

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GOOGLE LLC,

Petitioner,

v.

HEADWATER RESEARCH LLC,

Patent Owner.

Patent No. 8,023,425  
Case No. IPR2026-00464

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**DECLARATION OF BILL LIN, PH.D.**

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## **I. INTRODUCTION**

1. I have been retained by Google LLC (“Petitioner”) as an independent expert consultant in this proceeding before the Patent Trial and Appeal Board of the United States Patent and Trademark Office.

2. I am over 18 years of age and, if I am called upon to do so, I would be willing and able to testify as to the matters set forth herein.

3. My compensation is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of any related proceeding.

4. I understand that this proceeding involves U.S. Patent No. 8,023,425 (“the ’425 patent,” EX1001). I have been asked by the Petitioner to provide my opinion on whether certain claims of the ’425 patent would have been obvious to a person of ordinary skill in the art at the time of the earliest claimed priority date of the ’425 patent. In performing my analysis, I have been asked to assume that the priority date is January 28, 2009, which is the filing date of the earliest provisional application to which the ’425 patent claims priority. My opinions are set forth below.

5. Throughout this declaration, I refer to specific pages, figures, or line numbers of various exhibits. These citations are illustrative and are not intended to

suggest that they are the only support for the propositions for which they are cited.

## **II. SUMMARY OF OPINIONS**

6. This declaration considers claims 1-23 and 51 of the '425 patent.

Below, I set forth the opinions I have formed, the conclusions I have reached, and the bases for these opinions and conclusions. I believe the statements contained in this declaration to be true and correct to the best of my knowledge.

7. Based on my experience and knowledge of the art at the time of the earliest claimed priority date of January 28, 2009, it is my opinion that claims 1-23 and 51 of the '425 patent would have been obvious based on the asserted grounds discussed below. A person of ordinary skill in the art would have found it obvious to combine the prior art references I cite and would have been motivated to do so before the priority date.

## **III. QUALIFICATIONS AND BACKGROUND**

8. I believe that I am well qualified to serve as a technical expert in this matter based upon my qualifications, discussed in detail below.

9. I am currently a Full Professor of Electrical and Computer Engineering and the Associate Dean for Research at the University of California, San Diego (UCSD).

10. I received a Bachelor of Science in Electrical Engineering and

Computer Sciences from University of California, Berkeley in May 1985. I received a Master of Science in Electrical Engineering and Computer Sciences in May 1988 and a Ph.D. in Electrical Engineering and Computer Sciences in May 1991, both from the University of California, Berkeley.

11. I joined UCSD in 1997, and I have been a tenured professor since 1999. My teaching and research focus on computer architecture and computer network problems, including the design of high-performance switches and routers, high-speed packet processors, wireless networks, data networks, and various hardware accelerators for networking applications. I regularly teach a senior-level design course on the design of advanced processors, and I have taught graduate courses and advanced special topics in computer architecture and computer networks.

12. At UCSD, I am 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 future networked systems. My contribution to CNS has been expertise in the design of computer architecture solutions for packet processing, computer networking, and network measurements. I am also 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 computer architecture solutions for wireless networking and mobile computing.

13. Prior to joining UCSD, I was the Head of the Systems and Communications Group at IMEC in Leuven, Belgium, where I led a team of researchers who worked on a range of computer design problems, including specialized processors for wireless communications and computer networking. I also previously held positions at Hewlett Packard, Hughes Electronics, and Western Digital.

14. 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 packet processing, computer networks, network measurements, and wireless communications.

15. I have served as an Associate or Guest Editor for several journals published by the Association for Computing Machinery (“ACM”) and the Institute of Electrical and Electronics Engineers (“IEEE”). I have also served as General Chair of several ACM/IEEE conferences, and on the Organizing or Steering Committees of many ACM/IEEE conferences, and I have served on the Technical Program Committees of numerous ACM/IEEE conferences. I am the author of

over 250 top-tier peer-reviewed publications in the field of computer engineering dating to the 1980s, including journal articles, conference papers, book chapters, technical reports, and invited papers. A number of these publications have received best paper awards or distinguished paper citations. I have also given numerous invited and keynote talks around the world.

16. I am a named inventor on six patents in the fields of computer design and computer networking.

17. My complete qualifications and professional experience are described in my curriculum vitae, filed as a separate Exhibit (EX1004).

#### IV. MATERIALS CONSIDERED

| <u>Exhibit</u> | <u>Description</u>                                                                     |
|----------------|----------------------------------------------------------------------------------------|
| EX1001         | U.S. Patent No. 8,023,425 to Raleigh (“the ’425 patent”).                              |
| EX1002         | Prosecution History of U.S. Patent No. 8,023,425.                                      |
| EX1005         | U.S. Patent Appl. Publ. No. 2009/0017789 to Thomas et al. (“ <i>Thomas</i> ”).         |
| EX1006         | U.S. Patent Appl. Publ. No. 2008/0039102 to Sewall et al. (“ <i>Sewall</i> ”).         |
| EX1012         | U.S. Patent Appl. Publ. No. 2006/0031515 to Van Gassel et al. (“ <i>Van Gassel</i> ”). |
| EX1013         | U.S. Patent Appl. Publ. No. 2003/0035397 to Haller et al. (“ <i>Haller</i> ”).         |

| <u><b>Exhibit</b></u> | <u><b>Description</b></u>                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| EX1014                | U.S. Patent Appl. Publ. No. 2009/0046591 to Krishnaswamy et al. (“ <i>Krishnaswamy</i> ”).                                                      |
| EX1015                | U.S. Patent Appl. Publ. No. 2007/0104169 to Polson (“ <i>Polson</i> ”).                                                                         |
| EX1016                | U.S. Patent Appl. Publ. No. 2005/0102529 to Buddhikot et al. (“ <i>Buddhikot</i> ”).                                                            |
| EX1017                | U.S. Patent Appl. Publ. No. 2008/0080493 to Weintraub et al. (“ <i>Weintraub</i> ”).                                                            |
| EX1018                | U.S. Patent Appl. Publ. No. 2010/0043068 to Varadhan et al. (“ <i>Varadhan</i> ”).                                                              |
| EX1019                | U.S. Patent Appl. Publ. No. 2008/0080458 to Cole (“ <i>Cole</i> ”).                                                                             |
| EX1022                | U.S. Patent No. 6,219,706 to Fan et al. (“ <i>Fan</i> ”).                                                                                       |
| EX1023                | U.S. Patent Appl. Publ. No. 2002/0197991 to Anvekar et al. (“ <i>Anvekar</i> ”).                                                                |
| EX1024                | U.S. Patent No. 7,453,793 to Jones et al. (“ <i>Jones</i> ”).                                                                                   |
| EX1025                | <i>Headwater Research LLC v. Google LLC</i> , C.A. No. 3:26-cv-06230, Joint Claim Construction Statement, ECF No. 78 (W.D. Tex., June 5, 2026). |

18. I have also relied on my education, experience, research, training, and knowledge in the relevant art and my understanding of legal principles described in this declaration.

19. All of the opinions contained in this declaration are based on the documents I reviewed and my knowledge and professional judgment. My opinions have also been guided by my understanding of how a person of ordinary skill in the

art would have understood the claims of the '425 patent at the time of the earliest claimed priority date.

20. I reserve the right to supplement and amend any of my opinions in this declaration based on documents, testimony, and other information that becomes available to me after the date of this declaration.

## **V. LEGAL STANDARDS**

21. In forming my opinions and considering the subject matter of the '425 patent and its claims in light of the prior art, I am relying on certain legal principles that counsel in this case explained to me. My understanding of these concepts is summarized below.

22. I understand that the claims define the invention. I also understand that an unpatentability analysis is a two-step process. First, the claims of the patent are construed to determine their meaning and scope. Second, after the claims are construed, the content of the prior art is compared to the construed claims.

23. I understand that there are two ways in which prior art may render a patent claim unpatentable. First, I have been informed that the prior art can “anticipate” a claim. Second, I have been informed that the prior art can render a claim “obvious” to a person of ordinary skill in the art. I understand that a claim is patentable if it was not anticipated and would not have been obvious by the prior

art at the effective filing date of the patent.

**1. Claim Construction**

24. I understand that the United States Patent and Trademark Office interprets claim terms in an *inter partes* review proceeding under the same claim construction standard that is used in a United States federal court. I understand that under this standard, the meaning of claim terms is considered from the viewpoint of one of ordinary skill in the art at the time of the alleged invention.

25. I have been informed that claim terms are generally given their ordinary and customary meaning as understood by one of ordinary skill in the art in light of the specification and the prosecution history pertaining to the patent. I understand, however, that claim terms are generally not limited by the embodiments described in the specification.

26. I understand that in addition to the claims, specification, and prosecution history, other evidence may be considered to ascertain the meaning of claim terms, including textbooks, encyclopedias, articles, and dictionaries. I have been informed that this other evidence is often less significant and less reliable than the claims, specification, and prosecution history.

**1. Anticipation under 35 U.S.C. § 102**

27. I understand that a patent claim is invalid as anticipated if a single

piece of prior art teaches every element of the claims, viewed from the perspective of a person of ordinary skill in the art. I also understand that an anticipatory reference does not have to recite word for word what is in the anticipated claims. Anticipation can also occur when a claimed limitation is inherent in the relevant reference. I have been advised that if the prior art necessarily functions in accordance with, or includes, the claims limitations, it can anticipate even though the limitation is not expressly disclosed.

**2. Obviousness under 35 U.S.C. § 103**

28. I understand that a patent claim is invalid as obvious if the claimed invention would have been obvious to a person of ordinary skill in the art at the time the claimed invention was made. This means that even if all of the elements of the claim cannot be found in a single prior art reference that would anticipate the claim, a person of ordinary skill in the field who knew about all the prior art would have come up with the claimed invention. I understand that in an obviousness determination, the person of ordinary skill in the art is presumed to have knowledge of all prior art. I understand that whether a claim is obvious is based upon the determination of several factual issues.

29. In considering obviousness, I understand that one must determine the scope and content of the prior art. I also understand that one must determine what

differences, if any, existed between the claimed invention and the prior art.

30. I understand that a patent claim composed of several elements is not proved obvious merely by demonstrating that each of its elements was independently known in the prior art. In evaluating whether such a claim would have been obvious, one may consider whether a reason has been identified that would have prompted a person of ordinary skill in the art to combine the elements or concepts from the prior art in the same way as in the claimed invention. There is no single way to define the line between true inventiveness on the one hand (which is patentable) and the application of common sense and ordinary skill to solve a problem on the other hand (which is not patentable). For example, market forces or other design incentives may be what produced a change, rather than true inventiveness.

31. I also understand that, while there is no requirement that the prior art contain an express suggestion to combine known elements to achieve the claimed invention, and while a suggestion to combine known elements to achieve the claimed invention may come from the prior art as a whole or individually and may consider the inferences and creative steps a person of ordinary skill in the art would employ, as filtered through the knowledge of one skilled in the art, obviousness grounds cannot be sustained by mere conclusory statements and must

include some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. Moreover, I understand that a proper obviousness analysis requires a determination of whether a person of ordinary skill in the art would have a “reasonable expectation of success”—but not “absolute predictability” of success—in achieving the claimed invention by combining prior art references.

32. I understand that one may consider whether (1) the change was merely the predictable result of using prior art elements according to their known functions, or whether it was the result of true inventiveness; (2) there is some teaching or suggestion in the prior art to make the modification or combination of elements claimed in the patent; (3) the innovation applies a known technique that had been used to improve a similar device or method in a similar way; (4) the claimed invention would have been obvious to try, meaning that the claimed innovation was one of a relatively small number of possible approaches to the problem with a reasonable expectation of success by those skilled in the art; (5) the invention merely substituted one known element for another known element in order to obtain predictable results; (6) the invention merely applies a known technique to a known device, method, or product to yield predictable results, or (7) known work in the field may have prompted variations of use of the same

inventions in the same or different fields due to market forces or design incentives that would have been predictable to a person of ordinary skill in the art.

33. I understand that one must be careful not to determine obviousness using the benefit of hindsight; many true inventions might seem obvious after the fact. I understand that the determination should be based on the position of a person of ordinary skill in the field at the time the claimed invention was made and should not consider what is known today or what is learned from the teaching of the patent.

### **3. Secondary Considerations of Non-Obviousness**

34. I understand that certain secondary considerations may be considered in evaluating obviousness in order to prevent hindsight bias. These secondary considerations include commercial success of products that practice the patent, long-felt need for the patented technology, failure by others to solve the problem addressed by the patent, initial skepticism by others in the industry, industry recognition and praise of the patented products, and efforts by others to copy the patented technology. I am not presently aware of any secondary considerations that would apply here.

35. I have been informed that these secondary considerations of non-obviousness must be balanced against the strength of the prima facie case of

obviousness. Where the invention represents no more than the predictable use of prior art elements according to their established functions, secondary considerations are inadequate to establish non-obviousness.

36. I have also been informed that the patentee must establish a nexus between any secondary consideration factors and the claimed invention. Where a secondary consideration factor results from something other than what is both claimed and novel in the patent, there is no nexus to the merits of the claimed invention.

37. I have been informed that, for example, the nexus requirement as it applies to the evidence of commercial success requires that the patentee must show that the sales of a product that allegedly practices the claimed invention must be a direct result of the unique characteristics of the claimed invention, as opposed to other economic and commercial factors that are unrelated to the patented invention. I understand that this means if the commercial success is due to an element that existed in the prior art or that is not claimed by the patent, then no nexus exists.

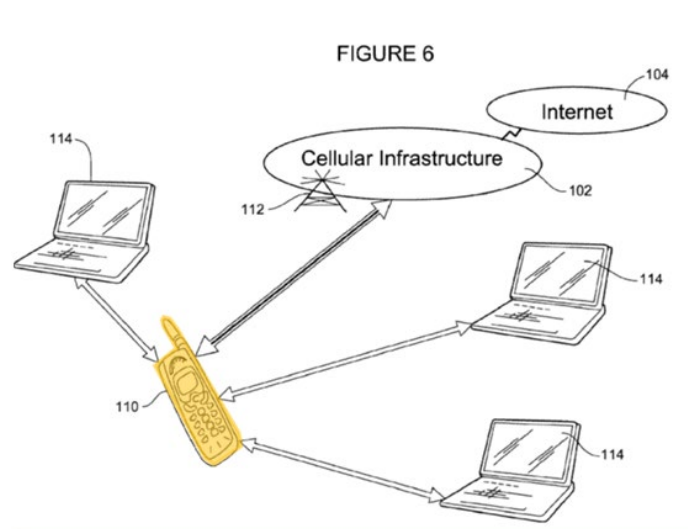
38. I have been further informed that, for example, the nexus requirement as it applies to the long-felt need element must likewise be supported by evidence. Where the differences between the prior art and the claimed invention are minimal,

it cannot be said that any long-felt need was met by the patented invention or that the patent solved any technological problems that were unaddressed by others.

39. I have been informed that evidence of industry praise must also show a nexus with the claimed invention, and that self-serving statements by the patentee regarding the merits of the claimed invention are generally not given weight.

## VI. TECHNOLOGY OVERVIEW

40. By January 2009, the '425 patent's earliest claimed priority date, using an end-user device to provide a forwarding service was not merely known, but was considered old and "conventional." EX1005, ¶28. For example, the representative figures below from several U.S. Patent Publications that were filed and/or published before January 2009, demonstrate how ubiquitous mobile hotspot technology was at the claimed priority date of the '425 patent.



EX1005, Fig. 6 (annotated) (published January 15, 2009), ¶25.

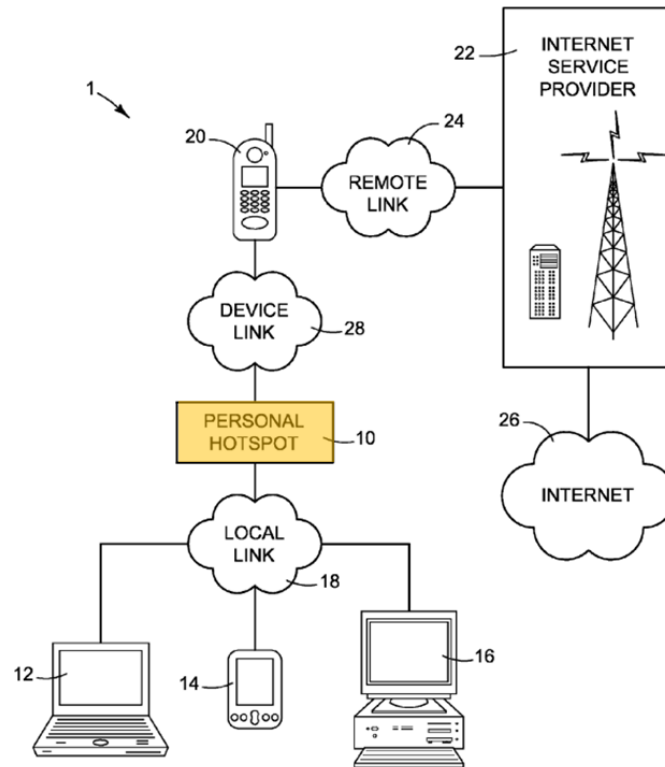


FIG. 1

EX1006, Fig. 1 (annotated) (published February 14, 2008), ¶9; EX1010, Fig. 1 (published December 18, 2008).

