85. Challenger discloses an arbitration module 416 that involves “frequent and regular verification of the continued availability of last mile telecommunications lines 110 and re-evaluation of the amount of available bandwidth to the master [BSD] 202.” Ex. 1017, ¶ [0056]. Challenger describes determining routes based on the metric of bandwidth. However, in my opinion, a POSITA would have understood or found it obvious that Challenger’s master BSD might employ *quality of service* (*i.e.*, delay) as a metric for optimizing its network routes. A POSITA would have

understood that the situation might arise in which one slave BSD has more available bandwidth than another slave BSD, but the slave BSD with more available bandwidth might be associated with longer packet delay time. In such a situation, a POSITA would have been motivated to consider packet delay as a factor in determining which of the slave BSD routes to select for packet transfer and optimizing packet transfer. Alternatively, a POSITA would have found it obvious to apply Held's commonly used routing protocol metric of delay in optimizing the route selection in Challenger's BSD configuration system. Accordingly, Challenger alone or Challenger in view of Held renders the *quality of service* limitation obvious.

**10. Independent Claim 15**

- a. *“A communications device that is capable of providing broadband communications services, comprising: at least one connection for connecting to a communications network; at least one wireless interface for connecting wirelessly to at least one cellular phone; and a processor that requests the at least one cellular phone to assist in transferring data, sends a request to the at least one cellular phone for requesting use of a portion of unused bandwidth of the at least one cellular phone, receives a response from the at least one cellular phone, the response containing information about the portion of unused bandwidth, selects the at least one cellular phone with unused bandwidth, sends control information to the at least one cellular phone for participating in a multilink connection, receiving packets from the at least one cellular phone and aggregates the data from the at least one cellular phone with data transfers from the at least one connection to increase data bandwidth for the*

*communications device.*”

86. It is helpful for me to explain why a POSITA would have found it obvious that the BSDs described in Challenger might be *cellular phones*. Although Challenger’s Figure 2 depicts Challenger’s BSDs connected to terminals 108 over “last mile” copper transmission lines, *id.* ¶ [0006], Fig. 2, Challenger also discloses that “the *communications* between the end user terminals 108 and the bandwidth sharing devices 202 *can occur over* land lines, as in the case of a hardwired local area network, as well as through *wireless communications over wireless networks* as *commonly known in the prior art.*” *Id.* ¶ [0039] (emphasis added). Challenger further discloses that the connections between the BSDs and the Internet can also be wireless. *Id.*, cl. 9. Moreover, a POSITA would have understood that at the time of the alleged ’801 invention in 2002, *cellular phone* networks were a type of wireless network that was very common and well-known in the art.

87. Challenger additionally discloses that its BSDs are capable of “voice interconnections with typical telephone . . . equipment and connectors” and that its “voice connection terminal, to which a telephone 306 might be connected . . . allows the use of hardwired and/or *wireless* connections.” *Id.* ¶¶ [0016], [0041] (emphasis added). In my opinion, a POSITA would have found it obvious in light of Challenger’s BSD’s disclosed voice functionality that in order to provide voice service to users, a *cellular phone* connection could be implemented for wireless

communication with end user terminals, other BSDs, and the Internet. Accordingly, Challenger renders obvious that the *at least one communications device* could be a *cellular phone*.

**B. Ground II: Claims 1-17 Are Obvious Under § 103 In View of Kotzin Alone or in View of Kotzin and Held**

**1. Independent Claim 1**

- a. Limitation 1.3: “a processor that requests the at least one remote communications device to assist in transferring data,”*

88. It is helpful for me to provide additional context regarding requesting devices to assist in transferring data by the processor. Kotzin explains that its *processor* executes the bandwidth sharing functionality of its wireless units, including the task of requesting that wireless units 106B-N *assist in transferring data*. Ex. 1018, ¶ [0023] (“For example, the processing apparatus 112 may . . . among other things, **determine** whether the wireless apparatus 106a will allow **shared use** of its wireless local area network **wireless resources** with proximal wireless units 106b-106n.”). These tasks include setting up bandwidth sharing by sending query messages to the other wireless units to determine if they can participate in the connection. Ex. 1018, ¶ [0037] (“[T]he wireless apparatus 106a sends **query messages** . . . to determine which proximal wireless units in the LAN can hear the query message[.]”), [0038] (“[P]articipation response messages 506a-506d indicate the **number of megabits per second** that each proximal wireless apparatus is

**capable of providing** by sharing some of its wireless resources.”). A POSITA would have understood that these tasks are performed by a processor.

