

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,

Petitioner,

v.

HEADWATER RESEARCH LLC,

Patent Owner.

Patent No. 8,023,425
Case No. IPR2026-00465

DECLARATION OF DR. 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 Petitioner to provide my opinion on whether the 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 ’102 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 24-50 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 24-50 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> ”).

<u>Exhibit</u>	<u>Description</u>
EX1013	U.S. Patent Appl. Publ. No. 2003/0035397 to Haller et al. (“ <i>Haller</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> ”).
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.

A. 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.

B. Obviousness under 35 U.S.C. § 103

27. 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.

28. 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.

29. 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.

30. 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.

31. 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.

32. 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.

C. Secondary Considerations of Non-Obviousness

33. 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.

34. 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.

35. 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.

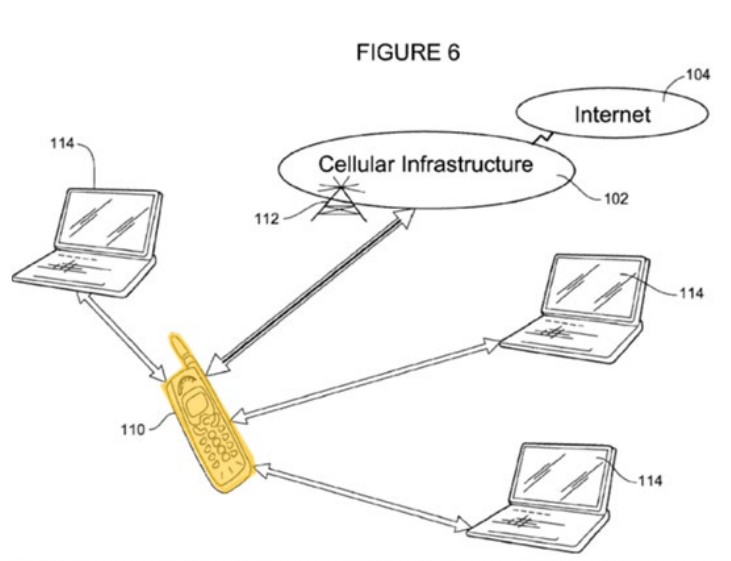
36. I have been informed that, for example, the nexus requirement as it applies to the evidence of commercial success requires that the patentee must show that the sales of a product that allegedly practices the claimed invention must be a direct result of the unique characteristics of the claimed invention, 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.

37. 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.

38. 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

39. 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 '102 patent.



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

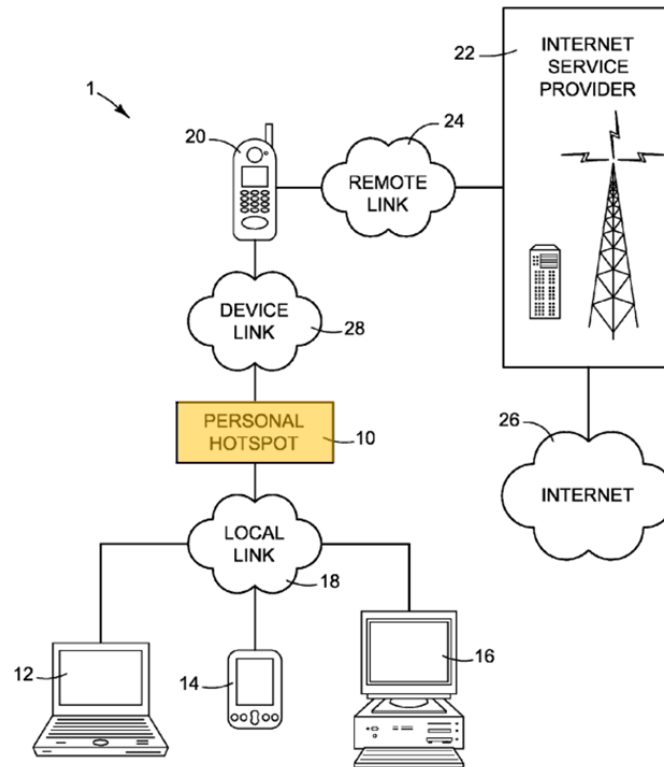


FIG. 1

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

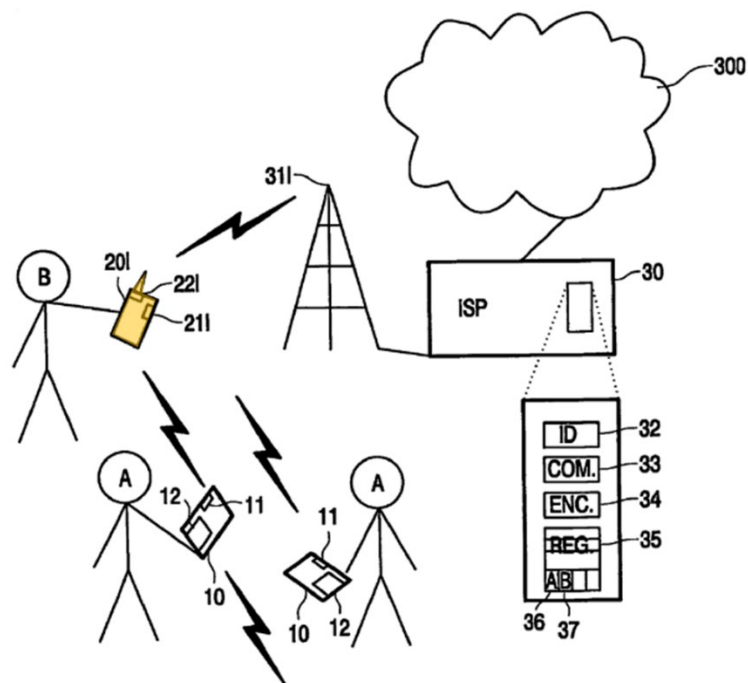


FIG. 1

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

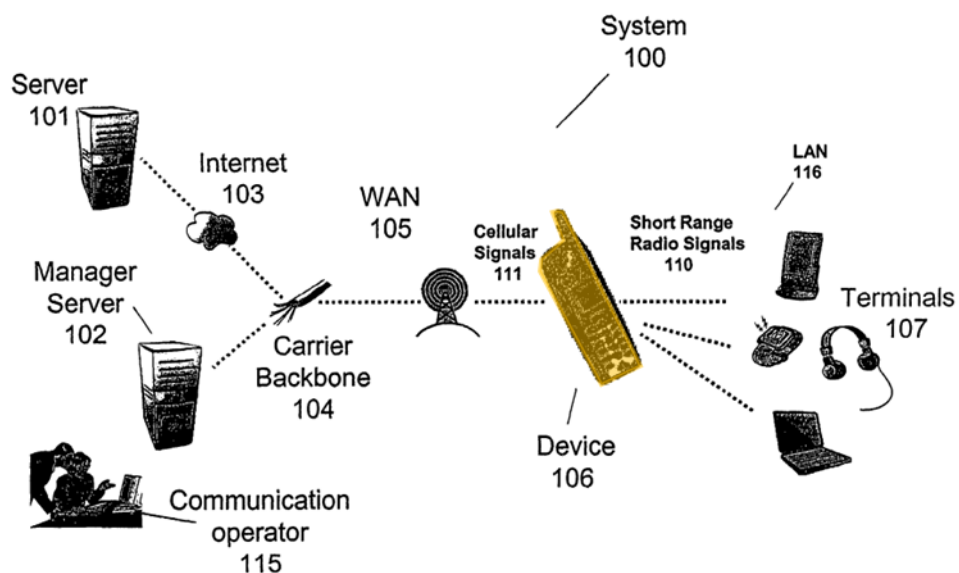


Fig. 1

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

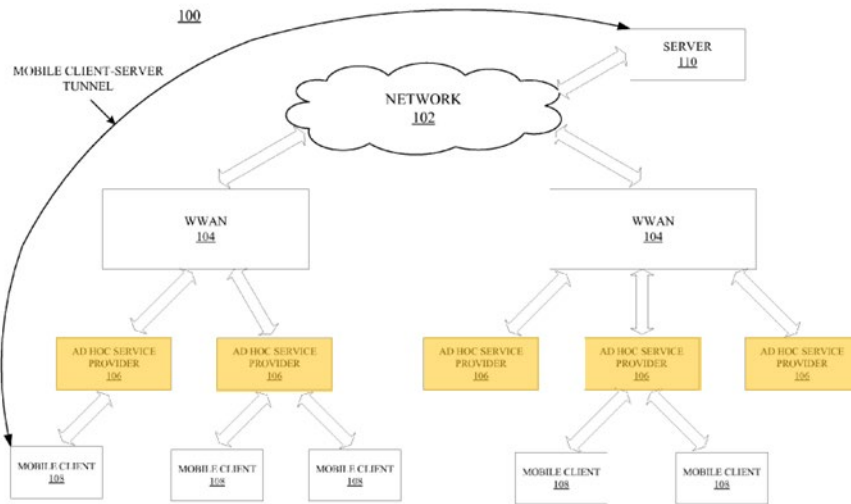
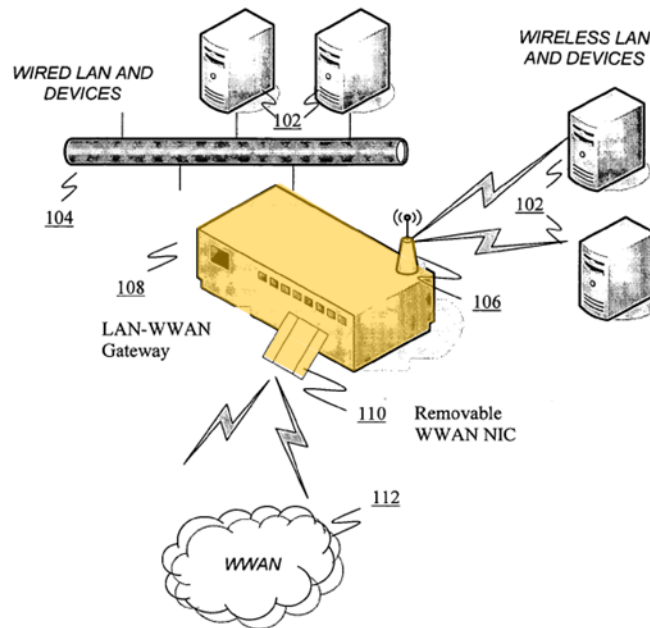