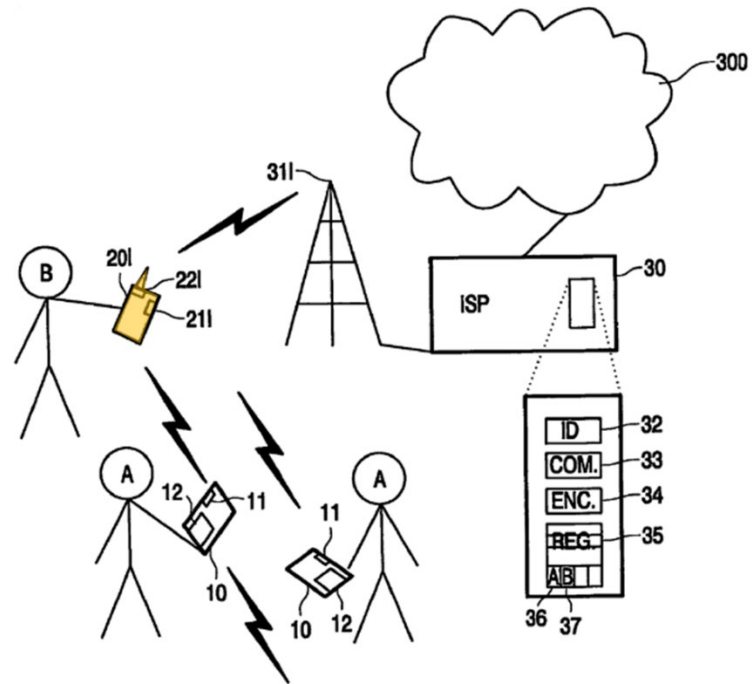


FIG. 1

EX1012, Fig. 1 (annotated) (published February 9, 2006), ¶¶69-71.

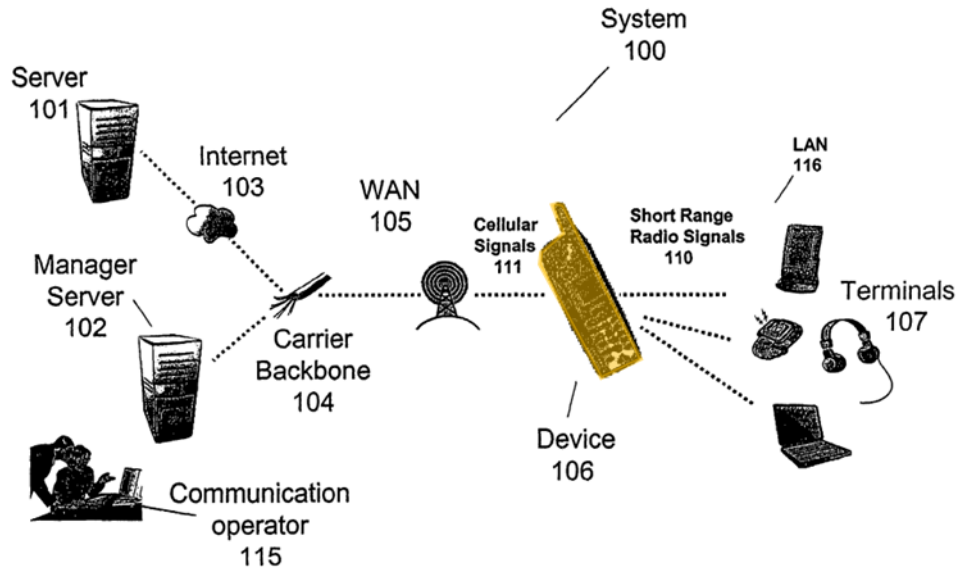


Fig. 1

EX1013, Fig. 1 (annotated) (published February 20, 2003), ¶¶40 and 43.

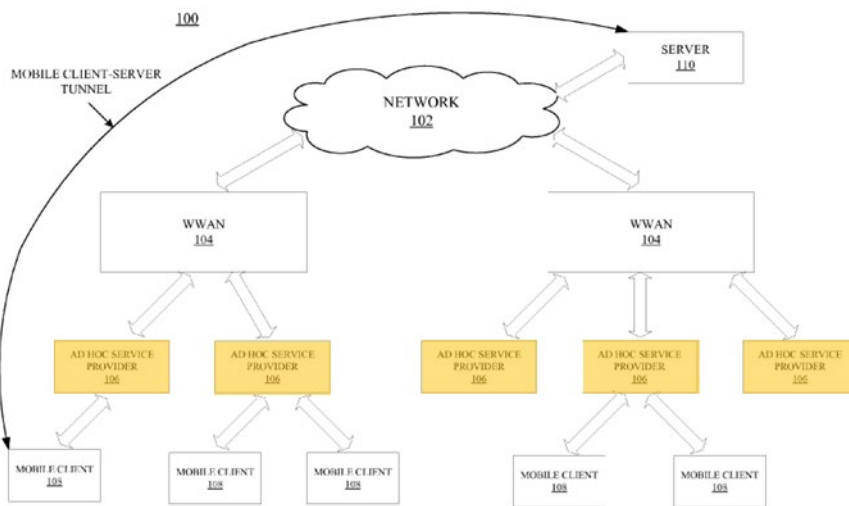
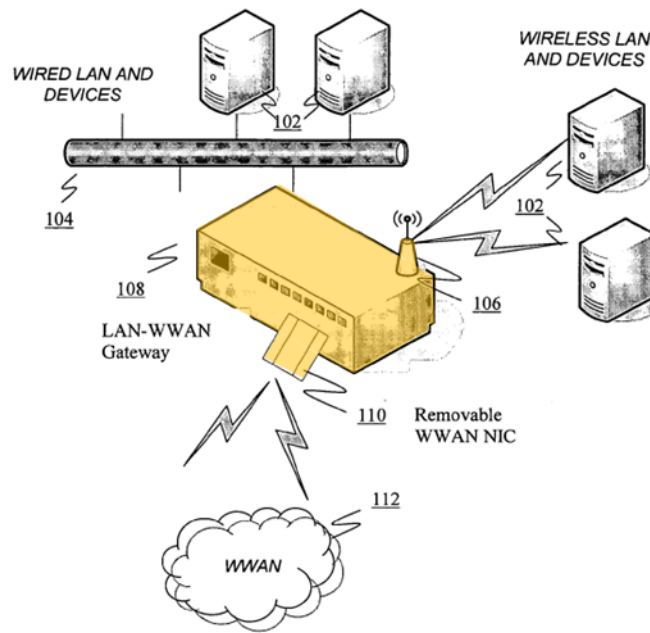


FIG. 1

EX1014, Fig. 1 (annotated) (published February 19, 2009 and claiming priority to Provisional App. No. 60/956,658, filed Aug. 17, 2007), ¶¶21-24.



EX1015, Fig. 1 (published May 10, 2007), ¶20.

41. Providing service plans for end-user devices to enable a forwarding service, providing notifications to users regarding information about the forwarding service, accounting for usage of the forwarding service by other end user devices, and controlling traffic associated with the forwarding service were similarly well-known by January 2009. EX1005, ¶¶46, 49, 54, 56, 76, 77; EX1006, ¶¶22, 25, 33, 36, 37, 38.

## VII. THE '425 patent

### 1. Background

42. The '425 patent discloses a system for allowing an end user device to be used as an intermediate networking device. EX1001, 32:38-48, 35:24-33.

Figure 15, below, reflects the purported invention:

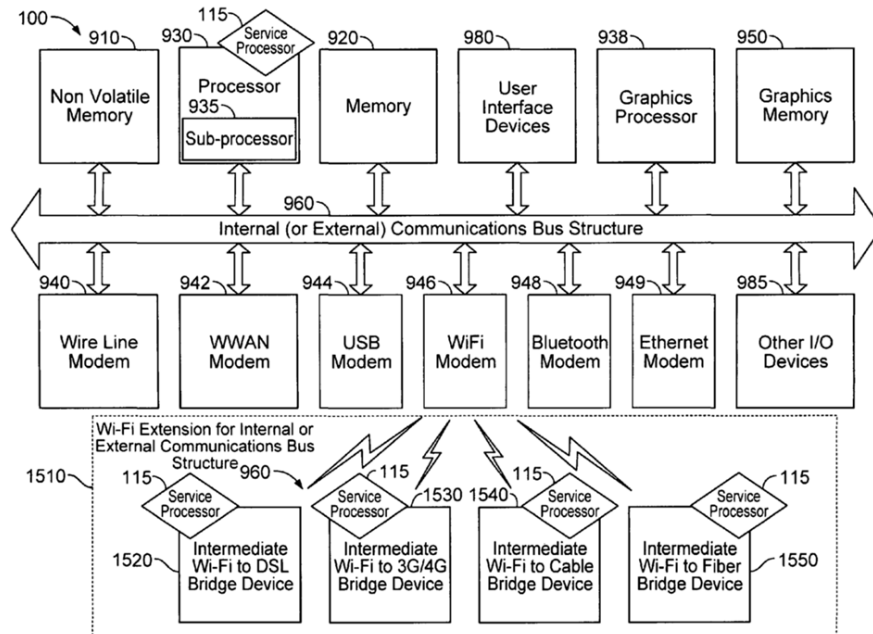


FIG. 15A

EX1001, Fig. 15A (annotated). The end user device of the '425 patent includes a modem that facilitates communication with one or more network elements and one or more other devices. The memory of the end user device stores service policy settings that authorize the end user device to provide a forwarding service. The service processor obtains configuration information and a user input through a user interface, and modifies a service policy setting to enable or disable the forwarding service.

## 2. Prosecution History

43. During prosecution, the Examiner issued one office action, rejecting application claim 21 under 35 U.S.C. § 101 and application claims 1-8, 21, and 22

on the ground of nonstatutory double patenting over co-pending U.S. Application No. 12/380,769. EX1002, 241-251. The Examiner also rejected application claims 1-4, 9-11, 21, and 22 as anticipated by *Varadhan* (EX1018). EX1002, 251. In response, Applicant cancelled application claims 1-22 and presented new claims 23-77. EX1002, 120-130. The Examiner issued a Notice of Allowance, cancelling application claims 29, 30, and 35, adding the subject matter of these claims to the independent claims, and allowing the remaining application claims. EX1002, 77-95. In the reasons for allowance, the Examiner stated:

[The claims] are allowed over the prior art of record since the cited references taken individually or in combination fails to particularly disclose **the forwarding agent including a policy implementation agent configured to forward the data in the first end point device's communications stack, and a firewall agent configured to pass or redirect the data to one or more specific access network routing paths according to the access network forwarding policy.**

EX1002, 95 (emphasis in original). The examiner also stated that “*Varadhan et al.* fails to disclose or render obvious the above underlined limitations as claimed.” EX1002, 95.

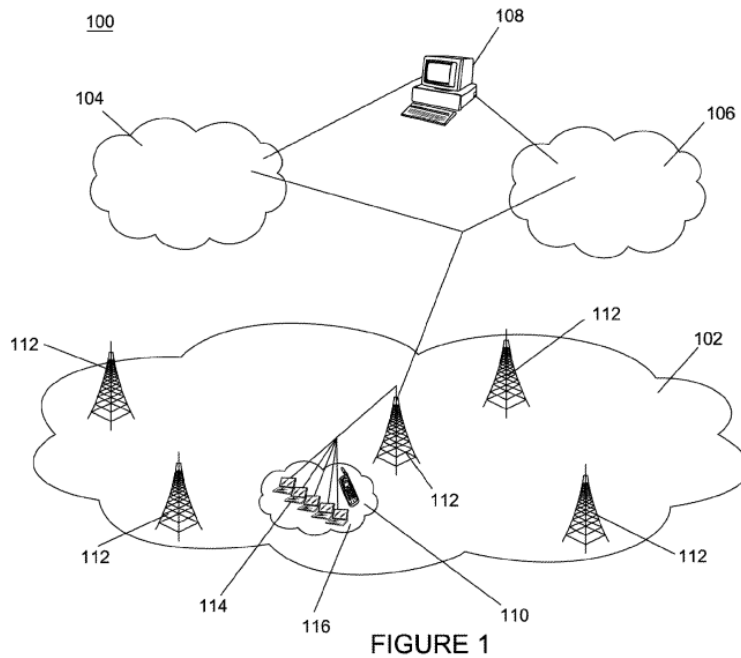
44. In my opinion, the Examiner clearly erred because *Varadhan*

discloses a network router that includes “a forwarding engine configured by the routing engine to select next hops for the packets in accordance with the routing information,” and “a firewall integrated within the network router, the firewall configured to apply security functions to the packets.” EX1018, ¶13. In my opinion, *Varadhan*’s forwarding engine reads on the claimed “policy implementation agent” and its firewall reads on the claimed “firewall agent,” which together constitute the claimed “forwarding agent.”

## **VIII. PRIOR ART**

### **1. Thomas**

45. *Thomas* discloses a network environment where “the wireless device 110 and the server 108, along with the WLAN 116, form an integrated networking capability for the client computing devices 114” that allows client computing devices 114 to “communicate normal traffic through the wireless device 110 to reach a network, such as the internet 104, or to access information on the server 108.” EX1005, ¶¶27, 47, Fig. 1.



EX1005, Fig. 1.

46. *Thomas* further discloses a message flow between wireless device 110 and server 108 “to configure the wireless device 110 for operation and to authorize the client computing device 114 for operation.” EX1005, ¶¶57-60, Fig. 7. As part of the “mobile, ad hoc point of presence” formed by wireless device 110, *Thomas* discloses an access network forwarding policy for metering usage and/or limiting number of concurrent users accessing the network through wireless device 110 (which I may also refer to as *Thomas*’s hotspot device in this Declaration).

EX1005, ¶¶46-47, 49-50, 54-55.

## 2. **Buddhikot**

47. *Buddhikot* discloses a gateway for mobile access. EX1016, ¶12.

*Buddhikot*'s gateway provides quality-of-services (QoS) services, including providing guaranteed bandwidth or adjusting bandwidth based on number of users.

EX1016, ¶¶176-179. *Buddhikot*'s gateway includes a firewall service with firewalling and packet-mangling rules to control data flow through its gateway.

EX1016, ¶¶74, 76. *Buddhikot* discloses that its firewall service "serve[s] the dual purpose of protecting the clients from malicious attacks coming from the Internet (such as PING floods, TCP syn floods, etc.), and of protecting the Gateway."

EX1016, ¶75. *Buddhikot*'s packet-mangling rules provide "automatic redirection of user's traffic." EX1016, ¶76.

### **3. Sewall**

48. *Sewall* discloses a device (e.g., a cellular phone) capable of routing communications between client devices and the internet. EX1006, Abstract. This device, functioning as a personal hotspot, may implement access rules that limit network access to its traffic-forwarding service. EX1006, ¶¶7-9. The hotspot device may apply different network-access rules based on different identified users or user types. EX1006, ¶22.

### **4. Haller**

49. *Haller* discloses a "hand-held device for providing communication between a wide area network and a wireless local area network." EX1013, ¶7.

*Haller* discloses that “device 106 includes a display ... and a touchscreen, singly or in combination.” EX1013, ¶69. *Haller* discloses that its cellular phone hotspot device includes service level verification software that enforces service level agreements with users. EX1013, ¶¶54-56, 61, 140. *Haller* also discloses permitting unlimited amount of cellular traffic from its hotspot device during the night but limiting the traffic during the day. EX1013, ¶141.

**5. Polson**

50. *Polson* discloses a gateway adapted to establish a connection between itself and a WWAN with a WWAN interface adapted to receive data from and transfer data to the WWAN on behalf of devices of a LAN. EX1015, Abstract. *Polson* further discloses strategies for managing WWAN access, including adapting its gateway to prioritize specific data over the WWAN to manage conflicts between end-user devices of LANs that are sharing limited WWAN capacity. EX1015, ¶46. *Polson* also recognizes that the mobility of its gateway is important and that the ability to connect to multiple WWANs is necessary when one WWAN is not available due to the location of the user, issues with the service provider, or the features of a service agreement. EX1015, ¶¶52-53.

**6. Weintraub**

51. *Weintraub* discloses parental control policies that prohibit a customer

device within the customer's premises from accessing adult content from the external network. EX1017, ¶10. *Weintraub* also discloses different restriction settings based on a type of network content, for example, instant messaging or Voice over IP communications, peer-to-peer transmissions, e-mail transmissions, or streaming media. EX1017, ¶26. *Weintraub* discloses restricting forwarding of data based on source or destination, time of day, attachments, or type of content. EX1017, ¶26.

## **IX. LEVEL OF ORDINARY SKILL IN THE ART**

52. I am informed that patentability must be analyzed from the perspective of “one of ordinary skill in the art” (which I may also refer to as “one skilled in the art,” “skilled artisan,” “POSITA,” “person of ordinary skill in the art,” or similar variation) in the same field as the patent-in-suit at the time of the invention. I am also informed that several factors are considered in assessing the level of ordinary skill in the art, including (1) the types of problems encountered in the art; (2) the prior art solutions to those problems; (3) the rapidity with which innovations are made; (4) the sophistication of the technology; and (5) the education level of active workers in the field.

53. In my opinion, a person of ordinary skill in the art pertinent to the '425 patent as of its earliest priority date would have had at least a bachelor's

degree in computer science, electrical engineering, or a related field, and at least two years of work/research experience in the field of computer networking and networking devices. More related education would compensate for fewer years of work experience (and vice versa). I meet this definition of one of ordinary skill in the art now and at the priority date of the '425 patent.