- b. Limitation 1.7: *sends control information to the at least one remote communications device for participating in a multilink transfer.*

89. It is helpful for me to discuss here the term “send[ing] control information.” Kotzin discloses that UNIT 1 sends partial bandwidth requests 510A-D to UNITS 2, 3, 4, N. Ex. 1018, Fig. 5, ¶ [0040]. Kotzin further explains that messages 510A, B, C, and D in Kotzin’s Figure 5 inform UNITS 2, 3, 4, and N of the amount of bandwidth they will share with UNIT 1, rendering these messages as *control information*. Ex. 1018, Fig. 5. In my opinion, a POSITA would have understood and found obvious that these messages 510A-D constitute *control information* because rather than carrying data, these messages carry information that dictates how much bandwidth UNITS 2-N are to share with UNIT 1. A POSITA would have understood and found obvious that messages that carry directions for the execution of transferring data but that are incapable of transmitting data themselves constitute *control information*. Accordingly, in my opinion, a POSITA would have understood and found obvious that Kotzin’s messages 510A-D are *control information*.

- c. Limitation 1.8: “ .... *receives packets from the at least*

*one remote communications device and”*

90. I provide here additional explanation regarding term “receiv[ing] packets,” which would be helpful to provide context for the analysis provided in the petition. Kotzin discloses *receiv[ing] packets*. Specifically, Kotzin explains that “[w]hen each of the participating proximal wireless units receives their respective subsets of the total information for the destination unit (*i.e.*, wireless apparatus 106a), **each of the units then retransmits the respective portions of the communication to the wireless apparatus 106a** as shown by messages 514A-514D.” Ex. 1018, ¶ [0040]. A POSITA would have understood that the wireless units’ retransmission of portions of data to the destination of wireless unit 106a results in the wireless unit 106a’s (claimed *communications device* in preamble of claim 1) *recei[pt]* of *packets* of data.

91. A POSITA would have found obvious that data communications in Kotzin’s disclosure are packet-based. A POSITA would also find it obvious that the digital communications disclosed by Kotzin are packet-based. Specifically, Kotzin explains that its wireless units can communicate using the IEEE 802.11 and Bluetooth protocols, both of which use packet-based communications. Ex. 1018, ¶ [0022]. Furthermore, Kotzin discloses that its wireless units communicate with Internet Web servers. *Id.* ¶ [0035]. In my opinion, a POSITA would have known that these Internet Web servers use data packets based on the TCP/IP protocol. Finally,

Kotzin additionally discloses that its wireless units can communicate with a GSM or CDMA network. *Id.* ¶ [0035]. In my opinion, a POSITA would have known that all these networks use packet-based communications. *Id.*, ¶ [0022]; *see* Ex. 1052 (802.11 Wireless Networks – The Definitive Guide 2002) at 54 (“Figure 3-13 shows how 802.2 LLC encapsulation is used to carry an ***IP packet***.”); Ex. 1053 (Shoemake-Wi-Fi and Bluetooth) at 14 (“Since acknowledgements are embedded Bluetooth ***packets***, throughput can be improved by hopping through a sequence of good hop frequencies and thereby not needlessly retransmitting any data due to lost acknowledgements.”); Ex. 1054 (Furuskar – Edge Enhanced Data Rates for GSM) (“The current GSM standard provides data services with user bit rates up to 14.4 kbps for circuit switched data and up to 22.8 kbps for ***packet data***.”); Ex. 1055 (Rappaport et al-Wireless Communications) (“Tantivy Communications, of Melbourne, FL, has developed an alternative approach to ***packet-based CDMA*** that also exploits the wireless channel using phased-array antennas.”); Ex. 1058, 27 (“Protocols such as Bluetooth, IEEE 802.11, and Wireless Application Protocol (WAP) are paving the way towards a wireless Internet.”), 520 (listing GSM and CDMA as included in WAP).

2. **Dependent Claim 5**

- a. “The communications device of claim 1, wherein the processor creates and updates routing tables with the at

*least one remote communications device.”*

92. Under Ground IIA, in my opinion, Kotzin discloses or renders obvious the additional limitation of claim 5. As an example, Kotzin teaches routing of data packets among network devices, such as wireless devices and Internet servers, without limitation. In my opinion, a POSITA at the time of the invention would have understood that routing tables are *create[d]* and *update[d]* to transmit and receive packets and/or messages to and from multiple devices. Ex. 1030, 369; Ex. 1019, 254, 260. As another example, Kotzin expressly discloses that its wireless units can communicate with the Internet, including via “Internet Web server.” Ex. 1018, ¶ [0035]. A POSITA would have understood that Internet communications employ the TCP/IP protocol and that the TCP/IP protocol uses *routing tables*.