FIG. 1

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.

40. 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

A. Background

41. The '425 patent discloses a system that allows an end-user device to be used as an intermediate networking device. EX1001, 32:34-44, 35:21-29. Figure 15 reflects the purported invention:

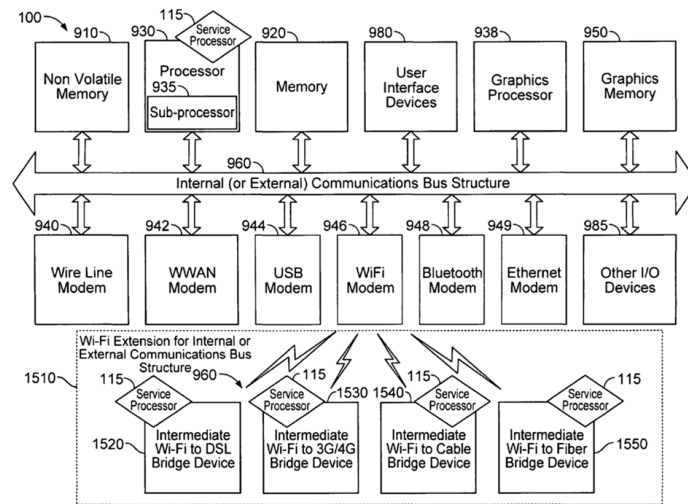


FIG. 15A

EX1001, Fig. 15A. The end-user device includes a modem. The memory stores service-policy settings for authorizing the end-user device to provide a forwarding service. The service processor obtains configuration information, obtains a user input through a user interface, and modifies a service-policy setting to enable or disable the forwarding service.

B. Prosecution History

42. During prosecution, the Examiner issued one office action which rejected application claim 21 under 35 U.S.C. § 101 and rejected 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). 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:

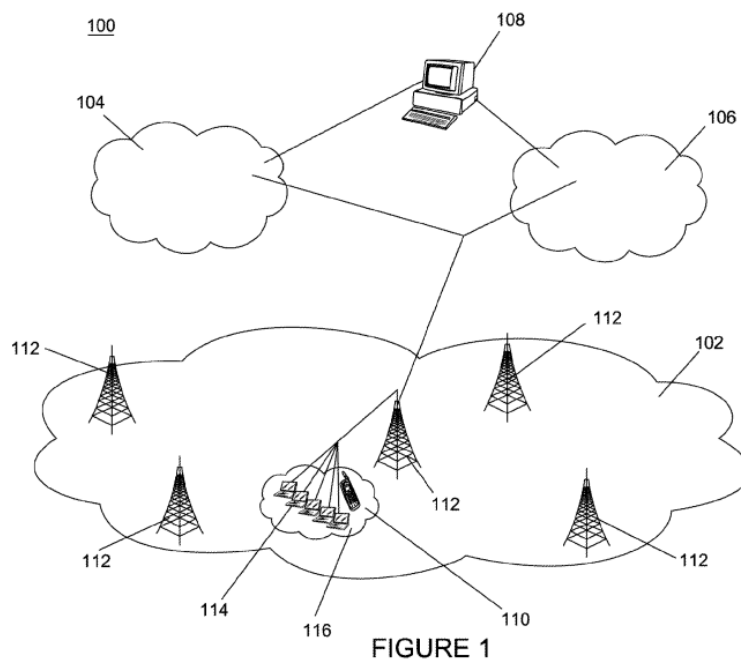
[The claims] are allowed over the prior art of record since the cited references taken individually or in combination fails to particularly disclose **the forwarding agent including a policy implementation agent configured to forward the data in the first end point device's communications stack, and 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 noted that “Varadhan et al. fails to disclose or render obvious the above underlined limitations as claimed.” *Id.* The Examiner 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. *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

A. Overview of *Thomas*

43. *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.” *Thomas*’s network environment 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.

44. Figure 7 of *Thomas* further discloses a message flow between wireless device 110 and server 107 “to configure the wireless device 110 for

operation and to authorize the client computing device 114 for operation.”

EX1005, ¶¶57-60, Fig. 7. *Thomas* also discloses an access network forwarding policy for metering usage and/or limiting the number of concurrent users accessing the network through wireless device 110 as part of the “mobile, ad hoc point of presence” of wireless device 110. (also referred to herein as *Thomas*’s hotspot device). EX1005, ¶¶46-47, 49-50, 54-55.

B. Overview of *Buddhikot*

45. *Buddhikot* discloses a gateway for mobile access. EX1016, ¶12. *Buddhikot*’s gateway includes a firewall service that provides firewalling and packet-mangling rules to control data flow through the gateway. EX1016, ¶¶74, 76. *Buddhikot*’s 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.

C. Overview of *Haller*

46. *Haller* discloses a “hand-held device for providing communication between a wide area network and a wireless local area network.” EX1013, ¶7. *Haller*’s “device 106 includes a display ... and a touchscreen, singly or in combination.” EX1013, ¶69. *Haller*’s cellular phone hotspot device includes

service level verification software to enforce service level agreements with users. EX1013, ¶¶54-56, 61, 140. *Haller* also discloses limiting cellular traffic from its hotspot device during daytime hours and permitting unlimited amount of cellular traffic from its hotspot device during nighttime hours. EX1013, ¶141

D. Overview of *Polson*

47. *Polson* discloses a mobile gateway that establishes a connection between itself and a WWAN. EX1015, Abstract. *Polson* includes a WWAN interface adapted to receive data from and transfer data to the WWAN on behalf of devices of a LAN. EX1015, Abstract. *Polson* also discloses strategies for managing WWAN access, which include prioritizing specific data over the WWAN to manage conflicts between end-user devices of LANs that share limited WWAN capacity. EX1015, ¶46.

48. *Polson* discloses that the mobile gateway allows connection to multiple WWANs, which 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.

E. Overview of *Weintraub*

49. *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 restriction settings based on a type of network content, such as, instant messaging or Voice over IP communications, peer-to-peer transmissions, e-mail transmissions, or streaming media. EX1017, ¶26. *Weintraub* restricts data forwarding based on a source or destination, time, attachments, or type of content. *Id.*

IX. LEVEL OF ORDINARY SKILL IN THE ART

50. I am informed that patentability must be analyzed from the perspective of “one of ordinary skill in the art” 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.

51. 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 '102 patent.

X. CLAIM CONSTRUCTION

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

XI. Ground 1: Claims 24, 25-32, 34, 36, 40-42, 44, 46, 49, and 50 Are Obvious over *Thomas* and *Buddhikot*

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

53. One of skill would have recognized that *Thomas* and *Buddhikot* are analogous art to the '425 patent. *Thomas* and *Buddhikot* 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, Figs. 15A-F.

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

54. *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.

55. *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.

56. 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.

57. 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.

58. 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*

59. *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.