**X. CLAIM CONSTRUCTION**

54. In my opinion, no claim terms need to be expressly construed.

**XI. GROUND 1: CLAIMS 1, 4-7, 9, 15-17, 20, 21, 23, AND 51 ARE OBVIOUS OVER *THOMAS* AND *BUDDHIKOT***

**1. Motivation to combine *Thomas* and *Buddhikot***

55. One skilled in the art would have recognized that *Thomas* and *Buddhikot* are analogous art to the '425 patent. They are in the same field of endeavor: mobile devices and wireless access points for computer networking. EX1005, ¶¶2, 6, 9, 23, 28, 84-85, Figs. 1-11; EX1016, Abstract, ¶¶2, 32, 45-47, 52-53, 182-189, Figs. 1-15; EX1001, 32:34-35:20. *Thomas* and *Buddhikot* also share a common goal with the '425 patent: using an end-user device to bridge or route traffic from client devices to a network system, such as, the internet, including providing services to improve the customizability and monetization of mobile-hotspot technology, for example, usage control, user interactivity, notifications via graphical user interfaces, and billing features. EX1005, ¶¶23, 28,

44-45, 54-55, 79-80; EX1016, Abstract, ¶¶2, 32, 45-47, 52-53, 182-189; EX1001, 32:34-35:20, 65:31-67, Fig. 15A-F.

**a. Combining Buddhikot's firewalling and packet-mangling policies with Thomas's hotspot device**

56. *Thomas* discloses traffic flow controls through wireless device 110—a hotspot device—and a firewall that operates on the hotspot device. EX1005, ¶¶42, 54, 69. *Buddhikot* discloses a gateway including a firewall service with firewalling and packet-mangling rules that control data flow through the gateway. EX1016, ¶¶74, 76, 114. In my opinion, one of skill in the art would have been motivated to implement *Buddhikot*'s firewall and packet-mangling rules on *Thomas*'s hotspot device. This combination would have provided a more refined control of network traffic through *Thomas*'s hotspot device.

57. *Buddhikot*'s firewall service has two benefits. EX1016, ¶¶75-76. *Buddhikot*'s firewalling rules protect both *Buddhikot*'s gateway and the client devices connected to the gateway from malicious attacks. EX1016, ¶75. *Buddhikot*'s packet-mangling rules that redirect traffic to a local web cache also help reduce network traffic flowing to the access network. EX1016, ¶76. In my opinion, one of skill in the art would have been motivated to implement *Buddhikot*'s access network forwarding policy, including firewall and packet-mangling rules, on *Thomas*'s hotspot device to obtain these same benefits.

Implementing *Buddhikot*'s firewalling and packet-mangling rules on *Thomas*'s hotspot device would have been nothing but a combination of familiar elements, such as, firewalling and packet-mangling rules on a gateway, according to known methods such as implementing the rules to forward or redirect data flowing through the gateway, to obtain predictable results like protecting devices from malicious attacks and reducing network traffic by redirection to the local DNS or web cache.

58. In my opinion, one of skill in the art would have had a reasonable expectation of success in implementing *Buddhikot*'s Quality of Service ("QoS") and firewall rules on *Thomas*'s hotspot device. *Thomas* discloses rules that meter usage, limit the number of concurrent connections, and allow data to flow through its hotspot device based on a desired service level. EX1005, ¶¶46-47, 49-50, 54-55. *Thomas* also discloses a firewall on its hotspot device. EX1005, ¶42. *Buddhikot* provides details on how to implement QoS, firewall, and packet-mangling rules to control data flow through a gateway device. EX1016, ¶¶74, 76, 114. Implementing *Buddhikot*'s QoS, firewall, and packet-mangling rules on *Thomas*'s hotspot device would have involved known techniques as disclosed by both *Thomas* and *Buddhikot*. In my opinion, this combination would have been well within the skill level of a POSITA. Accordingly, a POSITA would have had a reasonable

expectation of success in combining *Buddhikot*'s teachings with *Thomas*'s hotspot device.

59. In my opinion, one of skill in the art would also have been motivated to modify *Thomas*'s server using *Buddhikot*'s teachings to provide *Buddhikot*'s firewalling and packet-mangling rules to *Thomas*'s hotspot device. A POSITA would have done so to protect devices from malicious attacks and reduce network traffic by redirecting traffic to the local DNS or web cache as discussed above.

60. In my opinion, one of skill in the art would have had a reasonable expectation of success in implementing *Buddhikot*'s firewalling and packet-mangling rules on *Thomas*'s server. *Thomas* discloses that a server that provides the rules to meter usage, limit the number of concurrent connections, and allow data to flow through its hotspot device based on a desired service level. EX1005, ¶¶46-47, 49-50, 54-55. *Thomas* also discloses that a firewall may operate on its server. EX1005, ¶42. Thus, modifying *Thomas*'s server to provide *Buddhikot*'s firewall and packet-mangling rules to *Thomas*'s hotspot device would have been a combination of familiar elements, such as, rules, according to known methods, such as providing rules from a server, to obtain predictable results—a modified server capable of providing a variety of rules to hotspot devices.

**b. Combining *Buddhikot*'s network congestion management scheme with *Thomas***

61. *Thomas* discloses an access network forwarding policy that meters usage and/or limits the number of concurrent users. EX1005, ¶¶46-47, 49-50, 54-55. *Buddhikot* discloses providing a minimum bandwidth to client devices connected to its gateway. EX1016, ¶78. *Buddhikot* also discloses that bandwidth provided to client devices may be adjusted when network congestion occurs. For example, bandwidth may be reduced for all connected client devices rather than allowing some users to use all the bandwidth and blocking other users completely. EX1016, ¶78. *Buddhikot* explains that this approach is fair to all users by allowing all users to access the network. EX1016, ¶78. In my opinion, one of skill in the art would have found it obvious to combine the access network forwarding policy of *Thomas* with *Buddhikot*'s network congestion management scheme.

62. A POSITA would have been motivated to implement *Buddhikot*'s congestion management scheme on *Thomas*'s hotspot device to ensure client end point devices connected to the access network through *Thomas*'s hotspot device can exchange data with the access network rather than being disconnected. A POSITA would have been motivated to implement this combination provide fairness for all connected client devices, which would improve user experience and satisfaction with the forwarding service provided by the *Thomas-Buddhikot* hotspot

device. Implementing *Buddhikot*'s congestion management QoS rules on *Thomas*'s hotspot device would have been nothing but a combination of familiar elements, such as known QoS rules, according to known methods, such as implementing the QoS rules to forward or redirect data flowing through the gateway, to obtain predictable results of ensuring connected devices can exchange data with the access network even when there is network congestion. As discussed above, a POSITA would have had a reasonable expectation of success in combining *Buddhikot*'s QoS rules with *Thomas* because implementing rules was already taught by both *Thomas* and *Buddhikot*. *Supra* §XI.1.a.

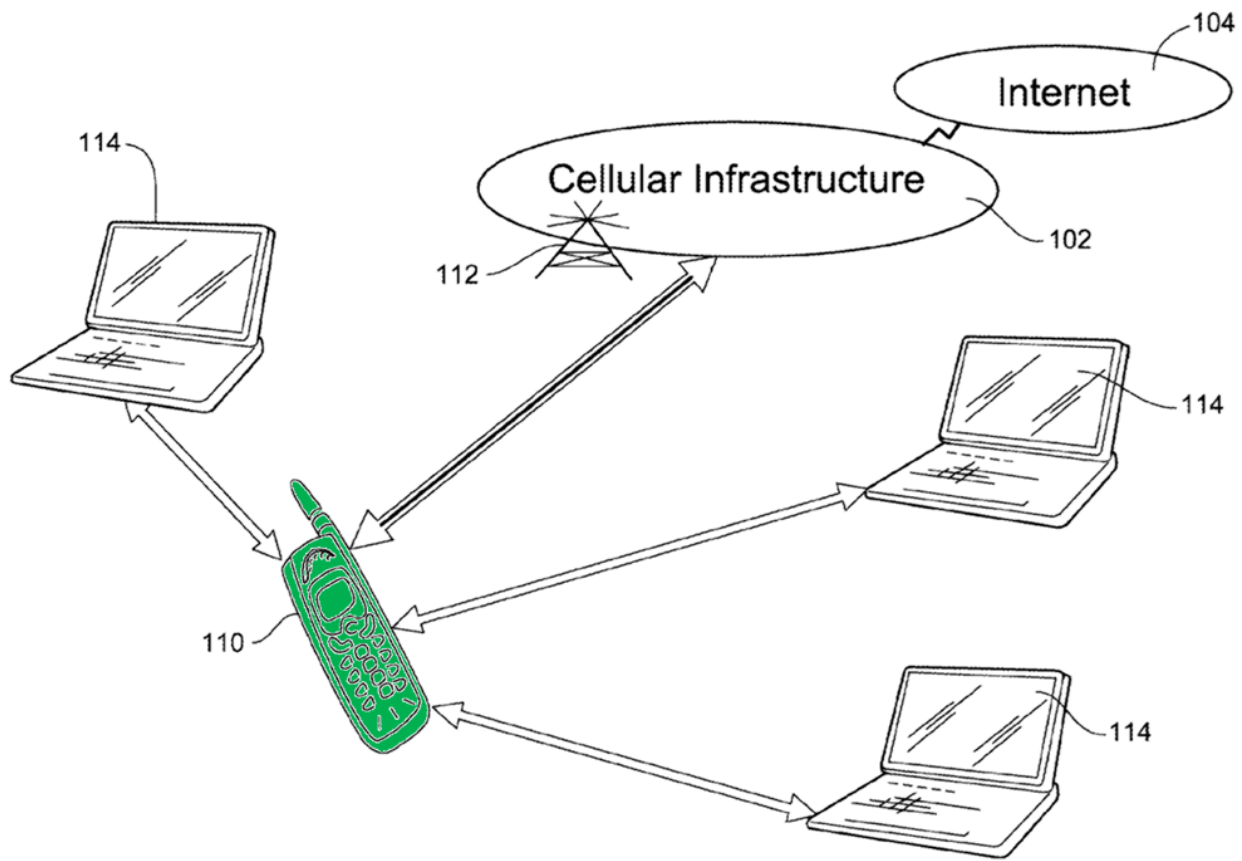
## 2. Independent Claim 1

63. In my opinion, the *Thomas-Buddhikot* combination discloses claim 1.

### a. 1[pre]: “A first end point device comprising:”

64. In my opinion, *Thomas* discloses claim element 1[pre]. *Thomas* discloses using a wireless device 110 as an ad-hoc point-of-presence on a wireless network so that other computing devices can access the internet via the end-user device. EX1005, ¶¶2, 23, 25. *Thomas* describes a cellular phone as providing such services. EX1005, ¶¶44-46, 52, Figs. 5, 6. In my opinion, *Thomas*'s wireless device 110 is the claimed first end-point device because as explained below, it includes the claimed features. *Infra* §§XI.2.b-XI.2.k.

FIGURE 6



EX1005, Fig. 6.

- b. 1[a]: “an **access network modem** configured to communicate data over at least one **access network**, the access network modem providing a connection via at least one **2G, 3G or 4G wireless network**;

65. *Thomas* discloses claim element 1[a]. *Thomas* discloses that its **wireless device 110** includes a **radio-frequency front-end 300** for bi-directional communication. EX1005, ¶33. *Thomas* also discloses that **DSP 304** “modulates and demodulates data”—i.e., a modem—to process data transmissions to and from the wireless device. EX1005, ¶33 (emphases added). In my opinion, *Thomas*’s

radio-frequency front-end 300 and DSP 304 collectively are the access network modem because they modulate and demodulate data. EX1005, ¶33.

66. *Thomas's* cellular network 102 provides voice and data services to wireless device 110 using 2.5G, 3G, 4G, or any future cellular-data-network technology. EX1005, ¶¶25, 32. Thus, as shown below, *Thomas's* wireless device 110 includes a radio-frequency front-end 300 and DSP 304 (i.e., “access network modem”) that communicates data over cellular network 102 (i.e., “access network”) via 3G or 4G technology as claimed.

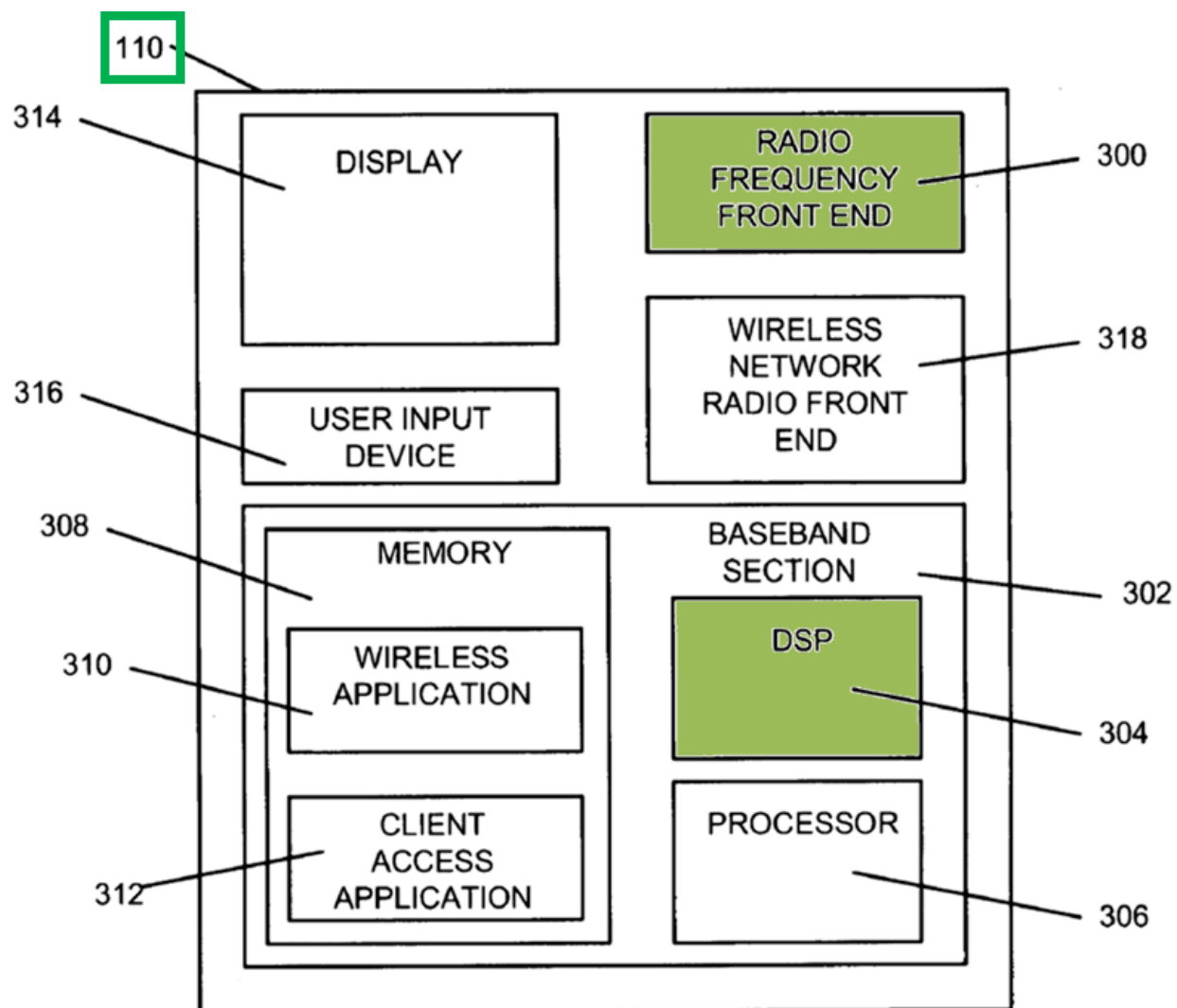
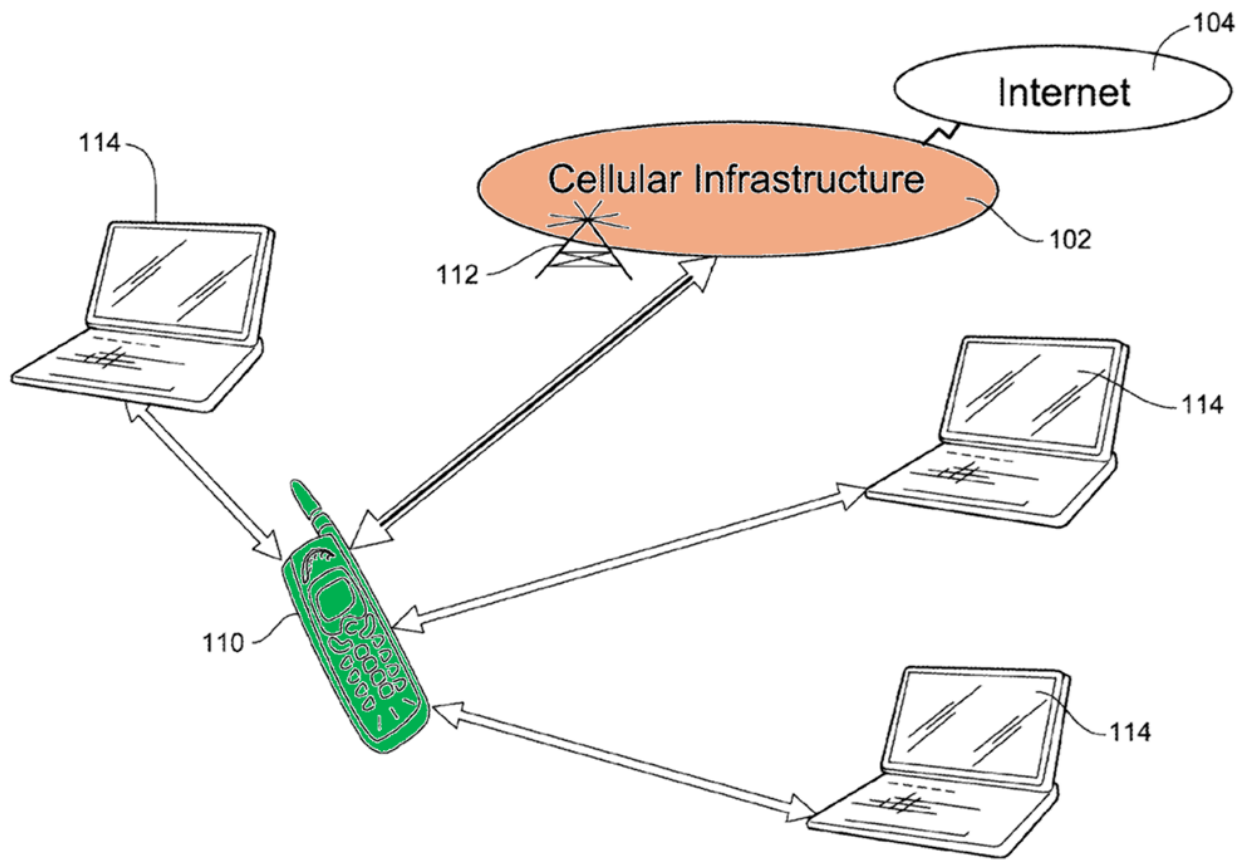


FIGURE 3

EX1005, Fig. 3.