93. Moreover, it is my understanding that *routing tables* were widely known at the time of the alleged invention. I have identified multiple references that confirm that *routing tables* were commonly known and used in the field of network routing before the alleged time of invention of the '801 Patent. *See* Ex. 1030 (Dummies), 369 (defining “routing table” as “[a] table that lists all the possible paths data can take to get from source to destination. The routing table is stored in memory on routers, gateways, and computers.”); Ex. 1019 (Carlson), 254 (highlighting “*routing tables*” as a feature that should generally be checked when debugging common network-layer problems) (emphasis added); *id.*, 260 (disclosing that

“[c]ommon [PPP] implementation errors” can cause an error in which “*routing tables* . . . [are] not yet [] operational”); Ex. 1020, 275 (“The routing table is the key to the routing process, especially in routers. It contains the mappings that associate destination subnetworks with the address of a local router that can forward packets to, or toward, that network.”).

94. Additionally, at the time of the invention, a POSITA would have understood the concept that *routing tables* are *create[d]* and *update[d]* to facilitate transmission and receipt of packets and/or messages to and from multiple devices. First, a POSITA would have understood that in order to be used, a routing table first needs to be *create[d]*. Specifically, a POSITA would have understood that routing tables store information about the paths available to transfer data from the source to the destination. *See* Ex. 1030, 369. A POSITA would have understood that this stored information may include data like the next hop, number of hops, packet loss, and network delay, and that these data points are useful for determining the optimal path for transmitting packets of data from one device to another device in the network. *See* Ex. 1020, 276. By gathering this information, a POSITA would have understood how to *create* a *routing table*. Second, a POSITA would have understood that in order to serve its purpose, a routing table needs to be consistently *update[d]*. A POSITA would have understood that routing tables can be updated dynamically, which means that the information in the tables evolves based on changes that occur

in the network. Ex. 1020 (Held), 276. A POSITA would have further understood that a routing table would be *create[d] and update[d]* to ensure that the data packets are transferred to the intended destination using the optimal path. In my opinion, a POSITA would have understood and/or found it obvious that *routing tables* would be used to coordinate the distribution of data bandwidth across Kotzin's system.

95. Given that the uses and benefits of routing tables were commonly known at the time of the alleged invention of the '801 Patent, it is my opinion that a POSITA would have been motivated to use *routing tables* in Kotzin's method to keep track of the other UNITS from which it is borrowing bandwidth and the amount of bandwidth that each of the UNITS is to share with UNIT 1, because using routing tables would enable Kotzin's system to make an informed decision on how it can optimize routing of packets to/from the destination unit. (Kotzin reveals that its bandwidth sharing system "is used in both uplink and downlink communications." Ex. 1018, Abstract, Fig. 7.) Kotzin also explains the method's need to monitor quality of service information so that the processor can decide which wireless units to select for bandwidth sharing. Kotzin states that "some of the wireless apparatus 106a-106n **may not experience the same quality** of communication with the wide area network 104, while referring to Figure 4. Therefore, according to Kotzin's disclosure, "a wireless apparatus in the group of proximal units that is located in a more optimal location (e.g., near window) should be used to carry a larger burden of

the traffic for the group. This **quality information (e.g., signal strength) may be determined** by the network element 400 (one or more) or by the wireless apparatus themselves using conventional signal quality detection techniques. The resulting **link quality information is then forwarded** to the remaining members of the group of proximal units using peer-to-peer communication and the **results are also communicated** with the wide area network to increase efficiency in maintaining an acceptable level of quality of service.” Ex. 1018, ¶ [0035]. In my opinion, a POSITA would have understood that link quality is important for optimization of data routes, yet link quality is constantly changing based on fluctuations in network conditions. Accordingly, in my opinion, a POSITA would have understood and/or found it obvious that *routing tables* store information about the paths available to transfer data from the source to the destination and that such entries of information may be dynamically updated according to quality metrics, including available bandwidth, packet loss, number of hops, and network delay, as I discussed above with respect to Challenger. See §IX.A.4; Ex. 1030, 369. In my opinion, dynamically updatable routing tables would have been the logical and straightforward method for monitoring the configuration of Kotzin’s bandwidth sharing system, including monitoring metrics such as signal quality and bandwidth. Therefore, in my opinion, a POSITA would have understood and found obvious to use *routing tables* with Kotzin’s wireless units. In my opinion, a POSITA would have understood that

utilizing these routing tables would enable Kotzin's processor to both select other wireless units for bandwidth resource sharing and determine how to divide packets of data across the units. In my opinion, a POSITA would have recognized that dynamically updatable routing tables were well-known tools for routing data between devices in data networks, for the same reasons discussed above in Section IX.A.5.a**Error! Reference source not found..** Held also addresses the concept of data network transmission as well as explains the well-known advantages and value of using routing protocols and dynamically updatable routing tables to make routing decisions and route packets based on those decisions. In particular, Held discloses the implementation of routing tables as "the key to the routing process, especially in routers. It contains the mappings that associate destination subnetworks with the address of a local router that can forward packets to, or toward, that network. The routing table lists the next hop only and typically indicates a total cost to reach that subnetwork. Cost is a reflection of the quality of the route. In general, a smaller cost means a better route. The specific meaning of the number differs from environment to environment." Ex. 1020, 275. Held also explains that routing tables can be advantageously optimized dynamically to account for changes in network conditions. *Id.*, 275. Held explains that information can be used to dynamically update routing tables, including parameters such as number of hops, packet loss, network delay, path, bandwidth, and network associations. *Id.*, 276.