60. 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

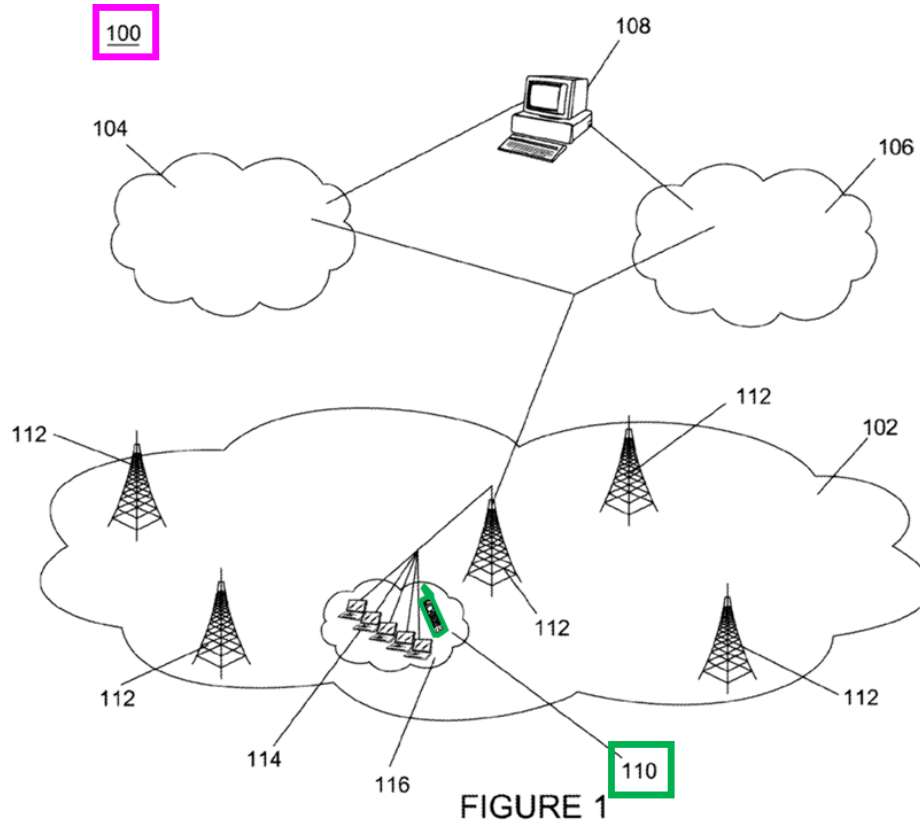
implementing the QoS rules to forward or redirect data flowing through the gateway, to obtain predictable results of ensuring connected devices can exchange data with the access network even when there is network congestion. As discussed above, a POSITA would have had a reasonable expectation of success 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 24

61. In my opinion, the *Thomas-Buddhikot* combination discloses claim 24.

a. 24[pre]: “A network system for activating an access network forwarding service for a first end point device,”

62. In my opinion, *Thomas* discloses 24[pre]. As depicted in Figure 1, annotated below, *Thomas* discloses a network environment 100, which includes wireless device 110, client devices 114, server 108, and cellular network 102 that connects to internet 104. EX1005, ¶¶24-25, Fig. 1.



EX1005, Fig. 1 (annotated).

63. *Thomas* discloses that “wireless device 110 forms a mobile, ad hoc point of presence within the cellular network for the client computing devices 114.” EX1005, ¶27; *see also id.*, ¶¶25, 16, 47. *Thomas*’s “wireless device 110 and the server 108, along with the WLAN 116, form an integrated networking capability for the client computing devices 114.” EX1005, ¶27. Further, as disclosed by *Thomas*, “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. *Thomas*

discloses that the server 108 of **network system 100** configures the **wireless device 110** for operation. EX1005, ¶57. Accordingly, *Thomas*'s **network environment 100**, the “network system,” is configured to activate **wireless device 110**, the “first end point device,” to communicate traffic (e.g., “access network forwarding service”) from client devices 114 through cellular network 102 to internet 104 through wireless device 110 (e.g., “access network”).

- b. **24[pre][i]: “the first end point device including 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;”**

64. In my opinion, *Thomas* discloses 24[pre][i]. As depicted in Figure 3, annotated below, *Thomas* discloses that **wireless device 110** includes a **radio frequency front-end 300** that “provides radio frequency (RF) control and signaling capabilities for bi-directional communication for the wireless device 110.” EX1005, ¶33. According to *Thomas*, **DSP 304** converts the signal from analog to digital or digital to analog and “modulates and demodulates data to process signaling received from or transmitted to the **RF front-end 300**.” EX1005, ¶33.

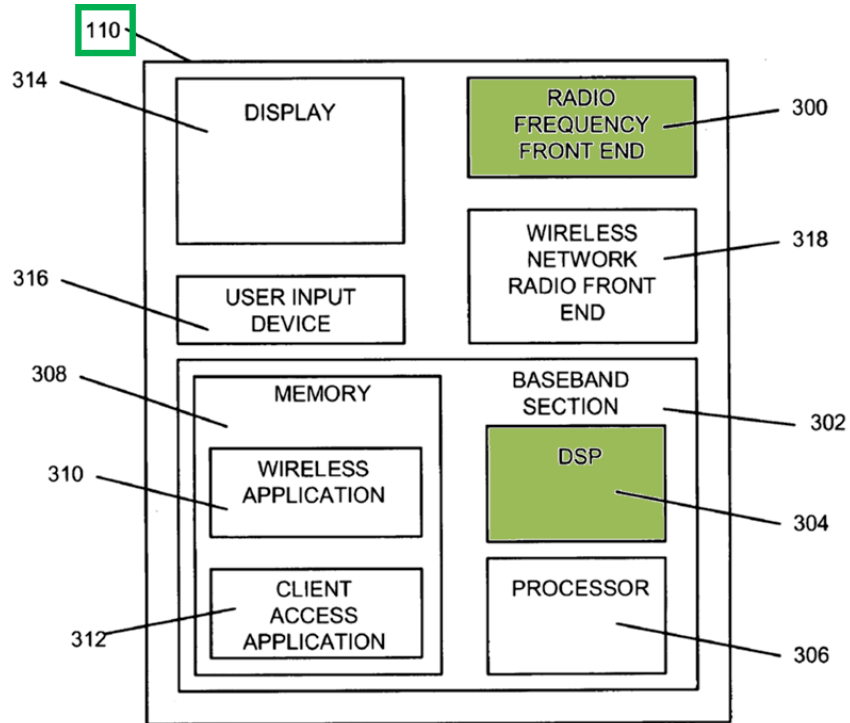
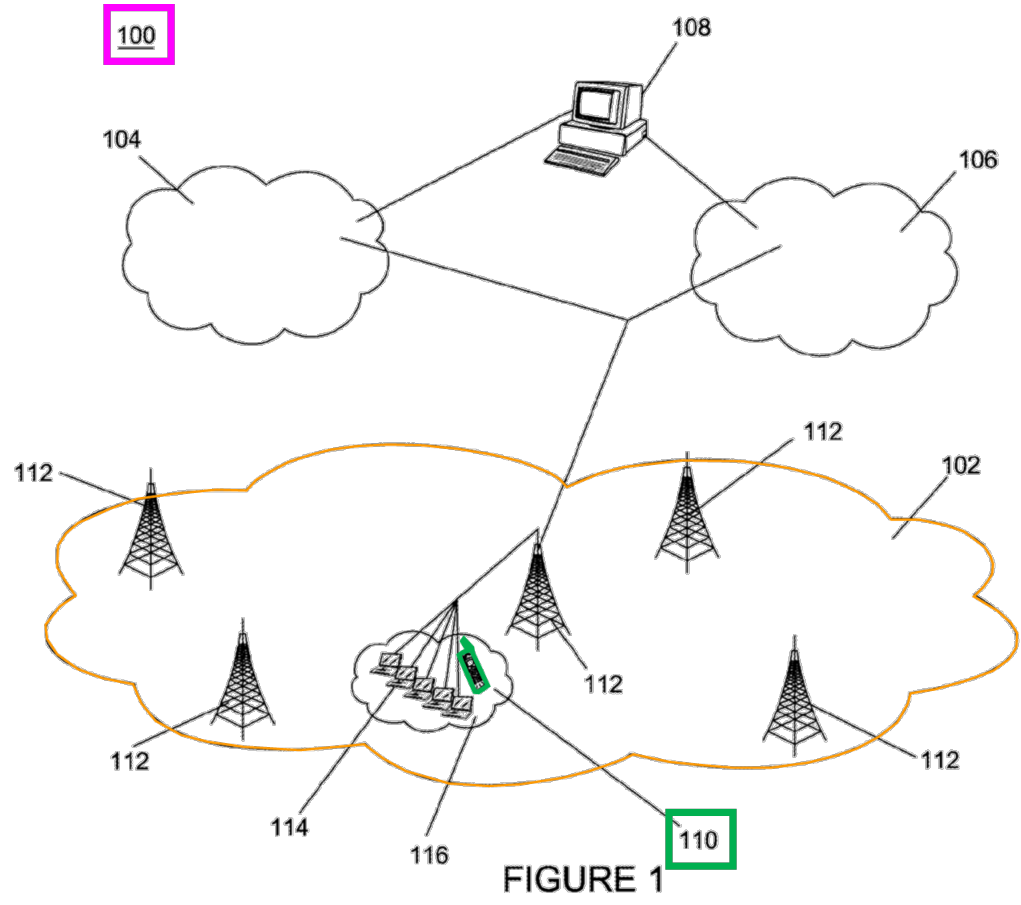


FIGURE 3

EX1005, Fig. 3 (annotated).

65. The cellular network 102 of Thomas “provides voice and data services to a wireless device 110 via wireless signals, such as wireless signals based on well established world wide standard transmission formats (e.g., GSM, CDMA, W-CDMA, UMTS, WiMAX, etc.) or any other wireless signals.”

EX1005, ¶25, Fig. 1.