FIGURE 6



EX1005, Fig. 6.

- c. 1[b]: “a **local area network modem** configured to communicate data with **one or more additional end point devices** over a local area network, the **local area network modem** providing a connection via at least one of Bluetooth, **Wi-Fi** or **USB**;

67. In my opinion, *Thomas* discloses claim element 1[b]. *Thomas* discloses “wireless network radio front end 318 provides communication capabilities for the **wireless device 110**.” EX1005, ¶34. *Thomas* discloses that **wireless device 110** provides data services to client-computing devices 114 via a

shorter-range wireless-local-area network (WLAN) 116, which may use any suitable wireless protocol, such as 802.11 WLAN. EX1005, ¶25. *Thomas's* wireless device 110 includes “processor 306,” which “is further adapted to communicate via the wireless network radio front end with the at least one computing device.” EX1005, ¶33, claim 7. A skilled artisan would have understood that an interface such as [wireless-network-radio front end 318](#) that communicates data using the 802.11 standard is a modem. EX1014, ¶37; EX1019, ¶¶31, 35 (disclosing that WLAN interfaces based on IEEE 802.11, Wi-Fi are modems); EX1024, 1:42-54 (disclosing that IEEE 802.11 based protocols involve modulation and demodulation). In my opinion, therefore, [processor 306](#) and [wireless-network-radio front end 318](#) collectively constitute the [local area network modem](#).

68. Thus, as shown below, *Thomas's* [wireless device 110](#) includes [processor 306](#) and [wireless-network-radio front end 318](#) (i.e., “[local area network modem](#)”) that communicates data with [client-computing devices 114](#) (i.e., “[additional end point devices](#)”) over [802.11 WLAN 116](#) (i.e., “[local area network](#)”) via [Wi-Fi](#).

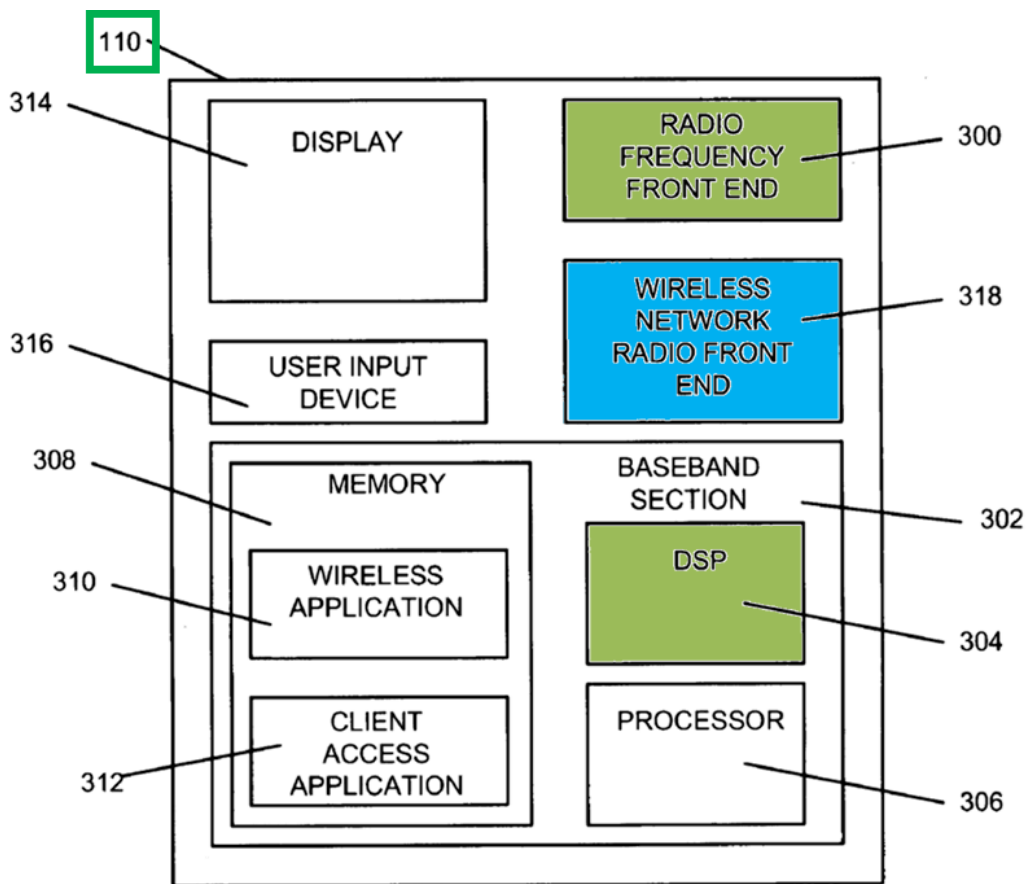
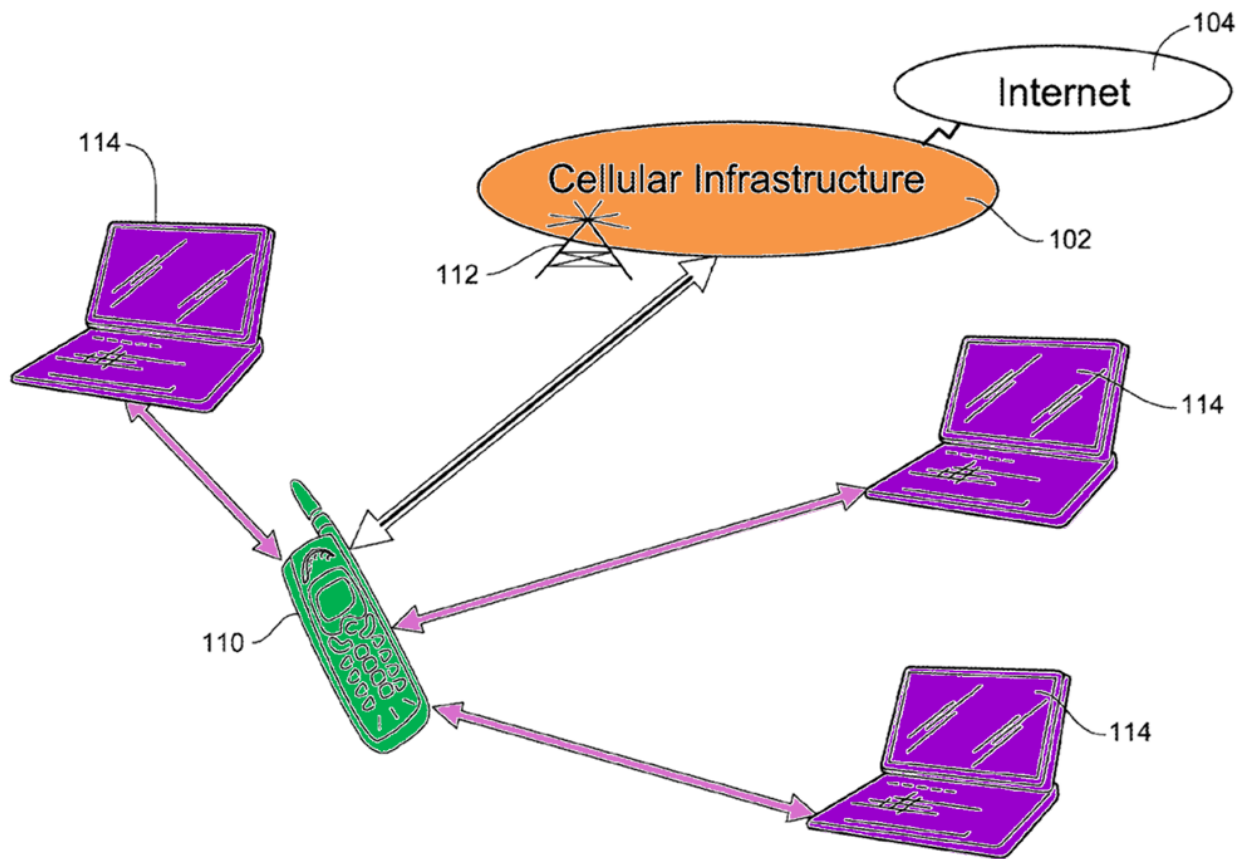


FIGURE 3

EX1005, Fig. 3.

FIGURE 6



EX1005, Fig. 6.

- d. 1[c]: “a forwarding agent configured to forward the data between the **access network modem** and the **local area network modem** according to an access network forwarding policy to implement a **network access forwarding service**, the forwarding agent including a **policy implementation agent** configured to forward the data in the first end point device’s communications stack, and a **firewall agent** configured to pass or redirect the data to one or more specific access network routing paths according to the access network forwarding policy; and”

69. In my opinion, the *Thomas-Buddhikot* combination discloses claim element 1[c].

70. First, in my opinion, *Thomas* discloses a policy-implementation agent and a firewall agent. *Thomas* discloses that software running on wireless device 110 distributes data services offered by cellular network 102 in local area networks (LAN) supported by 802.11. EX1005, ¶30. *Thomas* also discloses a client-access application 312 provides application-level point-of-presence capabilities for wireless device 110. EX1005, ¶34. Further, *Thomas* discloses a **firewall** (i.e., “**firewall agent**”) configured to operate on either the wireless device 110 or the server 108. EX1005, ¶42. In my opinion, *Thomas*’s **client-access application and associated software** are a “**policy implementation agent**” because, as explained below, they implement settings and rules for controlling the flow of data through *Thomas*’s hotspot device. Further, in my opinion, *Thomas*’s **client-access application and associated software** together with *Thomas*’s **firewall** (i.e., “**firewall agent**”) constitute the claimed “forwarding agent.”

71. A skilled artisan would have understood that a device’s communication stack refers to a set of software components that control how data is created, interpreted, and/or received and transmitted between devices or applications being executed on those devices. Because *Thomas*’s **client-access application and associated software** (i.e., “**policy implementation agent**”) forward data from client-computing device 114 through wireless device 110 to reach

internet 104 based on settings and rules for controlling the data flow. (EX1005, ¶¶27, 46, 47, 84, 85), *Thomas*'s **client-access application and associated software** forwards data in *Thomas*'s wireless-device-communication stack. *Thomas*'s wireless-network-radio front end 318 (i.e., "local area network modem") communicates data with client-computing devices 114 and *Thomas*'s radio-frequency front-end 300 and DSP 304 (i.e., "access network modem") communicates with cellular network 102. EX1005, ¶¶25, 32-34, Figs. 3, 6; *supra* §§XI.2.b, XI.2.c. In my opinion, one skilled in the art would have understood that forwarding data through *Thomas*'s wireless network device 110 would include forwarding data between *Thomas*'s wireless-network-radio front end 318 (i.e., "local area network modem") and *Thomas*'s radio-frequency front-end 300 and DSP 304 (i.e., "access network modem"). Further, in my opinion, a skilled artisan would have understood that forwarding data in this manner constitutes implementing a **network-access-forwarding service**.

72. Second, *Thomas* discloses forwarding data according to an access-network-forwarding policy. *Thomas* discloses metering usage based on time duration of connection, number and size of packets sent or received, or quality-of-service (QoS) requirements. EX1005, ¶54. *Thomas* discloses that a number of concurrent users may be controlled based on a "service level" for the client access

application 312. EX1005, ¶69. In my opinion, metering usage based on service-level or QoS, and controlling number of concurrent users constitute applying settings associated with an access-network-forwarding policy. Thus, *Thomas*'s **client access application and associated software** are a “**policy implementation agent**” configured to forward the data in the communication stack of *Thomas*'s wireless device 110 according to an access-network-forwarding policy.

73. Third, *Thomas* discloses a firewall, but does not explain explicitly how its firewall forwards or redirects data. *Buddhikot* discloses these features. *Buddhikot* discloses a gateway that provides data communication between a 3G cellular-access network and devices connected to the gateway via a LAN. EX1016, ¶¶12, 32, 34, 41-42. Like *Thomas*, *Buddhikot*'s gateway provides QoS services, including providing guaranteed bandwidth and adjusting bandwidth if there are too many users connected to the gateway. EX1016, ¶¶46, 78-81, 176-179. Further, *Buddhikot*'s gateway supports a dynamic-stateful-firewall service. EX1016, ¶74. *Buddhikot*'s firewall service implements firewalling rules for protecting clients from malicious attacks from the internet and protecting *Buddhikot*'s gateway against traffic from malicious clients. EX1016, ¶75.

74. *Buddhikot*'s firewall service also implements packet-mangling rules for automatic redirection of user's traffic (i.e., data received from client devices

connected to the gateway) to local services, such as a local DNS server or a web-cache. EX1016, ¶76. *Buddhikot* explains that a user's web requests to a web server 305 may get redirected to the cache 304. EX1016, ¶113. When the cache does not have the requested information (i.e., cache miss), the requests are forwarded to a web server on the internet. EX1016, ¶113. Conversely, if the cache has the requested information (i.e., cache hit), that information is provided without forwarding the data to the web server. EX1016, ¶113. Thus, *Buddhikot*'s firewall service either forwards the data or redirects the data according to specific network routing paths (e.g., path to web server or path to local DNS server or cache) based on its packet-mangling rules. A skilled artisan would have understood that not forwarding the client request to the web server would help reduce network traffic, freeing up the network bandwidth for other uses.

75. As I explained, a skilled artisan would have found it obvious to implement *Buddhikot*'s QoS, firewalling, and packet-mangling functionality on *Thomas*'s hotspot device and would have had a reasonable expectation of success in doing so. *Supra* §XI.1. In my opinion, *Thomas*'s hotspot device modified with *Buddhikot*'s QoS, firewall, and packet-mangling rules provides the forwarding agent of claim element 1[c]. In this Declaration, I may refer to *Thomas*'s hotspot device modified with *Buddhikot*'s teachings as the *Thomas-Buddhikot* hotspot

device.

**e. 1[d]: “a service processor configured to:”**

76. In my opinion, *Thomas* discloses claim element 1[d]. *Thomas*’s wireless device 110 includes “processor 306,” that “provides computational and processing capabilities for the wireless device 110 and includes signal processing capabilities.” EX1005, ¶33, Fig. 3. In my opinion, processor 306 is the claimed “service processor” because it provides the processing capabilities to forward data through *Thomas*’s hotspot device and thus to implement the network-access-forwarding service.

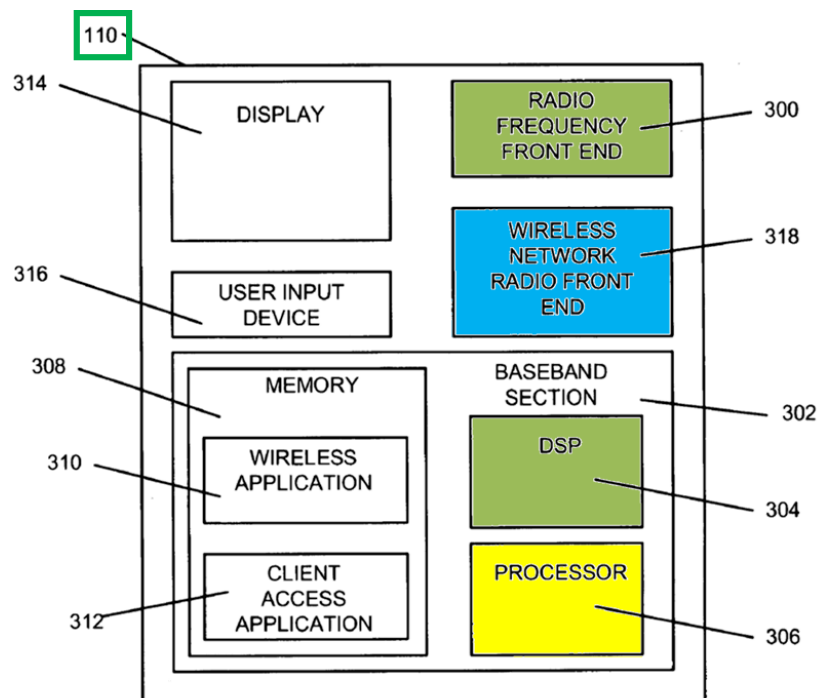


FIGURE 3

EX1005, Fig. 3.