96. In my opinion, given the known advantages and uses of dynamically updatable routing tables as taught by Held, a POSITA would have been motivated to use these dynamically updatable routing tables in each of Kotzin's wireless UNITS as a way to monitor which of the other UNITS it is borrowing bandwidth from and the amount of available bandwidth each UNIT has to share with UNIT 1, enabling the UNIT to make an efficient, optimal decision on how it should route packets to the Internet via the other UNITS. In this way, Kotzin is concerned with not only downloads from the Internet, but with uploads as well. Additionally, Kotzin explains that it is important to use quality of service information in order to select the best wireless units for bandwidth sharing. As an example, Kotzin explains in its discussion of Figure 4 that "some of the wireless apparatus 106a-106n may not experience the same quality of communication with the wide area network 104. Accordingly, a wireless apparatus in the group of proximal units that is located in a more optimal location (e.g., near window) is used to carry a larger burden of the traffic for the group. This quality information (e.g., signal strength) may be determined by the network element 400 (one or more) or by the wireless apparatus themselves using conventional signal quality detection techniques. The resulting link quality information is then provided to other members of the group of proximal units via peer-to-peer communication and results are communicated with the wide

area network to increase efficiency in maintaining an acceptable level of quality of service.” Ex. 1018, ¶ [0035].

97. The implementation of routing tables within the system described by Kotzin would have been a straightforward application of established networking techniques. As detailed in Held, routing tables were a well-understood and widely adopted mechanism for managing the transmission of data packets between multiple devices in a network, allowing for dynamic updates based on network conditions such as bandwidth, delay, and hop count. Kotzin’s disclosure of a system in which wireless units coordinate to share bandwidth and optimize communication efficiency (see, e.g., Ex. 1018 ¶¶ [0035], [0040]) involves tracking which units are participating and the quality of their connections—functions that routing tables are specifically designed to perform.

98. Given the prevalence of routing tables, a POSITA would have recognized that integrating routing tables into Kotzin’s bandwidth-sharing architecture would enable efficient management of available paths and resources among the participating wireless units. The process of creating and updating routing tables to reflect the current network topology and available bandwidth would have been a routine task for a network designer, as described in Held (Ex. 1020, 275–276), and would not have required inventive skill beyond the application of standard networking practices. Accordingly, Kotzin’s system, when implemented using

conventional routing tables, would support the creation and updating of routing tables with the at least one remote communications device (wireless units 106B-N).

**3. Dependent Claim 8**

- a. “The communications device of claim 1, wherein the communications network is at least one of a public wired network, a private wired network, a public wireless network, and a private wireless network.”*

99. It is helpful for me to discuss the terms public and private networks. In my opinion, Kotzin discloses the additional limitation of claim 8. Kotzin discloses that each UNIT may communicate over “a digital cellular communication system, ***the Internet***, or any other suitable communication system.” Ex. 1018, ¶ [0022]. A POSITA would have understood that the Internet comprises each of the claimed network types. *See* Section IX.A.6.a. Kotzin additionally discloses that its external network 104 might take the form of a GSM network, which a POSITA would have understood is typically a *private wireless network* maintained by a cellular service provider. *Id.* ¶ [0034]. Furthermore, a POSITA would have understood that the LAN between the wireless devices would have been either a *private* (e.g. at home Wi-Fi network) or a *public wireless network* (e.g. an airport or conference center Wi-Fi network). Thus, Kotzin discloses this limitation.

**X. SECONDARY CONSIDERATIONS**

100. I have seen no evidence of, and I am not aware of any evidence of secondary considerations that have a nexus to the claimed inventions that would

overcome the combinations of prior art cited above in showing the obviousness of the claims of the '801 Patent. The sheer number of independently developed, simultaneous inventions, developed within in a relatively short time-period are persuasive indicia of obviousness. However, should Patent Owner assert any secondary considerations of non-obviousness, I reserve the right to respond.

## **XI. CONCLUSION**

101. For all the reasons discussed above, it is my opinion that each and every claim of the '801 Patent is invalid.

Declaration of Bill Lin in Support of Petition for *Inter Partes* Review of U.S.  
Patent No. 8,228,801

102. I hereby declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct, and that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements are punishable by fine or imprisonment or both. *See* 18 U.S.C. §1001.

Dated: August 5, 2025

Respectfully submitted,

A handwritten signature in dark ink, appearing to be 'Bill Lin', is written above a horizontal line.

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Bill Lin