EX1005, Fig. 1 (annotated). *Thomas* discloses that wireless device 110 “may utilize any cellular data network technology (e.g., 2.5G, 3G, 4G, or any future technology).” EX1005, ¶32. Accordingly, *Thomas*’s wireless device 110 includes a radio frequency front-end 300 and DSP 304, the “access network modem,” that communicates data over cellular network 102, the “access network,” via at least a 3G or 4G wireless network as claimed.

- c. 24[pre][ii]: “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,”

66. In my opinion, *Thomas* discloses 24[pre][ii]. As depicted in Figure 3, annotated below, *Thomas* discloses a **wireless network radio front end 318** that “provides communication capabilities for the **wireless device 110**.” EX1005, ¶34.

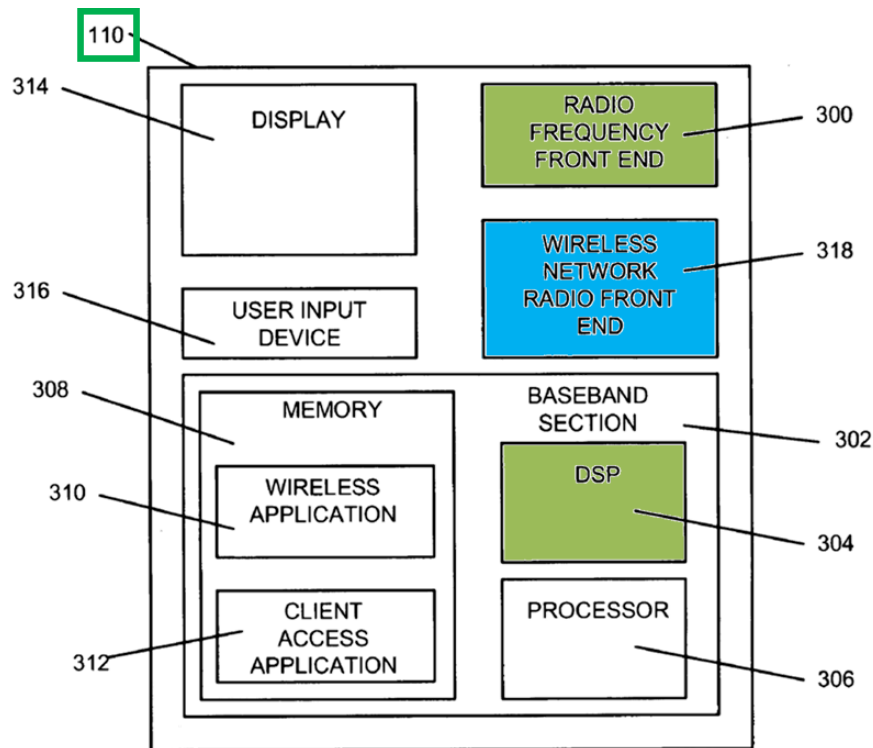
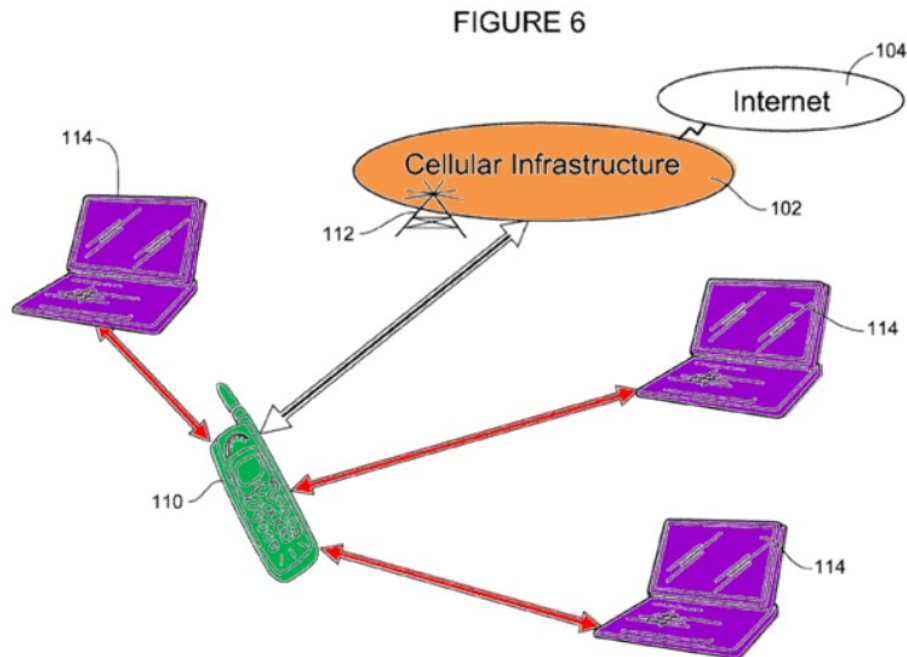


FIGURE 3

EX1005, Fig. 3. *Thomas*’s wireless device 110 also 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. Thus, as shown in Figure 6 annotated below, *Thomas*’s **wireless device 110** “provid[es] data services

to client computing devices 114 via a shorter range wireless local area network (WLAN) 116” using, for example, 802.11 WLAN. EX1005, ¶¶25-26, Fig. 6.



EX1005, Fig. 6 (annotated). Accordingly, in my opinion, *Thomas* discloses that the wireless network radio front end communicates with at least one computing device to provide access to the network infrastructure. EX1005, claim 7.

Accordingly, *Thomas*’s wireless device 110 includes a wireless network radio front end 318, the “local area network modem,” that communicates data over 802.11 WLAN 116, the “local area network,” via Wi-Fi.

- d. 24[pre][iii]: “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 including 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”

67. In my opinion, the *Thomas-Buddhikot* combination renders obvious 24[pre][iii]. 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.”

68. 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](#)

69. 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.

70. 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.

71. *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.

72. 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 24[pre][iii]. In this Declaration, I may refer to *Thomas*'s hotspot device modified with *Buddhikot*'s teachings as the *Thomas-Buddhikot* hotspot device.

e. 24[pre][iv]: “a service processor configured to”

73. In my opinion, *Thomas* discloses 24[pre][iv]. As shown in Figure 3, annotated below, *Thomas* discloses that its wireless device 110 includes processor 306, the “service processor,” 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 a “service processor” because it provides processing capabilities to implement the network access forwarding service.

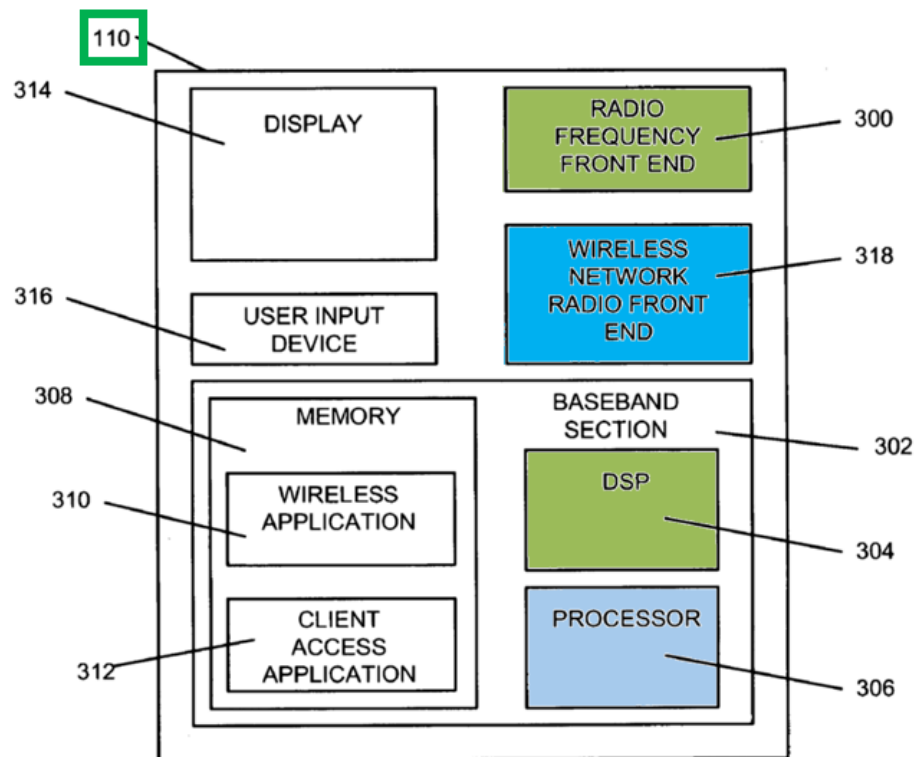


FIGURE 3

EX1005, Fig. 3 (annotated).