**f. 1[d][i]: “detect an event associated with the access network forwarding service;”**

77. In my opinion, *Thomas* discloses claim element 1[d][i]. *Thomas*’s wireless device 110 has a user interface to allow or disallow access to a connection via the internet 104 by computing devices within range of wireless device 110. EX1005, ¶¶44-46, 52, 76-77, Figs. 5, 6, 9, and 10 (disclosing user interfaces). *Thomas* discloses that a request to use the wireless device 110 may appear on a display 314 on the wireless device 110 along with some identifier of the client device attempting to use point-of-presence capabilities of wireless device 110. EX1005, ¶46.

78. A skilled artisan would have understood that processor 306, which “provides computational and processing capabilities,” to wireless device 110 would receive the client-device request for using the forwarding service provided by *Thomas*’s hotspot device. EX1005, ¶33. In my opinion, receiving the request by processor 306 constitutes “detecting an event.” In my opinion, the event (e.g., request) is associated with the access network forwarding service because it is a request to use the wireless device 110 to exchange data with the internet.

- g. 1[d][ii]: “present a notification message to a user of the first end point device in response to the event, the notification message including an offer to activate the access network forwarding service;”**

79. In my opinion, *Thomas* discloses claim element 1[d][ii]. *Thomas*’s wireless device includes a display 314 that provides user-output capabilities and a user interface. EX1005, ¶¶34, 44-46, 52, 76-77, Figs. 5, 6, 9, 10. *Thomas* discloses that a request from a client device to use point-of-presence capabilities of wireless device 110 may appear on display 314. EX1005, ¶46. *Thomas* also discloses that “a user of the wireless device 110 may accept or deny the request to access the internet 104 through the wireless device 110.” EX1005, ¶46.

80. In my opinion, one skilled in the art would have understood that processor 306, which “provides computational and processing capabilities,” to wireless device 110 would receive the client-device request (e.g., detect an event) and in response, cause a notification regarding the request to be presented on a user interface on display 314 of *Thomas*’s hotspot device. Moreover, because the notification requesting to use the forwarding capabilities offers an operator of *Thomas*’s hotspot device the ability to accept or deny the request, in my opinion, the notification is an offer to activate the access-network-forwarding service.

**h. 1[d][iii]: “receive a user response for activating the access network forwarding service;”**

81. In my opinion, *Thomas* discloses claim element 1[d][iii]. *Thomas*’s wireless device includes user-input device 316 that provides the user of wireless device 110 with input capabilities. EX1005, ¶34. *Thomas* also discloses that a “user of the wireless device 110 may accept or deny the request to access the internet 104 through the wireless device 110.” EX1005, ¶46. In my opinion, a skilled artisan would have understood that an operator of *Thomas*’s hotspot device would use the device’s input capabilities to accept or deny the request. One skilled in the art would have also understood that processor 306 of *Thomas*’s hotspot device, which “provides computational and processing capabilities,” would receive such operator response. EX1005, ¶33;

**i. 1[d][iv]: “provide information regarding the user response to an **activation server** as part of enabling the access network forwarding service for the first end point device; and”**

82. In my opinion, *Thomas* discloses claim element 1[d][iv]. *Thomas* discloses that a user laptop seeking to access wireless device 110 for access to the internet would start as an unauthorized user and then may be authenticated at the wireless device 110 or the wireless device 110 may forward the request for authentication to **server 108**. EX1005, ¶47, Fig. 1. In my opinion, *Thomas*’s **server**

108 is an “activation server” because it authorizes a client device (e.g., user laptop) for accessing the network, and provides a service level to the client device. *Id.*, ¶¶47, 57, 59; *compare* EX1001, 19:35-39 (activation functions include “devices can be recognized [and] gain access to the network, be provided with a service profile, be associated with a service account and/or be associated with a service plan”). *Thomas* discloses that “[o]nce authenticated, the client computing device 114 is allowed to communicate normal traffic through the wireless device 110 to reach a network, such as the Internet 104, or to access information on the server 108.” EX1005, ¶47. In my opinion, a skilled artisan would have understood that by forwarding the authentication request, *Thomas*’s hotspot device provides information regarding the hotspot device user’s response (allowance/denial of client device request) to server 108 (i.e. “activation server”). Because the user can use the forwarding service after being authenticated the information provided to the server by *Thomas*’s hotspot device is a part of enabling the access-network-forwarding service (e.g., forwarding capability) for *Thomas*’s hotspot device (i.e., first end point device).

- j. 1[d][v]: “receive a service profile including one or more access network forwarding settings from the activation server, the one or more access network forwarding settings including one or more restriction settings on the access network forwarding service, the one or more access network forwarding settings identifying which access

**network route or traffic redirection is to be used by the forwarding agent when attempting to forward traffic between the one or more additional end point devices and the access network; and”**

83. In my opinion, *Thomas* alone or in combination with *Buddhikot* discloses claim element 1[d][v]. *Thomas* discloses forwarding data between client-computing devices 114 (i.e., “additional end point devices”) through wireless device 110 to cellular network 102 (i.e., “access network”). *Supra* §§ XI.2.a-XI.2.d. *Thomas* also discloses receiving a service profile including access-network-forwarding settings from server 108. EX1005, ¶¶58-60. For example, *Thomas* discloses that server 108 sends a start response message that includes a response “okay to run or never start.” EX1005, ¶59. *Thomas* discloses that server 108 receives a start message when the client-access application is started on *Thomas*’s wireless device 110. EX1005, ¶58. In response to determining whether the wireless device 110 is authorized, server 108 sends a start-response message to the requesting wireless device 110. EX1005, ¶59. *Thomas* also discloses that the client access application 312 starts or stops based on the start response message. EX1005, ¶60. In my opinion, therefore, server 108 is an “activation server,” because it activates *Thomas*’s wireless device 110 to provide network forwarding capabilities (e.g., by allowing client access application 312 to start in response to the start response message).

84. *Thomas* discloses that the start-response message includes parameters, such as service level, number of available IP addresses, lease time, short lease time, new software version, data amount remaining, byte count on/off, and port restriction on/off. EX1005, ¶59. In my opinion, one skilled in the art would have understood that these parameters constitute access-network-forwarding settings of a service profile because *Thomas*'s hotspot device forwards data through its hotspot device based on these settings. A skilled artisan would have also understood that processor 306 (i.e., service processor) of *Thomas*'s hotspot device, which “provides computational and processing capabilities,” would receive a service profile including access-network-forwarding settings from server 108 (i.e., “activation server”). EX1005, ¶33.

85. In my opinion, a skilled artisan would have understood that the port-restriction parameter in the start message, identifies whether a port on *Thomas*'s hotspot device is available or unavailable for data forwarding. In my opinion, therefore, *Thomas*'s port-restriction parameter constitutes a restriction setting. When port-restriction is “off,” data may be forwarded along a network path associated with that port. When port-restriction is “on,” data cannot be forwarded along that network path. In my opinion, therefore, the parameters received from server 108 (i.e., “access network forwarding settings”) identify which network

route (i.e., through port with port-restriction off) can be used by *Thomas*'s hotspot device to forward data.

86. Further, *Buddhikot* discloses that when a client device connects with its gateway, the gateway obtains policies including firewalling and packet-mangling rules from a server associated with the client device. EX1016, ¶¶74-76; *supra* §§VIII.2, XI.2.d. As I discussed, one skilled in the art would have been motivated to implement *Buddhikot*'s firewalling and packet-mangling rules on *Thomas*'s hot spot device, and to modify *Thomas*'s server 108 to provide these rules to the *Thomas-Buddhikot* device. *Supra* §XI.1. And, as I discussed for claim 1[c], the *Thomas-Buddhikot* hotspot device, implemented with *Buddhikot*'s firewall and packet mangling rules, either forwards the data or redirects the data according to specific network routing paths (i.e., "access network route"). *Supra* §XI.2.d.

- k. **1[d][vi]: "update the access network forwarding policy with one or more access network forwarding settings to enable the forwarding agent to forward the data."**

87. In my opinion, *Thomas* alone or in combination with *Buddhikot* discloses claim element 1[d][vi]. *Thomas*'s wireless device 110 includes memory 308 that provides data storage and executable code space. EX1005, ¶33. In my opinion, a skilled artisan would have understood that upon receiving parameters in

the start response message from server 108, processor 306 of *Thomas*'s wireless device 110 would store those parameters in memory, for example, memory 308. One skilled in the art would have also understood that by storing parameters (i.e., "access network forwarding settings") received from server 108, processor 306 would update the access-network-forwarding policy because the forwarding settings are associated with the access-network-forwarding policy.

88. Similarly, *Buddhikot* discloses that its gateway includes "a persistent, non-volatile (e.g., on-disk) database 250" to store information such as "rules and address information." EX1016, ¶46. Further, *Buddhikot* discloses "Mobile-IP agents 221, 222 and the AAA server 242 upon successful authentication install (through IPF 223) sets of rules that implement two major functionalities: firewalling and packet-mangling." EX1016, ¶75. As I explained, a skilled artisan would have been motivated to implement *Buddhikot*'s firewalling and packet-mangling rules on *Thomas*'s hotspot device. *Supra* §XI.1. In my opinion, one skilled in the art would understand that implementing *Buddhikot*'s rules would require storing (i.e., installing as taught by *Buddhikot*) them in memory 308 of the *Thomas-Buddhikot* hotspot device and that doing so would update the access-network-forwarding settings and therefore the access-network-forwarding policy.

89. Accordingly, in my opinion, the *Thomas-Buddhikot* combination

discloses all limitations of claim 1 and renders it obvious.

**3. Claim 4: “The first end point device of claim 1, wherein the detecting an event includes intercepting a request to perform access network forwarding.”**

90. Claim 4 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Thomas* discloses the additional limitations of claim 4.

91. As I discussed, *Thomas*’s processor 306 detects the request from a client device for using the forwarding service provided by *Thomas*’s hotspot device. *Supra* §XI.2.f (claim element 1[d][i]). In my opinion, detecting the request for using the forwarding service by processor 306 constitutes intercepting the request to perform access-network-forwarding.

92. Accordingly, in my opinion, the *Thomas-Buddhikot* combination renders claim 4 obvious.

**4. Claim 5: “The first end point device of claim 1, wherein the detecting an event includes detecting user interest in using the access network forwarding service.”**

93. Claim 5 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Thomas* discloses the additional limitations of claim 5.

94. *Thomas* discloses that different wireless devices 10 within range of a

given client-computing device 114 may offer different bandwidths because different wireless carriers have different bandwidth standards. EX1005, ¶32.

*Thomas* explains that “a client computing device 114 using a Wi-Fi or other link may choose among different wireless devices 110 based upon available signal strength and bandwidth capacities of the respective wireless devices 110.”

EX1005, ¶32. Moreover, the request to use wireless device 110 may appear on a user interface of display 314 on the wireless device 110. EX1005, ¶46. In my opinion, because a client device can choose which hotspot device to connect to, and because client requests (e.g., to connect to a hotspot device) appears on the hotspot device user interface, *Thomas* discloses that detecting the event includes detecting user interest (i.e., interest of client device user in connecting to a particular hotspot).

95. Accordingly, in my opinion, the *Thomas-Buddhikot* combination renders claim 5 obvious.

**5. Claim 6: “The first end point device of claim 1, wherein content of the notification message is received from the activation server.”**

96. Claim 6 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Thomas* discloses the additional limitations of claim 6.

97. *Thomas* discloses a client access application 312 provides application-

level point-of-presence capabilities within a wireless device 110, including a display that provides user-output capabilities and a user interface. EX1005, ¶¶34, 44-46, 52, 76-77, Figs. 5, 6, 9, 10. *Thomas* discloses that a client-device request to use point-of-presence capabilities of wireless device 110 may appear on the display of the wireless device 110. EX1005, ¶46. In my opinion, a skilled artisan would have understood that client-access application 312 would provide user interfaces to display notifications regarding the received requests.

98. *Thomas* discloses that server 108 may provision client-access application 312 on *Thomas*'s hotspot device. EX1005, ¶74. Scheduled upgrades of client access applications 312 may also be performed by server 108. EX1005, ¶41. In my opinion, because client-access application 312 is provisioned or upgraded by *Thomas*'s server 108, which is the activation server (*see Supra* §XI.2.j), one skilled in the art would have understood that any notification messages displayed by the client-access application 312 are also provisioned by the activation server and received from the activation server by *Thomas*'s hotspot device.

99. Accordingly, in my opinion, the *Thomas-Buddhikot* combination renders claim 6 obvious.

**6. Claim 7: “The first end point device of claim 1, wherein the forwarding agent is configured to adjust the access network forwarding service based on a network congestion state.”**

100. Claim 7 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Buddhikot* discloses the additional limitations of claim 7.

101. *Buddhikot* discloses a gateway that provides QoS services, including multiple service classes, each with a guaranteed bandwidth. EX1016, ¶¶46, 77-78. *Buddhikot* also discloses controlling traffic from client devices to the internet including dropping or delaying packets. EX1016, ¶79. In my opinion, a skilled artisan would have understood as disclosing delaying or dropping packets based on a network congestion state.

102. *Buddhikot* provides an example where connection to the internet can handle a maximum data rate of 1.5 Mbps. Initially a single user (with 1.5 Mbps maximum allocated bandwidth) can forward data through the gateway at the maximum bandwidth. EX1016, ¶179. When a second user (with 1 Mbps maximum allocated bandwidth) joins, the first user’s bandwidth drops to 1 Mbps and the second user is allowed a bandwidth of 500 Kbps. EX1016, ¶179. And when a third user (with 500 Kbps maximum allocated bandwidth) joins, bandwidth is shared proportionally so that the total bandwidth is 1.5 Mbps. EX1016, ¶179. In my

opinion, therefore, *Buddhikot* discloses adjusting the access-network-forwarding service (i.e., by adjusting bandwidth for each user for forwarding data through the gateway) as the network gets more congested due to addition of more client devices. As I explained, a skilled artisan would have found it obvious to implement *Buddhikot*'s rules implemented on *Thomas*'s hotspot device. *Supra* §XI.1. One skilled in the art would have understood that the *Thomas-Buddhikot* device would include a forwarding agent that adjusts the access-network-forwarding service based on a network congestion state (e.g., according to the methods disclosed by *Buddhikot*).

103. Accordingly, in my opinion, the *Thomas-Buddhikot* combination renders claim 7 obvious.

**7. Claim 9: “The first end point device of claim 1, wherein the one or more restriction settings includes a setting for enabling or disabling the access network forwarding service.”**

104. Claim 9 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. *Thomas* and *Buddhikot* disclose the additional limitations of claim 9.

105. *Thomas*'s hotspot device receives a start message from server 108, the start message including a port-restriction on/off parameter (i.e., “restriction setting”). EX1005, ¶59. As I explained, when a port-restriction is off, data may be

forwarded via that port (i.e., enabling “access network forwarding service”) and when the port-restriction is on, data cannot be forwarded via that port (i.e., disabling “access network forwarding service”). *Supra* §XI.2.j.

106. As I also explained, in the *Thomas-Buddhikot* hotspot device, the firewall service uses firewalling rules to protect the hotspot device and/or client devices connected to the hotspot device from malicious attacks. EX1016, ¶¶74-75; *supra* §XI.2.d. In my opinion, one skilled in the art would have understood that when the data does not originate from a malicious source, the firewalling rules would permit data flow through the *Thomas-Buddhikot* hotspot device (i.e., enabling “access network forwarding service”). Conversely, a skilled artisan would have understood that when the data originates from a malicious source, the firewall rules would block data flow (i.e., disabling “access network forwarding service”). These firewall features are well-known in the art. For example, *Fan* discloses that a “packet filtering firewall employs a list of permissible packet types from external sources.” EX1022, 1:31-33. *Fan* explains that the “firewall checks each inbound packet to determine whether it meets any of the listed criteria” and if “it does not meet these criteria, the firewall rejects it.” EX1022, 1:34-38. *Fan* also discloses that a similar mechanism may be provided for outbound packets. EX1022, 1:38-39.

107. Accordingly, in my opinion, the *Thomas-Buddhikot* combination

renders claim 9 obvious.

8. **Claim 15: “The first end point device of claim 1, wherein based on an access network forwarding setting, the forwarding agent is configured to restrict a usage of a forwarding connection of the network access forwarding service, wherein the forwarding connection connects the one or more additional end point devices to the access network via the forwarding agent.”**

108. Claim 15 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Buddhikot* disclose the additional limitations of claim 15.

109. As I explained, *Buddhikot* discloses an example where connection to the internet can handle a maximum data rate of 1.5 Mbps. EX1016, ¶179. In my opinion, the maximum data rate (1.5 Mbps) of the connection to the internet is an access-network-forwarding setting because *Buddhikot*’s gateway uses this setting to control flow of data through *Buddhikot*’s gateway. As I also explained, *Buddhikot* discloses how the gateway adjusts bandwidth for each additional user that connects to the gateway. *Supra* §XI.6 (citing EX1016, ¶179). In my opinion, the network paths connecting the users’ devices to the internet through *Buddhikot*’s gateway constitute the forwarding connection.

110. *Buddhikot* also explains that when the third user device connects to the gateway, the usage (i.e., bandwidth) for each of the users is restricted below their respective bandwidth allocations such that the total usage meets the maximum

data rate of 1.5 Mbps. *Supra* §XI.6 (citing EX1016, ¶179). As I explained, one skilled in the art would have found it obvious to implement *Buddhikot*'s QoS rules on *Thomas*'s hotspot device. *Supra* §XI.1. In my opinion, the *Thomas-Buddhikot* hotspot device would include a forwarding agent that restricts usage of a forwarding connection of the network-access-forwarding service by reducing bandwidth for one or more user devices connected to the hotspot device.

111. Accordingly, in my opinion, the *Thomas-Buddhikot* combination renders claim 15 obvious.

**9. Claim 16: “The first end point device of claim 15, wherein the restriction on usage is on an aggregate usage of the forwarding connection, and wherein the aggregate usage limit applies to a total usage for all additional end point devices.”**

112. Claim 16 depends from claim 15. As I discussed, claim 15 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.8. *Buddhikot* discloses implementing QoS rules so that the aggregate bandwidth of the forwarding connection is restricted (e.g., to 1.5 Mbps). EX1016, ¶179; *Supra* §XI.8 (claim 15). As I explained, a POSITA would have found it obvious to implement *Buddhikot*'s QoS rules on *Thomas*'s hotspot device. *Supra* §XI.1. Moreover, one skilled in the art would have understood that this aggregate bandwidth limit for the *Thomas-Buddhikot* hotspot device applies to the total bandwidth usage of all the user devices (i.e., all “end point devices”) connected to *Buddhikot*'s gateway.

113. Accordingly, in my opinion, the *Thomas-Buddhikot* combination renders claim 16 obvious.

**10. Claim 17: “The first end point device of claim 15, wherein the restriction on usage is on a data rate of usage of the forwarding connection.”**

114. Claim 17 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. *Buddhikot* discloses implementing QoS rules so that the bandwidth of the forwarding connection is restricted (e.g., to 1.5 Mbps). In my opinion, one skilled in the art would have understood that bandwidth, expressed in terms of the number of bits per second, represents a data rate of usage. EX1016, ¶179; *Supra* §XI.8 (claim 15).

115. Accordingly, in my opinion, the *Thomas-Buddhikot* combination renders claim 17 obvious.

**11. Claim 20: “The first end point device of claim 1, wherein a forwarding service notification is provided by the service processor to the user of the first end point device or a user of an additional end point device during use of the access network forwarding service.”**

116. Claim 20 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Thomas* discloses the additional limitations of claim 20.

117. *Thomas*’s hotspot device (i.e., “first end point device”) includes a

processor that executes a client access application 312 that provides notifications to the hotspot device user via user interfaces. EX1005, ¶¶34, 44-46, 52, 76-77, Figs. 5, 6, 9, 10; *Supra* §§XI.2.g. *Thomas* discloses an exemplary user interface screen 900 of its hotspot device that provides connection information (i.e., “forwarding service notification”) for the wireless device. EX1005, ¶76, Fig. 9.

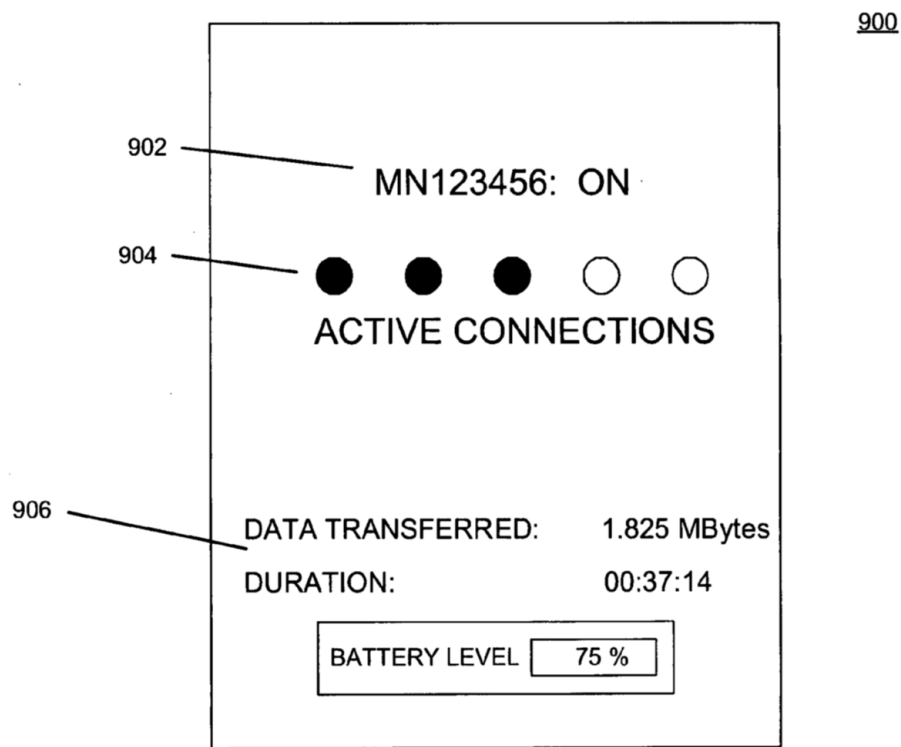


FIGURE 9

118. As I discussed, *Thomas*’s hotspot device is the claimed first endpoint device. *Supra* XI.2.a. Accordingly, in my opinion, the *Thomas-Buddhikot* combination renders claim 20 obvious.

12. **Claim 21: “The first end point device of claim 20, wherein the forwarding service notification informs the user of **an amount of usage of the access network forwarding service**, a rate of usage of the access network forwarding service, that the access network forwarding service is being used on a particular access network, that a service usage restriction setting is in place for the access network forwarding service, that the access network forwarding service is available, or that the access network forwarding service is not available.”**

119. Claim 21 depends from claim 20. As I discussed, claim 20 is rendered obvious over *Thomas* and *Buddhikot*. *Supra* §XI.11. As I also explained, *Thomas* discloses an exemplary user interface screen 900 for the wireless device 110 (e.g., *Thomas-Buddhikot* hotspot device) that provides connection information (i.e., “forwarding service notification”) for the wireless device in which information section 906 provides detailed information, such as **transferred data quantities** (i.e., “**an amount of usage of the access network forwarding service**”), duration of the present session, and battery level. EX1005, ¶76, Fig. 9. I note that the term “or” in claim 21 indicates that a first end point device (e.g., *Thomas-Buddhikot* hotspot device) that includes only one of the listed features satisfies the claim.

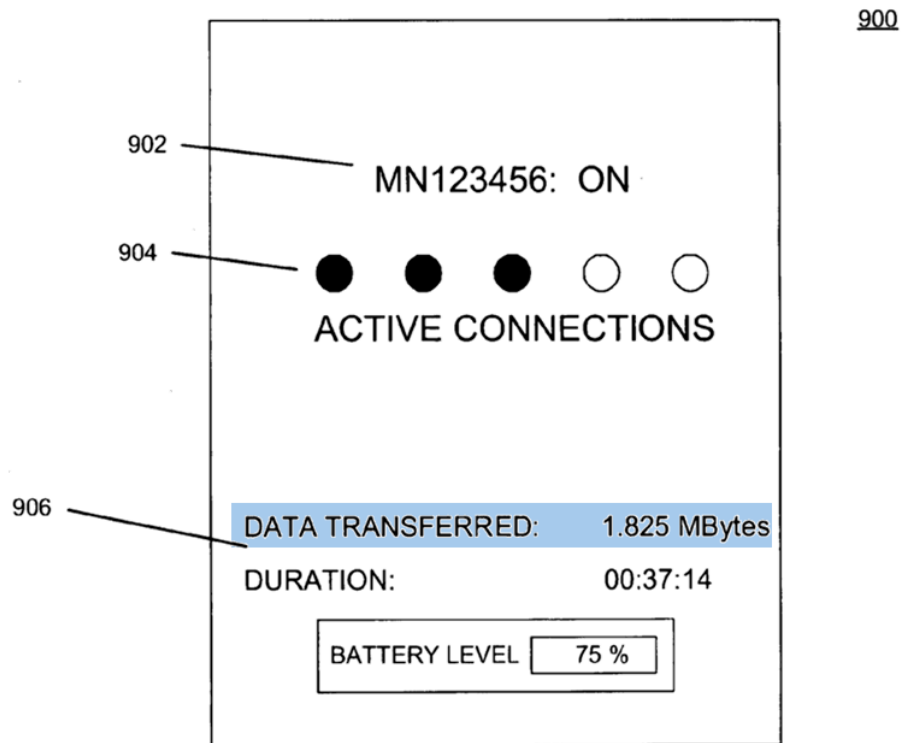


FIGURE 9

120. Accordingly, in my opinion, the *Thomas-Buddhikot* combination renders claim 21 obvious.

**13. Claim 23: “The first end point device of claim 20, wherein the forwarding service notification is provided when the access network forwarding service is enabled and the at least one access network includes a roaming access network.”**

121. Claim 23 depends from claim 20. As I discussed, claim 20 is rendered obvious over *Thomas* and *Buddhikot*. *Supra* §XI.11. In my opinion, *Thomas* discloses the additional limitations of claim 23.

122. *Thomas* discloses that the “roaming management function may be

performed to run on top of the WAN transport supplied by a given carrier.”

EX1005, ¶71. *Thomas* explains that “data plans may be provided by which a user may include roaming within the plan coverage.” *Id.*

123. In my opinion, one skilled in the art would have understood that when *Thomas*’s hotspot device is located outside its plan coverage area, it would connect to a cellular network based on the user’s roaming plan coverage. As *Anvekar* discloses, if “a cell-phone with home network A is to be used in network B, then a roaming agreement between the operators of networks A and B is necessary.”

EX1023, ¶4. *Anvekar* explains that when “the cell-phone is taken into the coverage area of network B, it is registered and calls to and from it are allowed by a mobile switching center of network B.” EX1023, ¶4. In my opinion, therefore, a skilled artisan would have also understood that *Thomas*’s hotspot device would provide notifications similar to those discussed for claim 20 (*supra* §XI.11) when the hotspot device is connected to a different cellular network (e.g., network B instead of network A) based on the user’s roaming plan coverage.

124. Accordingly, in my opinion, the *Thomas-Buddhikot* combination renders claim 23 obvious.

#### **14. Independent Claim 51**

125. In my opinion, the *Thomas-Buddhikot* combination discloses

claim 51. I have included a table below to compare the elements of independent claim 51 with those of independent claim 1. As shown in the table below, independent claim 51 largely recites corresponding claim elements to independent claim 1, except for the content of a notification provided to the user of the first end-point device.

| <b>126. Claim 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Claim 51</b>                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1[pre]: A first end point device comprising:                                                                                                                                                                                                                                                                                                                                                                                                               | 51[pre] A first end point device comprising:                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1[a]: an access network modem configured to communicate data over at least one access network, the access network modem providing a connection via at least one 2G, 3G or 4G wireless network;                                                                                                                                                                                                                                                             | 51[a]: an access network modem configured to communicate data over at least one access network, the access network modem providing a connection via at least one 2G, 3G or 4G wireless network;                                                                                                                                                                                                                                                             |
| 1[b]: a local area network modem configured to communicate data with one or more additional end point devices over a local area network, the local area network modem providing a connection via at least one of Bluetooth, Wi-Fi or USB;                                                                                                                                                                                                                  | 51[b]: a local area network modem configured to communicate data with one or more additional end point devices over a local area network, the local area network modem providing a connection via at least one of Bluetooth, Wi-Fi or USB;                                                                                                                                                                                                                  |
| 1[c]: a forwarding agent configured to forward the data between the access network modem and the local area network modem according to an access network forwarding policy to implement a network access forwarding service, the forwarding agent including a policy implementation agent configured to forward the data in the first end point device's communications stack, and a firewall agent configured to pass or redirect the data to one or more | 51[c]: a forwarding agent configured to forward the data between the access network modem and the local area network modem according to an access network forwarding policy to implement a network access forwarding service, the forwarding agent including a policy implementation agent configured to forward the data in the first end point device's communications stack, and a firewall agent configured to pass or redirect the data to one or more |

| 126. Claim 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Claim 51                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| specific access network routing paths according to the access network forwarding policy; and                                                                                                                                                                                                                                                                                                                                                                                                                                               | specific access network routing paths according to the access network forwarding policy; and                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 1[d]: a service processor configured to:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 51[d]: a service processor configured to:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1[d][i]: detect an event associated with the access network forwarding service;                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 51[d][i]: detect an event associated with the access network forwarding service;                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1[d][ii]: present a notification message to a user of the first end point device in response to the event, the notification message including <i>an offer to activate the access network forwarding service</i> ;                                                                                                                                                                                                                                                                                                                          | 51[d][ii]: present a notification message to a user of the first end point device in response to the event, the notification message including <i>an indication that the access network forwarding service is unavailable</i> ;                                                                                                                                                                                                                                                                                                              |
| 1[d][iii]: receive a user response for activating the access network forwarding service;                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1[d][iv]: provide information regarding the user response to an activation server as part of enabling the access network forwarding service for the first end point device; and                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1[d][v]: receive a service profile including one or more access network forwarding settings from the activation server, the one or more access network forwarding settings including one or more restriction settings on the access network forwarding service, the one or more access network forwarding settings identifying which access network route or traffic redirection is to be used by the forwarding agent when attempting to forward traffic between the one or more additional end point devices and the access network; and | 51[d][iii] receive a service profile including one or more access network forwarding settings from the activation server, the one or more access network forwarding settings including one or more restriction settings on the access network forwarding service, the one or more access network forwarding settings identifying which access network route or traffic redirection is to be used by the forwarding agent when attempting to forward traffic between the one or more additional end point devices and the access network; and |
| 1[d][vi]: update the access network forwarding policy with one or more access network forwarding settings to                                                                                                                                                                                                                                                                                                                                                                                                                               | 51[d][iv] update the access network forwarding policy with one or more access network forwarding settings to                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| 126. Claim 1                                     | Claim 51                                         |
|--------------------------------------------------|--------------------------------------------------|
| enable the forwarding agent to forward the data. | enable the forwarding agent to forward the data. |

127. In my opinion, the *Thomas-Buddhikot* combination renders obvious claim elements 51[pre]-51[d] and 51[d][iii]-51[d][iv] for reasons similar to elements 1[pre]-1[d] and 1[d][v]-1[d][vi], respectively. *Supra* §§XI.2.a-XI.2.e, XI.2.j-XI.2.k, XI.1. Further, as explained below, in my opinion, *Thomas* discloses claim elements 51[d][i] and 51[d][ii].

**a. 51[d][i]: “detect an event associated with the access network forwarding service;”**

128. In my opinion, *Thomas* discloses claim element 51[d][i]. *Thomas* discloses that when the hotspot-device operator starts the client access application 312, a start message is sent to the server 108. EX1005, ¶58. In response, the server 108 determines whether the hotspot device is authorized to operate within the network and sends a start response message that includes a “response (e.g., okay to run or never start).” EX1005, ¶58. In response, to receiving the start response message, *Thomas*’s hotspot device will either start the client access application 312 or will stop its attempts. EX1005, ¶58. In my opinion, one skilled in the art would have understood that processor 306 of *Thomas*’s hotspot device would receive the server response and thus detect an event associated with the access-network-

forwarding service.

- b. **51[d][ii]: “present a notification message to a user of the first end point device in response to the event, the notification message including an indication that the access network forwarding service is unavailable;”**

129. In my opinion, *Thomas* discloses claim 51[d][i]. *Thomas*’s hotspot device (i.e., “first end point device”) includes a processor that executes a client access application 312 that provides notifications to the hotspot device user via user interfaces. EX1005, ¶¶34, 44-46, 52, 76-77, Figs. 5, 6, 9, 10; *supra* §XI.2.g. *Thomas* discloses an exemplary user-interface screen 900 of its hotspot device that provides connection information (i.e., “forwarding service notification”) for the wireless device in which “activation status 902 indicates whether the client access application 312 is on or off.” EX1005, ¶76, Fig. 9.

130. As I discussed, *Thomas*’s hotspot device may receive a start-response message from server 108 that includes a response indicating the client-access application 312 should not start. EX1005, ¶58; *supra* §XI.14.a. Similarly, *Buddhikot* discloses that “in case the wireless link bandwidth or the back-haul bandwidth is already entirely allocated to existing users, the gateway can be configured to ... reject new users by blocking all their traffic.” EX1016, ¶80. Thus, in my opinion, the *Thomas-Buddhikot* device, implemented with *Buddhikot*’s QoS rules would deny connection to a new user based on bandwidth. Further, in my

opinion, a skilled artisan would have understood that in this situation, “activation status 902” on the *Thomas-Buddhikot* device would indicate on user-interface screen 900 that client-access application 312 is unavailable or off. In my opinion, therefore, *Thomas* discloses providing information to the hotspot device owner that the access-network-forwarding service is unavailable (i.e., off).

131. Accordingly, in my opinion, the *Thomas-Buddhikot* combination discloses all limitations of claim 51 and renders it obvious.