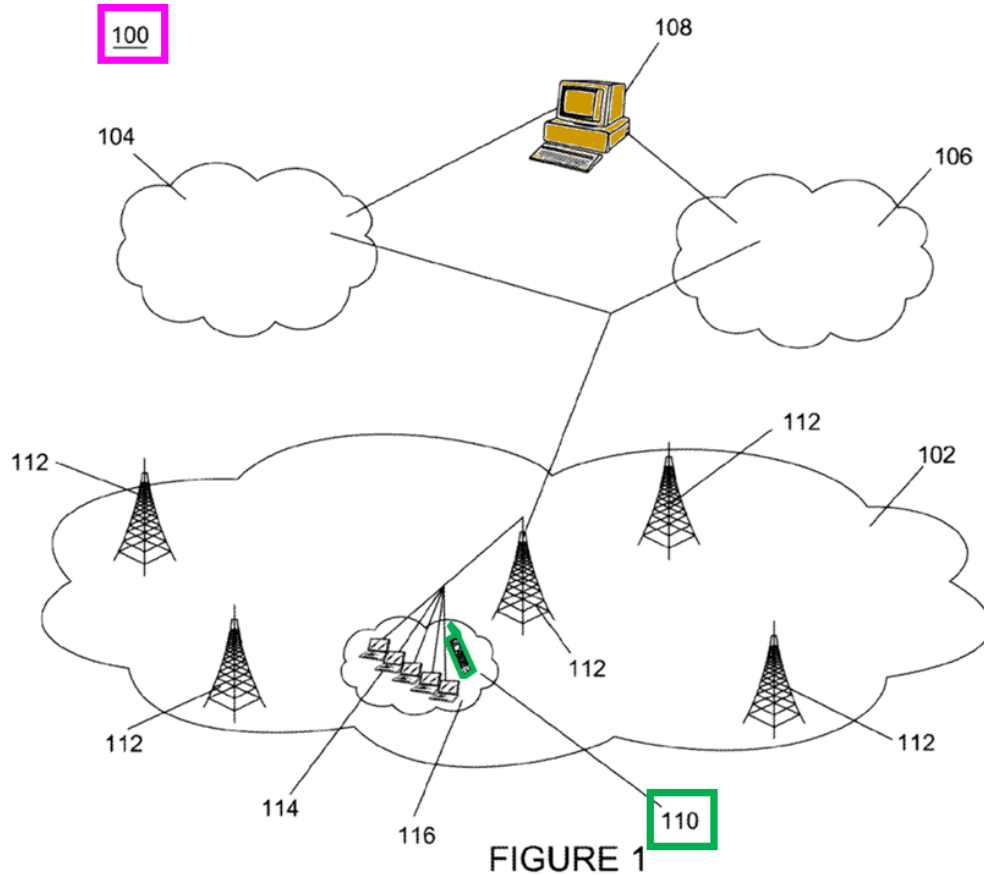
- f. 24[pre][v]: “send one or more messages including information regarding a user response for activating the access network forwarding service to the network system,”

74. In my opinion, *Thomas* discloses 24[pre][v]. *Thomas* discloses that “[w]hen the user of the wireless device 110 starts the client access application 312, a start message is sent from the wireless device 110 to the server 108.” EX1005, ¶58, Fig. 7. In my opinion, one of skill in the art would have understood that starting the client access application 312 constitutes a user response requesting activation of *Thomas*’s hotspot device. For example, as disclosed by *Thomas*, the

start message “includes parameters, such as message type, phone international mobile equipment identification (IMEI), cell identifier, software version, and comments.” EX1005, ¶62. Therefore, *Thomas*’s hotspot device sends the start message, the “one or more messages,” which include parameters, the “information regarding a user response,” to server 108, which is part of *Thomas*’s network system 100. *Supra* §XI.2.g. In my opinion, one of skill in the art would have understood that processor 306 of *Thomas*’s hotspot device would have caused the start message to be sent to server 108 because “processor 306 provides computational and processing capabilities for the wireless device 110 and includes signal processing capabilities to perform signal and channel correlations.” EX1005, ¶33.

**g. 24[a]: “the network system comprising: one or more
activation servers configured to:”**

75. In my opinion, *Thomas* discloses 24[a]. As depicted in Figure 1, annotated below, *Thomas* discloses that “cellular (telephone) network 102 connects via an Internet 104 connection . . . to a **server 108**” in network 100. EX1005, ¶24.



EX1005, Fig. 1 (annotated). *Thomas* discloses that “[i]n response to determining whether the wireless device 110 is authorized, the server 108 sends a start response message (line 2) to the requesting wireless device 110.” EX1005, ¶59. Therefore, in my opinion, *Thomas*’s server 108 is an activation server as claimed because it allows wireless device 110 to become activated to provide services to other client devices.

- h. 24[a][i]: “receive the one or more messages from the service processor of the first end point device, the one

or more messages including information regarding the user response;

76. In my opinion, *Thomas* discloses 24[a][i]. According to *Thomas*, activation server 108 receives a **start message**, the “one or more messages,” including **one or more parameters**, the “information regarding the user response,” from **processor 306**, the “service processor,” of *Thomas*’s **hotspot device**, the “first end point device.” *Supra* §XI.2.f.

i. 24[a][ii]: “perform an activation sequence in response to receiving the information regarding the user response from the service processor; and”

77. In my opinion, *Thomas* discloses 24[a][ii]. For example, *Thomas* discloses that server 108 receives a start message from wireless device 110 and then determines whether the requesting device is authorized to operate within *Thomas*’s network. EX1005, ¶59 (“In response to determining whether the wireless device 110 is authorized, the server 108 sends a start response message (line 2) to the requesting wireless device 110.”), Fig. 7. In my opinion, *Thomas*’s server 108 performs an activation sequence that permits *Thomas*’s hotspot device to act as an ad hoc point of presence device by determining whether the hotspot device is authorized to operate in the network and sending a start response message.

j. 24[a][iii]: “provision at least one of the first end point device and one or more network elements to allow the

access network forwarding service to be provided on the first end point device; and.”

78. In my opinion, *Thomas* discloses 24[a][iii]. For example, *Thomas* discloses providing to *Thomas*’s hotspot device a service level and parameters such as “number of available IP addresses, base IP address, lease time, short lease time, . . . data amount remaining, byte count on/off, [and] port restriction on/off.” EX1005, ¶59. Based on my review of the ’425 patent, the specification describes that “provisioning includes assigning, programming or embedding into the device . . . level of service activity, referred to as service profile.” EX1001, 120:66-121:3. Therefore, by providing the service level and parameters information to *Thomas*’s hotspot device (the first end point device), server 108 in *Thomas*’s network system 100 provisions *Thomas*’s hotspot device to allow the access network forwarding service. EX1005, ¶59.

k. 24[b]: “a service controller configured to:”

79. In my opinion, *Thomas* discloses 24[b]. For example, as reflected in Figure 3, annotated below, *Thomas*’s server 108 includes processor 402, which is a service controller that “provides computational and processing capabilities for the server 108.” EX1005, ¶38, Fig. 4; *see also* EX1001, 16:9-22 (“[N]etwork control of the service policy settings and services as discussed above is accomplished with

the service controller 122 which in various embodiments includes one or more server functions.”).

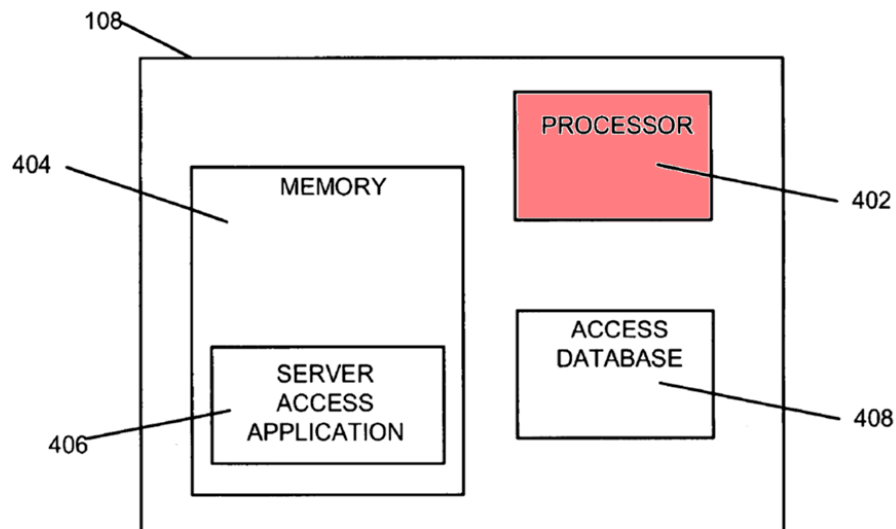


FIGURE 4

EX1005, Fig. 4 (annotated).

- I. **24[b][i]: “obtain a service profile including one or more access network forwarding settings for the access network forwarding policy, the one or more access network forwarding settings including one or more restriction settings on the access network forwarding service, at least one of the access network forwarding settings identifying which access network route or traffic redirection is to be used by the first end point device when attempting to forward traffic**

**between the one or more additional end point devices
and the access network; and”**

80. In my opinion, the *Thomas-Buddhikot* combination discloses 24[b][i]. *Thomas* discloses that server 108 provides the hotspot device with a service level. *Supra* § XI.2.j. *Thomas*’s server 108 as modified with *Buddhikot*’s teachings would provide the *Thomas-Buddhikot* hotspot device with firewalling and packet-mangling rules.