## **XII. GROUND 2: CLAIM 2 IS OBVIOUS OVER *THOMAS*, *BUDDHIKOT*, AND *SEWALL***

### **1. Motivation to combine *Thomas*, *Buddhikot*, and *Sewall***

132. One skilled in the art would have recognized that like *Thomas* and *Buddhikot*, *Sewall* is also analogous art to the '425 patent. *Sewall* is in the same field of endeavor: mobile devices and wireless access points (or hotspots) for computer networking. EX1006, Abstract, ¶¶7-11, 14-19, 22-28, Figs. 3-6. Like *Thomas* and *Buddhikot*, *Sewall* also shares a common goal with the '425 patent: using end-user devices for bridging or routing traffic from other devices to a network system (e.g., the internet), including the provisioning of services seeking to improve the customizability and monetization of mobile-hotspot technology (e.g., usage control, user interactivity and notifications via graphical user interfaces, and billing features). EX1006, ¶¶7-11, 14-19, 22-32, 42-56; EX1001,

32:34-35:20, 65:31-67, Fig. 15A-F; EX1005, ¶¶23, 28, 44-45, 54-55, 79-80;  
EX1016, Abstract, ¶¶2, 32, 45-47, 52-53, 182-189.

133. In my opinion, one skilled in the art would have been motivated to combine *Sewall* with *Thomas* and *Buddhikot* to enhance the management of traffic flow and user experience in the *Thomas-Buddhikot* hotspot device. *Thomas* discloses its hotspot device may be used to allow some or all of its bandwidth to be used by “strangers,” that is, devices belonging to users not necessarily known by the user of *Thomas*’s hotspot device. EX1005, ¶52. But *Thomas* does not provide granular control over the bandwidth for different user types. Similarly, *Buddhikot* discloses that its “system can be configured with three classes (Gold, Silver, Bronze) and each class can be guaranteed minimum bandwidth.” EX1016, ¶78. But, *Buddhikot* does not disclose allowing the hotspot user to control the bandwidth allocations for the three classes. *Sewall* addresses the limitations of *Thomas* and *Buddhikot* by disclosing that different users, such as strangers and users known to the hotspot-device operator, may have different internet-access rules than a hotspot-device operator. EX1006, ¶22. *Sewall* also discloses that the operator can provide configuration data to customize internet-access rules for different users via a user interface. EX1006, ¶¶23-24.

134. In my opinion, one skilled in the art would have recognized the

benefits of implementing *Sewall*'s teachings on the *Thomas-Buddhikot* hotspot device. For example, a skilled artisan would have understood that doing so would have allowed the *Thomas-Buddhikot* hotspot-device operator to reserve sufficient bandwidth for the operator's use, while allowing other users to the remaining unused bandwidth of the hotspot device. Further, one skilled in the art would have understood that the *Thomas-Buddhikot* hotspot-device operator would be able to differentiate bandwidth allocation between known and anonymous users. In my opinion, such customization would have also allowed the hotspot-device operator to adjust internet-access rules dynamically, such as during roaming or periods of low network bandwidth. EX1005, ¶¶29, 54-56, Figs. 5, 6. Thus, modifying the *Thomas-Buddhikot* hotspot device to also provide *Sewall*'s user-preference functionality would have been a combination of familiar elements, such as bandwidth allocation, according to known methods, such as allowing a hotspot device operator to specify bandwidth limits, to obtain predictable results, such as reserving sufficient bandwidth for the operator.

135. A skilled artisan would have had a reasonable expectation of success in implementing *Sewall*'s user-preference functionality on the *Thomas-Buddhikot* hotspot device. *Thomas* already discloses user interfaces for its hotspot device and *Buddhikot* already discloses assigning different guaranteed minimum bandwidths

for different classes of users. Accordingly, a skilled artisan would have had a reasonable expectation of success in combining *Sewall*'s teachings with *Thomas* and *Buddhikot*.

**2. Claim 2: “The first end point device of claim 1, wherein the user response includes user preferences for the access network forwarding service.”**

136. Claim 2 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Thomas* discloses the additional limitations of claim 2.

137. *Thomas* discloses that “in response to receipt of the join request for access to the Internet 104, the wireless device 110 sends an add client message to the server 108.” EX1005, ¶62. *Thomas* also discloses that the add-client message may include various parameters and that “additional add client message parameters are possible.” EX1005, ¶62.

138. *Sewall* discloses a personal hotspot, such as a cellular telephone, that allows a user to connect laptop or desktop computers or personal digital assistants (PDAs) to access the internet via the hotspot. EX1006, ¶7. *Sewall* also discloses that its personal hotspot 10 includes configuration data 42 including access rules for hotspot 10. EX1006, ¶23. *Sewall* further discloses that certain internet-access rules may apply to the operator of personal hotspot 10, other internet-access rules

may apply to users known to or authorized by the operator, and yet other internet-access rules may apply to anonymous users. EX1006, ¶22. *Sewall* discloses an example in which its hotspot 10 sends a communication requesting a web page for updating configuration data 42. EX1006, ¶24. A web server returns a user interface having controls for updating configuration data and the hotspot operator's selections are used by the profile engine 46 to update configuration data 42. EX1006, ¶24. In my opinion, therefore, *Sewall* discloses allowing the hotspot device owner to provide user preferences in the form of configuration data containing internet-access rules for forwarding data via its hotspot.

139. As I explained, one skilled in the art would have found it obvious to implement *Sewall*'s configuration setting features in the *Thomas-Buddhikot* hotspot device to allow the hotspot-device operator to customize allocation of available bandwidth to users. *Supra* §XII.1.

140. Accordingly, in my opinion, the *Thomas-Buddhikot-Sewall* combination renders claim 2 obvious.

### **XIII. GROUND 3: CLAIMS 3 AND 8 ARE OBVIOUS OVER *THOMAS, BUDDHIKOT, AND HALLER***

#### **1. Motivation to combine *Thomas, Buddhikot, and Haller***

141. One skilled in the art would have recognized that like *Thomas* and *Buddhikot*, *Haller* is also analogous art. *Haller* is in the same field of endeavor:

mobile devices and wireless access points (or hotspots) for computer networking. EX1013, Abstract, ¶¶7, 15, 35-38, 54, 61, Figs. 1-6. Like *Thomas* and *Buddhikot*, *Haller* also shares a common goal with the '425 patent: using end-user devices for bridging or routing traffic from other devices to a network system (e.g., the internet), including the provisioning of services seeking to improve the customizability and monetization of mobile-hotspot technology (e.g., usage control, user interactivity and notifications via graphical user interfaces, and billing features). EX1013, Abstract, ¶¶7, 15, 35-38, 54-56, 59-61, 89-90, 103, 121-122, 129 139-141, Figs. 1-6; EX1001, 32:34-35:20, 65:31-67, Fig. 15A-F; EX1005, ¶¶23, 28, 44-45, 54-55, 79-80; EX1016, Abstract, ¶¶2, 32, 45-47, 52-53, 182-189.

142. In my opinion, one skilled in the art would have been motivated to combine *Haller* with *Thomas* and *Buddhikot* for several reasons. First, *Haller* discloses the use of touchscreens, a technology that was well established in PDAs prior to the '425 patent priority date. EX1006, ¶7; EX1013, 6:16-19; EX1016, ¶7. One skilled in the art would have understood that integrating a touchscreen into the disclosed user-interface of the *Thomas-Buddhikot* hotspot device would have made user input more intuitive and accessible, especially compared to buttons or keyboards, which are often constrained by the limited size of mobile devices. A skilled artisan would have also understood that adopting a touchscreen interface

would facilitate easier and more efficient user interactions on such devices.

Modifying the *Thomas-Buddhikot* hotspot device to also provide *Haller's* touchscreen functionality would have been a combination of familiar elements, such as a touchscreen display, according to known methods, such as providing a touchscreen display on a mobile device, to obtain predictable results, such as, allowing a user to provide inputs into a display window using the touchscreen. In my opinion, a skilled artisan would have had a reasonable expectation of success in combining *Haller* with *Thomas* and *Buddhikot* because *Thomas* already discloses a display for its hotspot mobile device and *Haller* further discloses using a touchscreen as a display on a mobile device. Accordingly, in my opinion, one skilled in the art would have been motivated to implement a touchscreen on the *Thomas-Buddhikot* hotspot device to make it easier for a user to provide touch inputs into a display window.

143. Second, *Haller* teaches controlling network bandwidth according to the time of day, limiting traffic during peak hours and allowing greater access when demand is low. EX1013, ¶141. As I discussed, the *Thomas-Buddhikot* hotspot device already supports bandwidth-based forwarding settings. *Supra* §§XI.2.d, XI.2.j. In my opinion, a skilled artisan would have been motivated to incorporate *Haller's* time-based traffic control in the *Thomas-Buddhikot* device to

optimize user access during busy periods, thereby maximizing the number of users served and minimizing dissatisfaction due to denied access. The combination of *Haller*'s bandwidth rules with the *Thomas-Buddhikot* hotspot device would have been a combination of familiar elements, such as known bandwidth control rules, according to known methods, such as implementing the bandwidth control rules in a manner similar to implementation of the firewall and packet-mangling rules, to obtain predictable results, such as maximizing the number of connected users.

144. One of ordinary skill in the art would have had a reasonable expectation of success in implementing *Haller*'s bandwidth control rules on the *Thomas-Buddhikot* hotspot device. As I explained, implementing rules on *Thomas*'s hotspot device would have involved known techniques as disclosed by both *Thomas* and *Buddhikot* and would have been well within the skill level of a POSITA. *Supra* §XI.1. Accordingly, in my opinion, one of ordinary skill in the art would have had a reasonable expectation of success in combining *Haller*'s teachings with the *Thomas-Buddhikot* network system.

**2. Claim 3: “The first end point device of claim 1, wherein the user response is received as input into a display window associated with the notification message.”**

145. Claim 3 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Thomas* and *Haller* discloses

the additional limitations of claim 3.

146. *Thomas* discloses “[a] display 314 provides user output capabilities and a user input device 316 provides the user of the wireless device 110 with input capabilities for interaction with the wireless device 110.” EX1005, ¶34. *Haller* discloses a “hand-held device for providing communication between a wide area network and a wireless local area network.” EX1013, ¶7. *Haller* discloses terminals 107 coupled to wireless device 106 via short-range radio signals via a LAN. EX1013, ¶54. *Haller* discloses that device 106 is coupled to a cellular network. EX1013, ¶56. *Haller*’s device 106 is a cellular handset, PDA, or laptop computer. EX1013, ¶61. *Haller* discloses that “device 106 includes a display ... and a touchscreen, singly or in combination.” EX1013, ¶69. In my opinion, one skilled in the art would have understood that *Haller*’s touchscreen would allow a user to provide inputs into a display window.

147. As I discussed, a skilled artisan would have been motivated and found it obvious to implement *Haller*’s touchscreen in the *Thomas-Buddhikot* hotspot device to make it easier for users to provide inputs. *Supra* §XIII.1.

148. Accordingly, in my opinion, the *Thomas-Buddhikot-Haller* combination renders claim 3 obvious.

**3. Claim 8: “The first end point device of claim 1, wherein the forwarding agent is configured to adjust the access network forwarding service based on a time of day.”**

149. Claim 8 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Haller* discloses the additional limitations of claim 8.

150. *Haller* discloses that its cellular phone hotspot device includes service level verification software that enforces service level agreements with users. EX1013, ¶¶54-56, 61, 140. *Haller* also discloses that an unlimited amount of cellular traffic is permitted from its hotspot device during the night but a limited amount during the day. EX1013, ¶141. *Haller* explains that if traffic from the hotspot device exceeds the limited amount of data permitted during the day, the service level verification software drops packets. EX1013, ¶141.

151. As I discussed, a skilled artisan would have found it obvious to implement *Haller*’s time-of-day based bandwidth-control rules on the *Thomas-Buddhikot* hotspot device to enable a larger number of users to use the hotspot device even when demand for bandwidth is high at particular times of day. *Supra* §XIII.1.

152. Accordingly, in my opinion, the *Thomas-Buddhikot-Haller* combination renders claim 8 obvious.

**XIV. GROUND 4: CLAIMS 10, 18, 19, 22 ARE OBVIOUS OVER *THOMAS*, *BUDDHIKOT*, AND *POLSON***

**1. Motivation to combine *Thomas*, *Buddhikot*, and *Polson***

153. One skilled in the art would have recognized that like *Thomas* and *Buddhikot*, *Polson* is also analogous art to the '425 patent. *Polson* is in the same field of endeavor: mobile devices and wireless access points for computer networking. EX1015, Abstract, ¶¶2, 16, 20-23, 26, 56, , Figs. 1, 2, 9-15. Like *Thomas* and *Buddhikot*, *Polson* also shares a common goal with the '425 patent: using end-user devices for bridging or routing traffic from other devices to a network system (e.g., the internet), including the provisioning of services seeking to improve the customizability and monetization of mobile-hotspot technology (e.g., usage control, user interactivity and notifications via graphical user interfaces, and billing features). EX1015, Abstract, ¶¶2, 16, 20-23, 26, 29-35, 38-39, 44-46, 52-53, 56, 78-79, Figs. 1, 2, 9-15; EX1001, 32:34-35:20, 65:31-67, Fig. 15A-F; EX1005, ¶¶23, 28, 44-45, 54-55, 79-80; EX1016, Abstract, ¶¶2, 32, 45-47, 52-53, 182-189.

**a. Different settings for different access networks**

154. *Polson* discloses a hotspot device that can connect to multiple WWANs to “facilitate[] the switching of WWAN interfaces in areas where another provider having a different WWAN interface is stronger, or where the provider

associated with the current WWAN interface 110 does not provide service.”

EX1015, ¶¶20, 52-55. This “facilitates the mobility of the gateway 108.” EX1015, ¶53.

155. In my opinion, one of ordinary skill in the art would have been motivated to implement *Polson*’s multiple WWAN capability on the *Thomas-Buddhikot* hotspot device. This would have enabled the *Thomas-Buddhikot* hotspot device to allow client devices to exchange data with the internet in a variety of geographic locations, even if a cellular network did not provide services in a particular geographic location. One of skill in the art would have been motivated to operate the *Thomas-Buddhikot* hotspot device based on the service agreements (e.g., access network forwarding settings) associated with a particular WWAN modem so that the cellular networks can accurately bill clients for their usage of the respective WWANs.

156. In my opinion, implementing *Polson*’s teaching of connecting to multiple cellular networks on the *Thomas-Buddhikot* hotspot device would have been a combination of familiar elements, such as WWAN modems capable of exchanging data with different cellular networks, according to the known methods of providing more than one WWAN modem in the *Thomas-Buddhikot* hotspot device to obtain predictable results of ensuring that client devices connected to the

*Thomas-Buddhikot* hotspot device can exchange data with the internet in a variety of geographic locations. One of skill in the art would have had a reasonable expectation of success in implementing *Polson*'s multiple WWAN capability on the *Thomas-Buddhikot* hotspot device because *Thomas* already discloses a hotspot device having a WWAN modem. *Supra* §§XI.2.b, XI.2.c. *Polson* further discloses that its gateway can include devices like *Thomas*'s hotspot device, capable of facilitating transmission of data between LANs and WANs. EX1015, ¶20. *Polson* also discloses a gateway device that has more than one WWAN modem. EX1015, ¶¶52-55. Therefore, implementing more than one WWAN modem on the *Thomas-Buddhikot* hotspot device would have involved known techniques, as disclosed by *Polson*, and would have been well within the skill level of a POSITA.

Accordingly, a POSITA would have had a reasonable expectation of success in combining *Polson*'s teachings with the *Thomas-Buddhikot* hotspot device.

**b.     Restriction to a maximum number of additional end point devices**

157. *Polson* also discloses establishing "limitations on the number of simultaneous WiFi . . . connections." EX1015, ¶30. Therefore, in my opinion, one of skill in the art would have understood that such limitations would ensure that each device connected to the hotspot device via the Wi-Fi connection could access the network using a minimum bandwidth. This would ensure user satisfaction with

the connection.

158. One of skill in the art would have been motivated to implement *Polson*'s limitation on the number of simultaneous Wi-Fi connections on the *Thomas-Buddhikot* hotspot device to obtain the same benefits of an adequate minimum bandwidth for each Wi-Fi connection. *Thomas* already discloses a maximum number of available IP addresses for the WLAN connections. EX1005, ¶69. Therefore, implementing *Polson*'s limitations would constitute a combination of familiar elements, a setting specifying maximum number of simultaneous Wi-Fi connections, according to known methods of implementing rules in the *Thomas-Buddhikot* hotspot device to obtain predictable results of ensuring that client devices connected to the *Thomas-Buddhikot* hotspot device can exchange data with the internet at a minimum bandwidth.

159. In my opinion, one of skill in the art would have had a reasonable expectation of success in implementing *Polson*'s limitations on the maximum number of simultaneous Wi-Fi connections on the *Thomas-Buddhikot* hotspot device. As discussed above, *Thomas* already discloses rules that specify a maximum number of available IP addresses for *Thomas*'s hotspot device. The *Thomas-Buddhikot* combination also already discloses techniques for implementing additional firewalling and packet-mangling rules on the *Thomas-*

*Buddhikot* hotspot device. *Supra* §XI.1.a. Therefore, in my opinion, one of ordinary skill would have found that implementing *Polson*'s restriction setting to limit the maximum number of simultaneous Wi-Fi connections on the *Thomas-Buddhikot* hotspot device would have involved known techniques as disclosed by each of *Thomas*, *Buddhikot*, and *Polson*. This combination would have been well within the skill level of a POSITA and a POSITA would have had a reasonable expectation of success in combining *Polson*'s teachings with the *Thomas-Buddhikot* hotspot device.

**c. User options to purchase additional cellular network access**

160. *Polson* discloses providing notifications to allow a user to purchase additional network forwarding service such as quantity of bytes downloaded. EX1015, ¶¶26, 31, 81; Figs. 9-16. In my opinion, therefore, a skilled artisan would have been motivated to implement these features on the *Thomas-Buddhikot* hotspot device to allow customization of the forwarding service to meet user needs. A skilled artisan would have recognized that doing so would allow the operator of the *Thomas-Buddhikot* hotspot device to customize the forwarding service, for example, by purchasing more data to extend a VOIP call or transfer large files. Implementing *Polson*'s teachings on the *Thomas-Buddhikot* hotspot device would constitute a combination of familiar elements, such as notifications regarding

purchasing additional bandwidth, according to known methods, such as displaying such notifications on a display device, to obtain predictable results, such as allowing an operator of the *Thomas-Buddhikot* hotspot device to purchase additional bandwidth.

161. In my opinion, a skilled artisan would have had a reasonable expectation of success in combining *Polson* with *Thomas* and *Buddhikot*. *Thomas* already discloses the use of user interfaces to provide notifications. EX1005, ¶¶34, 44-46, 52, 76-77, Figs. 5, 6, 9, 10. In my opinion, the provision of notifications on a user interface of the *Thomas-Buddhikot* device to allow purchase on additional bandwidth would have been implementation of a well-known technique as disclosed by *Thomas*. Accordingly, in my opinion, a skilled artisan would have had a reasonable expectation of success in combining *Polson*'s teachings with *Thomas* and *Buddhikot*.

2. **Claim 10: “The first end point device of claim 1, wherein based on an access network forwarding setting, the forwarding agent is configured to restrict providing a forwarding connection of the network access forwarding service to a maximum number of additional end point devices, wherein the forwarding connection connects the one or more additional end point devices to the access network via the forwarding agent.”**

162. Claim 10 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. The *Thomas-Buddhikot* combination

discloses restriction settings for the forwarding connection. *Supra* § XI.2.j.

163. *Thomas* discloses restriction settings that specify a maximum number of end point devices. EX1005, ¶¶59, 69. For example, *Thomas* discloses that the start response message sent by its server 108 to wireless device 110 includes parameters such as a “number of available IP addresses.” EX1005, ¶¶59, 69. In my opinion, a person of ordinary skill in the art would have understood that the *Thomas-Buddhikot* hotspot device would not be able to connect additional client devices if the total number of connected devices exceeded the maximum number of available IP addresses. Therefore, in my opinion, the *Thomas-Buddhikot* combination alone discloses the additional limitations of claim 43

164. To the extent Patent Owner may dispute that the *Thomas-Buddhikot* combination discloses the additional features of claim 10, in my opinion, *Polson* discloses these additional limitations.

165. *Polson* discloses a gateway that provides data communication between a 3G cellular-access network and devices connected to the gateway via a LAN. EX1015, Abstract, ¶¶16, 20-23, 26, 29-33. In my opinion, *Polson*’s gateway is a forwarding agent configured to forward the data between the **access network modem (i.e., 3G cellular-access network)** and the **local area network modem (i.e., LAN)**. *Polson* discloses that its gateway requests features of a service agreement

associated with the cellular-access network from a server. EX1015, ¶78. *Polson* also discloses that such features include a limitation on a number of simultaneous Wi-Fi or Ethernet LAN connections of the gateway. EX1015, ¶78. As I discussed, a skilled artisan would have found it obvious to implement *Polson*'s limits on the number of simultaneous client devices connected to the *Thomas-Buddhikot* hotspot device to help ensure that each connected device receives a minimum bandwidth. *Supra* §XIV.1.

166. Accordingly, in my opinion, the *Thomas-Buddhikot-Polson* combination renders claim 10 obvious.

- 3. Claim 18: “The first end point device of claim 1, wherein the service processor is further configured to facilitate enabling the access network forwarding service on at least two access networks, and wherein the one or more access network forwarding settings include at least one setting that is different for different access networks.”**

167. Claim 18 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Polson* discloses the additional limitations of claim 18.

168. *Polson* discloses a gateway that connects devices to a 3G cellular-access network. EX1015, Abstract, ¶¶16, 20-23, 26, 29-33. *Polson* discloses that “more than one WWAN interface 110 may be available for use by gateway 108 to establish a WWAN 112 connection” and that the gateway may operate each

interface according to an associated service agreement. EX1015, ¶29. Further, *Polson* discloses that the service agreements may restrict access in many ways, including QoS (e.g., sufficient bandwidth to support Voice-over-IP), throughput provided, or cumulative bits over time. EX1015, ¶30. *Polson* also discloses that its gateway facilitates switching of WWAN interfaces in areas where another provider having a different WWAN interface is stronger, or where the provider associated with the current WWAN interface 110 does not provide service. EX1015, ¶52.

169. As I discussed, one skilled in the art would have found it obvious to combine *Polson*'s multiple WWAN capability with the *Thomas-Buddhikot* hotspot device to allow it to provide forwarding service in different geographies. *Supra* §XIV.1. In my opinion, a skilled artisan would have also understood that at least one access-network-forwarding setting (e.g., QoS, throughput or cumulative number of bits) would be different for the different access networks based on the service agreement associated with the cellular-network being used in a particular geography. For example, when the *Thomas-Buddhikot* device is located in an area outside its home network coverage, it may connect to a different network (e.g., via roaming) that provides a QoS or throughput different from the home network. A skilled artisan would understand that in this configuration, at least one access-network-forwarding setting such as QoS or throughput of the roaming network

would be different from that of the home network.

170. Accordingly, in my opinion, the *Thomas-Buddhikot-Polson* combination renders claim 18 obvious.

4. **Claim 19: “The first end point device of claim 18, wherein the different access networks include a home access network and a roaming access network, and wherein the access network forwarding settings used to implement the access network forwarding service are dependent on whether the first end point device is connected to the home access network or the roaming access network.”**

171. Claim 19 depends from claim 18. As I discussed, claim 18 is obvious over *Thomas, Buddhikot, and Polson. Supra* §XIV.3. As I explained, the *Thomson-Buddhikot* device modified with *Polson* would be capable of connecting to more than one cellular network, each cellular network having different access-network-forwarding settings. *Supra* §XIV.3. As I also explained, the *Thomas-Buddhikot* hotspot device, when located in a geographic area outside its plan coverage area, connects to a different cellular network based on a roaming plan. *Supra* §XI.13, XIV.3; EX1005, ¶71. In my opinion, the plan coverage area for the *Thomas-Buddhikot* device corresponds to the claimed “home access network” and geographic areas outside the plan coverage area correspond to the claimed “roaming access network.”

172. Both *Thomas* and *Polson* discloses forwarding data based on access-

network-forwarding settings corresponding to the particular cellular network to which a gateway or hotspot device is connected. EX1005, ¶¶71; EX1015, ¶¶29-30. In my opinion, and as I explained with respect to claim 18, a skilled artisan would have understood that the *Thomson-Buddhikot* device modified with *Polson* when connected to a cellular network with a roaming plan (i.e., outside its plan coverage area), would forward data from client devices to a cellular network using access-network-forwarding settings based on the roaming plan (i.e., according to the roaming access network). *Supra* XIV.3.

173. Accordingly, in my opinion, the *Thomas-Buddhikot-Polson* combination renders claim 19 obvious.

**5. Claim 22: “The first end point device of claim 20, wherein the forwarding service notification provides the user with an option to purchase additional access network forwarding service.”**

174. Claim 22 depends from claim 20. As I discussed, claim 20 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.11. In my opinion, *Polson* discloses the additional limitations of claim 22.

175. *Polson* discloses that its gateway includes display screens and that graphical user interfaces are displayed on the display screens. EX1015, ¶¶26, 81, Figs. 9-16. *Polson* further discloses that a user of *Polson*’s gateway can purchase WWAN access based on a period of time, a certain quantity of bytes downloaded,

or other parameters. EX1015, ¶31. In my opinion, one skilled in the art would understand that access for a period of time or total amount of bytes would constitute an access-network-forwarding setting that would determine duration for which *Polson*'s gateway can forward data.

176. As I discussed, a skilled artisan would have found it obvious to implement *Polson*'s options for purchasing additional cellular-network access (e.g., additional time duration or increase limit of maximum bytes transferred) on the *Thomas-Buddhikot* hotspot device. *Supra* §XIV.1.

177. Accordingly, in my opinion, the *Thomas-Buddhikot-Polson* combination renders claim 22 obvious.

## **XV. GROUND 5: CLAIMS 11-14 ARE OBVIOUS OVER *THOMAS, BUDDHIKOT, AND WEINTRAUB***

### **1. Motivation to combine *Thomas, Buddhikot, and Weintraub***

178. One skilled in the art would have recognized that like *Thomas* and *Buddhikot*, *Weintraub* is also analogous art to the '425 patent. *Weintraub* is in the same field of endeavor: mobile devices and wireless access points for computer networking. EX1017, Abstract, ¶¶10-15, 19, 21, Figs. 1-8. Like *Thomas* and *Buddhikot*, *Weintraub* also shares a common goal with the '425 patent: using end-user devices for bridging or routing traffic from other devices to a network system (e.g., the internet), including the provisioning of services seeking to improve the

customizability of mobile-hotspot technology (e.g., usage control, user interactivity and notifications via graphical user interfaces). EX1017, Abstract, ¶¶10-15, 19, 21, 25-27, 31-32, Figs. 1-8; EX1001, 32:34-35:20, 65:31-67, Fig. 15A-F; EX1005, ¶¶23, 28, 44-45, 54-55, 79-80; EX1016, Abstract, ¶¶2, 32, 45-47, 52-53, 182-189.

**a. Network traffic classification of the data**

179. *Weintraub* discloses exemplary network traffic classifications such as VOIP, IM, e-mail, or other types of traffic. EX1017, ¶26. *Weintraub* also discloses restricting such traffic based on, for example, time of day or size of attachments, etc. EX1017, ¶26. In my opinion, one skilled in the art would have been motivated to implement *Weintraub*'s restriction settings based on network traffic classification to manage bandwidth usage, an issue also highlighted in *Buddhikot*. For example, during times of high demand (e.g., during the day) a skilled artisan would have been motivated to restrict network traffic associated with VOIP or large email attachments because this traffic consumes a lot of available bandwidth leaving less bandwidth for all the users.

180. In my opinion, implementing *Weintraub*'s teaching of traffic limitations based on a network traffic classification on the *Thomas-Buddhikot* hotspot device would have been a combination of familiar elements, such as rules for limiting bandwidth based on classification, according to known methods, such

as implementing additional traffic control rules in the *Thomas-Buddhikot* hotspot device, to obtain predictable results to ensure client devices connected to the *Thomas-Buddhikot* hotspot device can exchange data with a minimum bandwidth. One of skill in the art would have had a reasonable expectation of success in implementing *Weintraub*'s traffic limitation rules based on network traffic classifications on the *Thomas-Buddhikot* hotspot device. For example, *Thomas* already discloses traffic control rules for its hotspot device. EX1005, ¶¶68-69. The *Thomas-Buddhikot* hotspot device also already discloses the implementation of additional firewalling and packet-mangling rules on the *Thomas-Buddhikot* hotspot device. *Supra* §XI.2.d. Accordingly, implementing *Weintraub*'s traffic restriction rules based on network classification on the *Thomas-Buddhikot* hotspot device would have involved known techniques as disclosed by each of *Thomas*, *Buddhikot*, and *Weintraub*. This combination would have been well within the skill level of a POSITA. Accordingly, in my opinion, one of skill in the art would have had a reasonable expectation of success in combining *Weintraub*'s teachings with the *Thomas-Buddhikot* hotspot device.

**b. Parental control policy**

181. *Weintraub* discloses policies that allow a parent to restrict adult content from devices associated with young children in the household. EX1017,

¶10. A skilled artisan would have understood that implementing such parental control policies on the *Thomas-Buddhikot* hotspot device would have allowed children to safely access the internet via the hotspot device without being at risk of being exposed to age-inappropriate content. EX1017, ¶10. In my opinion, one of skill in the art would have been motivated to implement parental control policies on the *Thomas-Buddhikot* hotspot device to allow parents to restrict adult content that is inappropriate for children from being forwarded by the *Thomas-Buddhikot* hotspot device to an end point client device associated with a child. Implementing *Weintraub*'s parental control traffic restrictions on the *Thomas-Buddhikot* hotspot device would have been a combination of familiar elements, such as rules for restricting content based on the type of content, according to known methods, such as implementing additional traffic control rules in the *Thomas-Buddhikot* hotspot device, to obtain predictable results of preventing unsuitable adult content from being delivered to end point devices associated with a child.

182. In my opinion, one of skill in the art would have had a reasonable expectation of success in implementing *Weintraub*'s content-based parental control policies on the *Thomas-Buddhikot* hotspot device. For example, *Thomas* already discloses traffic control rules for its hotspot device. EX1005, ¶¶68-69. The *Thomas-Buddhikot* hotspot device also already teaches or suggest implementation

of additional firewalling and packet-mangling rules on the *Thomas-Buddhikot* hotspot device. *Supra* §XI.2.d. Thus, implementing *Weintraub*'s traffic restriction rules based on network classification on the *Thomas-Buddhikot* hotspot device would have involved known techniques as disclosed by *Thomas*, *Buddhikot*, and *Weintraub*. This combination would have been well within the skill level of a POSITA. Therefore, in my opinion, one of skill in the art would have had a reasonable expectation of success in combining *Weintraub*'s teachings with the *Thomas-Buddhikot* hotspot device.

**2. Claim 11: “The first end point device of claim 1, wherein based on an access network forwarding setting, the forwarding agent is configured to restrict data associated with certain network destinations from being forwarded.”**

183. Claim 11 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Weintraub* discloses the additional limitations of claim 11.

184. *Weintraub* discloses parental control policies that prohibit a customer device within the customer's premises from accessing adult content from the external network. EX1017, ¶10. A skilled artisan would have understood that *Weintraub*'s policies restrict forwarding of a request received from a child's device to access a network destination (e.g., site providing adult content). As I explained, one skilled in the art would have found it obvious to implement *Weintraub*'s

policies restricting adult content on the *Thomas-Buddhikot* hotspot device to ensure children can safely access the internet via the hotspot device without potential exposure to age-inappropriate content. *Supra* §XV.1.

185. Accordingly, in my opinion, the *Thomas-Buddhikot-Weintraub* combination renders claim 11 obvious.

**3. Claim 12: “The first end point device of claim 11, wherein the network destinations that are restricted are determined by a parental control policy stored on the first end point device.”**

186. Claim 12 depends from claim 11. As I discussed claim 11 is obvious over *Thomas, Buddhikot*, and *Weintraub*. *Supra* §XV.2. In my opinion, the *Thomas-Buddhikot-Weintraub* combination renders claim 12 obvious for reasons similar to those for claim 11. *Supra* §XV.2.

**4. Claim 13: “The first end point device of claim 1, wherein based on an access network forwarding setting, the forwarding agent is configured to restrict a certain data content type from being forwarded.”**

187. Claim 13 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Weintraub* discloses the additional limitations of claim 13.

188. *Weintraub* discloses different restriction settings based on a type of network content, for example, instant messaging or Voice over IP communications (e.g., restricted based on time of day, destination, origin, or content), peer-to-peer

transmissions (e.g., restricted based on source/destination), e-mail transmissions (e.g., restricted based on time of day, source/destination, attachments, words in the e-mail transmissions, etc.), or streaming media (e.g., restricted media based on time of day, ratings. EX1017, ¶26. As I explained, a skilled artisan would have found it obvious to implement *Weintraub*'s teachings on the *Thomas-Buddhikot* hotspot device to allow it to restrict traffic based on a network classification such as type of data (instant messaging, voice over IP, peer-to-peer transmissions, email transmissions, streaming media transmissions) at particular times of day. *Supra* §XV.1. Doing so would have helped ensure sufficient bandwidth is available to all users during times of high bandwidth demand. *Supra* §XV.1.

189. Accordingly, in my opinion, the *Thomas-Buddhikot-Weintraub* combination renders claim 13 obvious.

5. **Claim 14: "The first end point device of claim 1, wherein the service processor is further configured to determine a network traffic classification for the data, and wherein the one or more restriction setting includes restriction settings that vary depending on the network traffic classification of the data.**

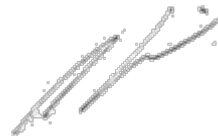
190. Claim 14 depends from claim 1. As I discussed, claim 1 is obvious over *Thomas* and *Buddhikot*. *Supra* §XI.2. In my opinion, *Weintraub* discloses the additional limitations of claim 14.

191. *Weintraub* discloses different restriction settings based on a network traffic classification of data, such as a type of network content. EX1017, ¶26; *Supra* §XV.4. In my opinion, the *Thomas-Buddhikot-Weintraub* combination renders claim 14 obvious for reasons similar to those for claim 13. *Supra* §XV.4.

## **XVI. CONCLUSION**

192. For the reasons set forth above, it is my opinion that claims 1-23 and 51 of the '425 patent are unpatentable in view of the prior art. In signing this declaration, I understand that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross-examination in this case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

193. I declare that all statements made herein of my knowledge are true, that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.



Dated: August 28, 2026

By: \_\_\_\_\_  
Bill Lin, Ph.D.