81. In my opinion, *Buddhikot*’s firewalling and packet-mangling rules are access network forwarding settings included in a service profile because processor 306, the “service processor,” of the *Thomas-Buddhikot* hotspot device forwards data based on these settings. As I explained above, in my opinion, one of ordinary skill would have found it obvious to modify *Thomas*’s server to provide the firewalling and packet-mangling rules of *Buddhikot* to *Thomas*’s hot-spot device. *Supra* §XI.1. As I discussed, *Buddhikot*’s firewalling rules implemented in the *Thomas-Buddhikot* hotspot device would protect both the *Thomas-Buddhikot* hotspot device and client devices connected to the *Thomas-Buddhikot* hotspot device from traffic coming from malicious sources. EX1016, ¶75; *supra* §XI.2.d. Accordingly, in my opinion, one of ordinary skill would have understood that the firewall rules constitute restriction settings as claimed because these firewall rules prevent traffic flow through the *Thomas-Buddhikot* hotspot device when traffic

flow originates from malicious sources. As also discussed above, *Buddhikot*'s packet-mangling rules implemented in the *Thomas-Buddhikot* hotspot device would determine which access network route (e.g., when forwarding traffic to a web server) or redirection (e.g., when forwarding traffic to a local cache) should be used by the *Thomas-Buddhikot* hotspot device when attempting to forward traffic between client devices connected to the *Thomas-Buddhikot* hotspot device and the cellular network 102. *Supra* §XI.2.d.

- m. **24[b][ii]: “transmit the one or more access network forwarding settings to at least one selected from the group consisting of the first end point device and at least one of the one or more network elements.”**

82. In my opinion, the *Thomas-Buddhikot* combination discloses 24[b][ii]. As I discussed, the *Thomas-Buddhikot* server would provide or “transmit” *Buddhikot*'s firewall and packet-mangling rules to the *Thomas-Buddhikot* hotspot device. *Supra* §XI.2.j.

- 3. **Claim 25: “The network system of claim 24, wherein the one or more messages includes credentials specific to the first end point device, and wherein the activation sequence is specific to the credentials.”**

83. In my opinion, *Thomas* discloses claim 25. For example, *Thomas* discloses a start message sent from wireless device 110 to server 108. EX1005, ¶58. The start message sent from wireless device 110 “includes parameters, such as

message type, phone international mobile equipment identification (IMEI), cell identifier, software version, and comments.” EX1005, ¶58. In my review of the '425 patent, the specification explains that “one or more device parameters (e.g., service owner, device type, OEM, plan type, IP address, security credential and/or software version) are used to determine what the appropriate network provisioning steps and/or settings.” EX1001, 135:27-35. Accordingly, the one or more device parameters of *Thomas* are credentials specific to *Thomas*’s wireless device 110, the “first end point device.”

84. *Thomas*’s server 108 determines, in response to the start message, whether wireless device 110 is authorized to operate within *Thomas*’s network. EX1005, ¶59. As *Thomas* discloses, “[i]n response to determining whether the wireless device 110 is authorized, the server 108 sends a start response message . . . to the requesting wireless device 110.” EX1005, ¶59. In my opinion, the activation sequence of *Thomas* is specific to that device’s credentials because the server determines whether the specific end point device is authorized to operate within the network based on the start message, including device parameters, or “credentials.”

4. **Claim 26: “The network system of claim 24, wherein a first activation server is configured to re-route the first end point device to a second activation server based on a credential**

received from the first end point device or based on a query-response sequence.”

85. In my opinion, *Thomas* discloses claim 26. For example, *Thomas* discloses an “add client message” that contains “add client message parameters” including “identification information associated with a billing account for the client computing device 114 [that] may be sent to the server 108 to allow billing for data services.” EX1005, ¶62. Based on my review of the ’425 patent, the specification defines a service account “associated with some portion of the credentials.” EX1001, 144:61-145:15. Therefore, parameters such as identification information associated with a billing account constitute a credential as claimed.

86. *Thomas* discloses that “the tasks associated with the server 108 may be divided between two servers.” EX1005, ¶86. For example, *Thomas* discloses an “authorization server 1202” and a “billing server 1204 connected to the network infrastructure [that] may interact with the authentication server 1202.” EX1005, ¶86. *Thomas* also discloses that “one or more metrics characterizing the connection session may be communicated to the billing server 1204 as the billing server 1204 has a billing relationship with the user of the client computing device 114.” EX1005, ¶87. In my opinion, communicating metrics regarding a connection session from an authorization server, “a first activation server,” to a billing server,

“a second activation server,” constitutes re-routing *Thomas*’s hotspot device to a second activation server based on a credential as claimed.

5. **Claim 27: “The network system of claim 24, wherein the one or more **activation servers** are further configured to provision the **first end point device** by transmitting software for updating the service processor of the **first end point device**.”**

87. In my opinion, *Thomas* discloses claim 27. *Thomas* discloses that a “client access application 312 can provide application-level point of presence capabilities within the **wireless device 110**.” EX1005, ¶34. According to *Thomas*, “[s]cheduled upgrades for the current version of the client access applications 312 running throughout the network and for the server access applications 406 may be scheduled and performed” by **server 108**. EX1005, ¶41. Accordingly, in my opinion, *Thomas*’s **server 108** in network system 100 can provision **wireless device 110** by upgrading the client access application 312.

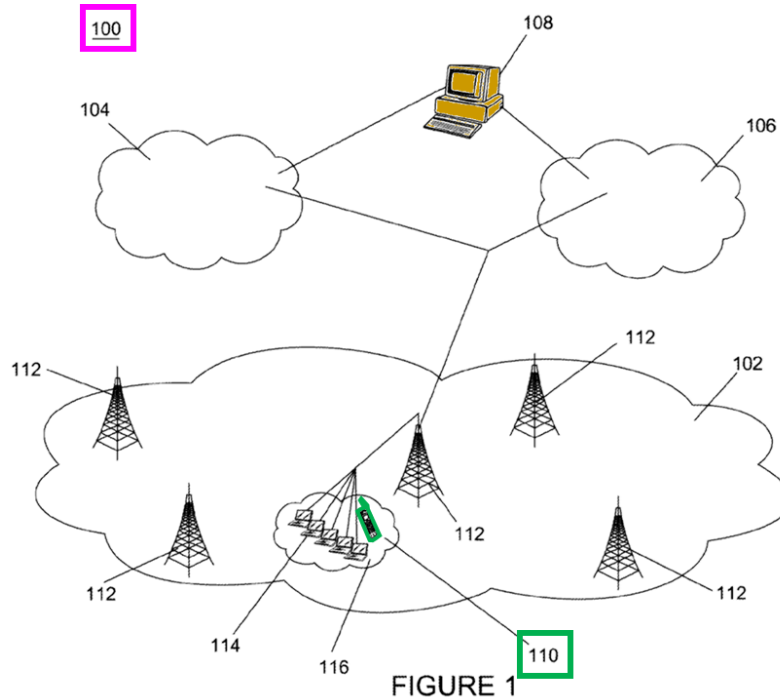
6. **Claim 28: “The network system of claim 24, wherein the one or more activation servers are operated by a virtual service provider, and wherein the virtual service provider bills a user of the first end point device for the access network forwarding service and provides a payment to a provider of the access network.”**

88. In my opinion, *Thomas* discloses claim 28. For example, *Thomas* discloses that the forwarding service may be hosted by a mobile virtual network operator (“MVNO”), which *Thomas* explains “is a company that does not own any

licensed frequency spectrum, but resells wireless services under their own brand name, using the network of another mobile phone operator.” EX1005, ¶¶81, 94. *Thomas* discloses that the MVNO, the “virtual service provider,” may provide server 108. *Thomas* further discloses that “[b]illing measures are established for use of the network infrastructure by a computing device.” EX1005, ¶79. The MVNO of *Thomas* resells wireless services, so it would bill a user of the *Thomas-Buddhikot* hotspot device for use of the access network forwarding service and provide a payment to a provider of the access network.

7. Claim 29: “The network system of claim 24, wherein the one or more network elements include at least one of an authentication and authorization server, a billing system, and one or more gateways.”

89. In my opinion, *Thomas* discloses claim 29. As I explained above in 24[a] and as depicted in Figure 1 annotated below, *Thomas*’s network system 100 includes at least one server 108. *Supra* §XI.2.g; EX1005, Fig. 1.



EX1005, Fig. 1 (annotated). *Thomas* further discloses that “the tasks associated with the server 108 may be divided between two servers.” EX1005, ¶86. For example, *Thomas* discloses that an “authorization server 1202 provides authorization for communication to the network infrastructure . . . [and a] billing server 1204 connected to the network infrastructure may interact with the authentication server 1202.” EX1005, ¶86. Accordingly, in my opinion, *Thomas* discloses at least an authentication and authorization server 1202.

8. Claim 30: “The network system of claim 29, wherein the service controller is further configured to assign the data to one or more specific access network routing paths.”

90. In my opinion, *Thomas* discloses claim 30. For example, *Thomas* discloses that a firewall may operate on wireless device 110 or server 108.

EX1005, ¶42. As explained for 24[pre][iii], the firewall service on the *Thomas-Buddhikot* hotspot device may block the transfer of packets that originate from a malicious source to prevent malicious attacks on the clients and the *Thomas-Buddhikot* hotspot device and allows packets to be transferred between WWAN and WLAN based on firewall rules. *Supra* §XI.2.d. Because *Thomas*'s firewall can operate on server 108, processor 402 of server 108, the "service controller," would be configured to block the transfer of packets to prevent malicious attacks on the clients and the *Thomas-Buddhikot* hotspot device and allow packets to be transferred between WWAN and WLAN based on firewalling and packet-mangling rules (e.g., "assign the data to one or more specific access network routing paths") in a manner similar to processor 306 of *Thomas*'s hotspot device. *Supra* §XI.2.d.

9. Claim 31: "The network system of claim 24, wherein at least one of the one or more access network forwarding settings configures the forwarding agent to begin providing the forwarding of the data."

91. In my opinion, the *Thomas-Buddhikot* combination discloses claim 31. As O explained in 24[b][i], *Buddhikot*'s firewalling and packet-mangling rules are access network forwarding settings as claimed. *Supra* §XI.2.1. As I explained in 24[pre][iii], *Thomas*'s **software** configured to forward data, the "policy implementation agent," between the **radio frequency front end** and the **wireless**

network radio front end, and the firewall, the “firewall agent,” of *Thomas*’s hotspot device constitute the claimed forwarding agent. *Supra* §XI.2.d. As I also explained in 24[pre][iii], the firewall service of the *Thomas-Buddhikot* hotspot device is configured to forward or redirect data based on packet-mangling rules. *Supra* §XI.2.d. Accordingly, in my opinion, in the case of a cache miss, the forwarding agent of the *Thomas-Buddhikot* hotspot device would be configured to forward web requests, “data,” received from a client device connected to the *Thomas-Buddhikot* hotspot device to a web server via the cellular network. EX1016, ¶113; *supra* §XI.2.d.

10. Claim 32: “The network system of claim 24, wherein at least one of the one or more access network forwarding settings is a function of a network congestion state.”

92. In my opinion, the *Thomas-Buddhikot* combination discloses claim 32. As I explained in 24[b][i], the firewalling and packet-mangling rules of *Buddhikot* are the access network forwarding settings included in a service profile because processor 306, the “service processor,” of the *Thomas-Buddhikot* hotspot device forwards data based on these settings. *Supra* §XI.2.1.

93. *Thomas* also discloses that forwarding service usage can be metered based on “peak or off-peak usage, or elevated quality of service requirements such as may be required for latency sensitive applications.” EX1005, ¶54. Therefore, in

my opinion, *Thomas* discloses forwarding data through its hotspot device based on quality of service.

94. *Buddhikot* discloses providing “Quality of Service in the form of multiple service classes, each with a guaranteed minimum bandwidth.” EX1016, ¶78. According to *Buddhikot*, if “extra bandwidth is available, users can exceed their minimum rate, with high class users getting the priority to grab excess resources.” EX1016, ¶78 *Buddhikot*’s gateway 40 “control[s] the amount of traffic which competes for resources, instead of prioritizing traffic when congestion occurs.” EX1016, ¶79. For example, “[a]t first, a single user gets 3.5 Mbps . . . [and as] a second and a third user arrives, they all get equal share of the available bandwidth which is around 4.5 Mbps,” such that “each user has the same QoS level.” EX1016, ¶177. Therefore, in my opinion, *Buddhikot* discloses data forwarding settings that adjust the available bandwidth based on network congestion.

95. As I explained above, one of skill in the art would have found it obvious to implement *Buddhikot*’s congestion management scheme as part of the access network forwarding settings implemented on *Thomas*’s hotspot device. *Supra* §XI.1.b.

11. Claim 34: “The network system of claim 24, wherein the one or more restriction settings includes a setting for

enabling or disabling the access network forwarding service.”

96. In my opinion, the *Thomas-Buddhikot* combination discloses claim 34. As I explained 24[pre][iii], the firewall service of the *Thomas-Buddhikot* hotspot device is configured to use packet filtering rules to protect the *Thomas-Buddhikot* hotspot device and/or client devices connected to the *Thomas-Buddhikot* hotspot device from malicious attacks. *Supra* §XI.2.d. In my opinion, one of skill in the art would have understood that firewall rules would block data flow through the *Thomas-Buddhikot* hotspot device if the data originated from a malicious source. In my opinion, a POSITA would have also understood that, by blocking data flow in this manner, the firewall rules in the *Thomas-Buddhikot* hotspot device would implement a restriction setting to disable the flow of data between client devices connected to the *Thomas-Buddhikot* hotspot device and the cellular network 102, which would thereby disable the access network forwarding service.

12. Claim 36: “The network system of claim 34, wherein a particular restriction setting is on a usage of a forwarding connection of the access network forwarding service, wherein the forwarding connection connects the one or more additional end point devices to the access network via the forwarding agent.”

97. In my opinion, the *Thomas-Buddhikot* combination discloses claim 36. *Thomas* discloses that “multiple client computing devices 114 may join during

an active session of the client access application 312.” EX1005, ¶64. Therefore, in my opinion, *Thomas*’s hotspot device provides a forwarding connection that allows more than one client devices 114 to exchange data with *Thomas*’s cellular network 102. As I explained for claim 32, data is forwarded in the *Thomas-Buddhikot* hotspot device based on QoS rules as taught by *Buddhikot*. *Supra* §XI.10. As I also explained, the QoS rules restrict the bandwidth for multiple connected client devices so that all connected client devices may continue to exchange data with the cellular network 102. *Supra* §XI.10. In my opinion, one of skill in the art would have understood that the QoS rules of *Buddhikot* that cause bandwidth restrictions would constitute restriction settings on the forwarding connection usage of the *Thomas-Buddhikot* hotspot device.

13. Claim 40: “The network system of claim 24, wherein the service controller is further configured to provide a forwarding service notification to the first end point device or to an additional end point device during use of the access network forwarding service.”

98. In my opinion, *Thomas* discloses claim 40. For example, as depicted in Figure 9 below, *Thomas* discloses a “user interface screen 900 . . . that provides connection information for the wireless device 110.” EX1005, ¶76, Fig. 9.

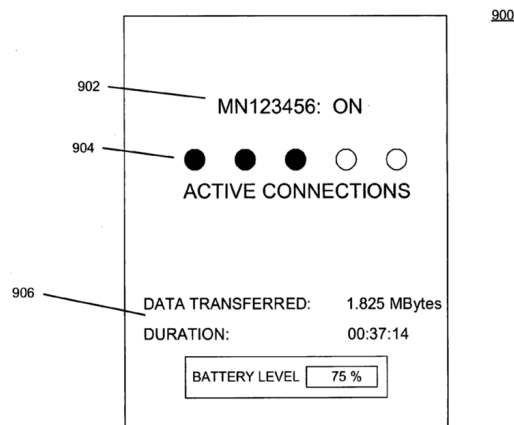


FIGURE 9

EX1005, Fig. 9. *Thomas* also discloses notifications that “provide[] detailed information, such as transferred data quantities, duration of the present session, and battery level.” EX1005, ¶76. The notifications of *Thomas* include a “startup ... message display sequence” associated with activating the forwarding service because the startup messages involve requesting authorization from server 108 to run application 312. EX1005, ¶¶59, 77, Fig. 10. The notifications as disclosed by *Thomas* also include an “activation status” indicating if the forwarding service is on and notifications of authorized devices.

- 14. Claim 41: “The network system of claim 40, 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.”**

99. In my opinion, *Thomas* discloses claim 41.

Thomas discloses notifications that include a “startup ... message display sequence” associated with activating the forwarding service because the startup

messages involve requesting authorization from server 108 to run application 312. EX1005, ¶¶59, 77, Fig. 10. The notifications of *Thomas* also include an “activation status” that indicates whether the forwarding service is on and notifications of authorized devices. Accordingly, *Thomas* discloses providing a forwarding service notification when the access network forwarding service is enabled.

100. *Thomas* also discloses that a “roaming management function may be performed to run on top of the WAN transport supplied by a given carrier.” EX1005, ¶71. According to *Thomas*, “data plans may be provided by which a user may include roaming within the plan coverage.” EX1005, ¶71. Therefore, *Thomas* discloses that connection of *Thomas*’s hotspot device to the cellular network 102 may be a roaming connection. In my opinion, one of ordinary skill would have understood that the forwarding service notification disclosed by *Thomas* is provided when the access network is a roaming access network.

15. **Claim 42: “The network system of claim 40, 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.”**

101. In my opinion, *Thomas* discloses claim 42. As depicted in Figure 9, annotated below, *Thomas* discloses a user interface that provides “detailed information, such as transferred data quantities, duration of the present session, and battery level.” EX1005, ¶76, Fig. 9. As shown in Figure 9, *Thomas*’s user interface displays a notification about the amount of usage of the access network forwarding service. EX1005, ¶76, Fig. 9 (“DATA TRANSFERRED”).

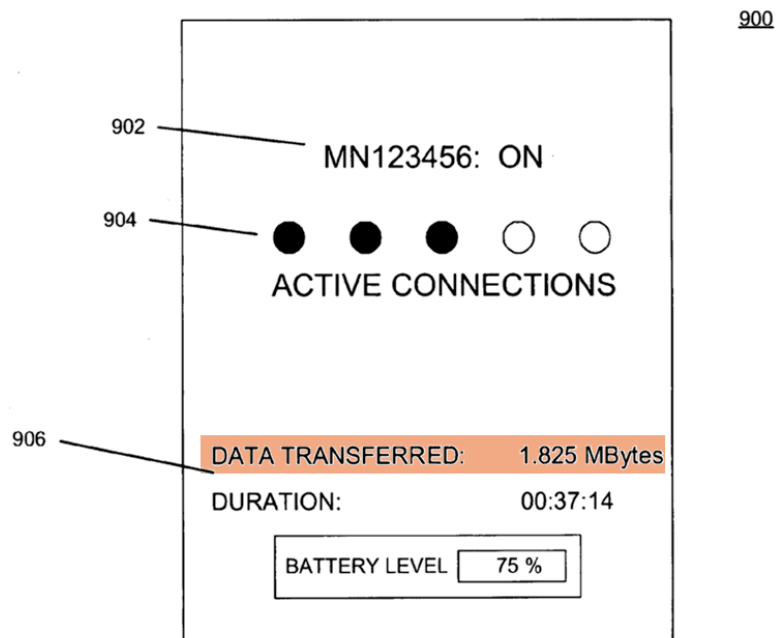


FIGURE 9

EX1005, Fig. 9 (annotated).

16. Independent Claim 44

a. 44[pre]: “A method comprising:”

102. In my opinion, *Thomas* discloses 44[pre]. As shown below, Figure 11 of *Thomas* depicts a process for providing mobile network access. EX1005, ¶¶21, 79.

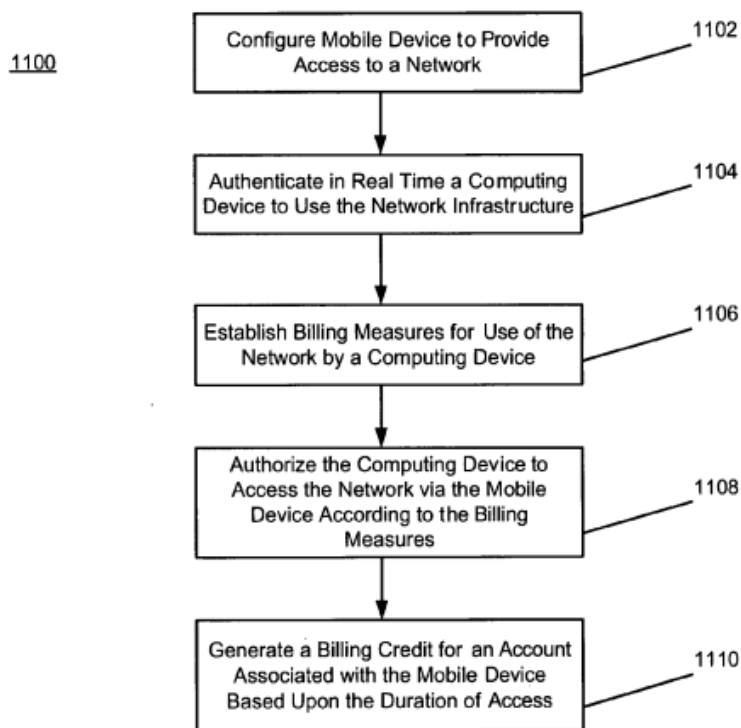


FIGURE 11

EX1005, Fig. 11. As explained below, the *Thomas-Buddhikot* network environment, which includes the *Thomas-Buddhikot* hotspot device, performs all the claimed method steps.

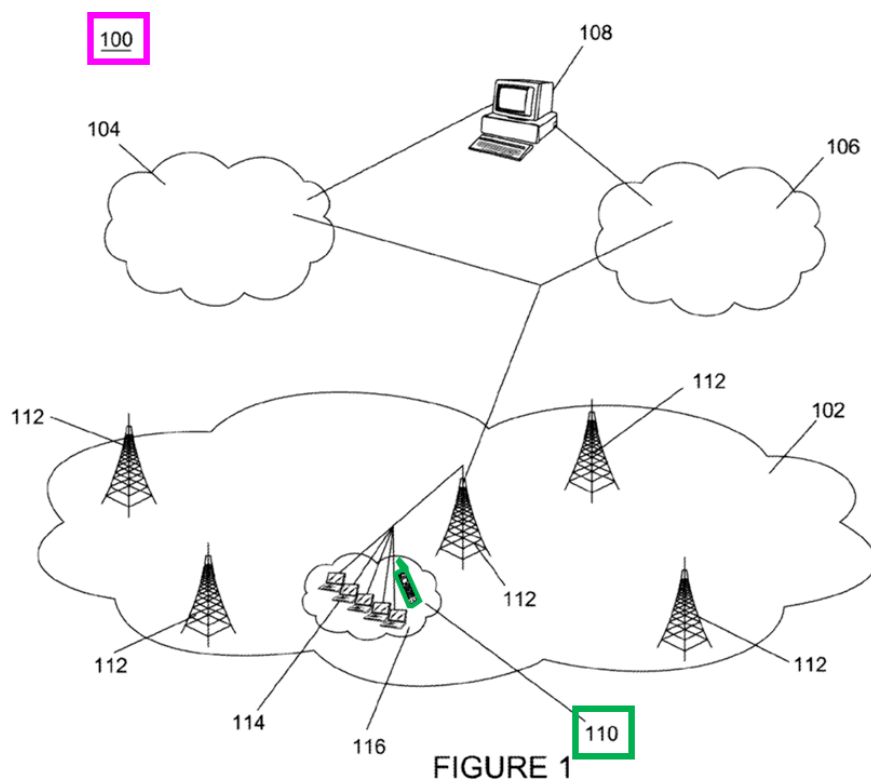
b. 44[a][i]: “receiving, at a service design system, first service plan elements of a first service plan for using

an access network forwarding service, the access network forwarding service to be used by a first end point device,”

103. In my opinion, the *Thomas-Buddhikot* combination discloses 44[a][i], as I discuss below in section 44[b][i].

- c. **44[b][i] “wherein the first service plan elements include one or more access network forwarding settings that define 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 first end point device when attempting to forward traffic between the one or more additional end point devices and the access network;”**

104. In my opinion, the *Thomas-Buddhikot* combination discloses 44[a][i] and 44[b][i]. As shown in Figure 1, *Thomas* discloses a network environment 100. EX1005, ¶24, Fig. 1. In my opinion, one of ordinary skill would have understood that *Thomas*’s network environment 100 as modified by *Buddhikot* is a service design system as claimed. For example, as I explained for 24[pre], and as depicted in Figure 1 annotated below, *Thomas*’s network environment 100 includes wireless device 110, the “first end point device,” capable of providing data services to client computing devices 114 by communicating normal traffic through the wireless device 110 to reach a network (e.g., “using an access network forwarding service”). EX1005, ¶¶25, 47, Fig. 1; *supra* §XI.2.a.



EX1005, Fig. 1 (annotated).

105. The table below compares limitation 44[b][i] with 24[b][i] with corresponding recitations in bold font.

Claim 44[b][i]	Claim 24[b][i]
wherein the first service plan elements include one or more access network forwarding settings that define 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 first end point device when attempting to forward traffic between the one or more additional end point devices and the access network	obtain a service profile including one or more access network forwarding settings for the access network forwarding policy, the one or more access network forwarding settings including one or more restriction settings on the access network forwarding service, at least one of the access network forwarding settings identifying which access network route or traffic redirection is to be used by the first end point device when attempting to forward traffic between the one or more additional end point devices and the access network

106. Accordingly, in my opinion, the service plan elements of claim 44[b][i] correspond to access network forwarding settings of the service profile of claim 24[b][i]. As I explained for 24[b][i], the *Thomas-Buddhikot* hotspot device receives access network forwarding settings, including QoS, firewall, and packet-mangling rules from the *Thomas-Buddhikot* server. *Supra* §XI.2.1. *Thomas* discloses that server 108 provides the hotspot device with a service level. *Supra* § XI.2.j. *Thomas*'s server 108 as modified with *Buddhikot*'s teachings would provide the *Thomas-Buddhikot* hotspot device with firewalling and packet-mangling rules.

107. In my opinion, *Buddhikot*'s firewalling and packet-mangling rules are access network forwarding settings included in a service profile because

processor 306, the “service processor,” of the *Thomas-Buddhikot* hotspot device forwards data based on these settings. As I explained above, in my opinion, one of ordinary skill would have found it obvious to modify *Thomas*’s server to provide the firewalling and packet-mangling rules of *Buddhikot* to *Thomas*’s hot-spot device. *Supra* §XI.1. As I discussed, *Buddhikot*’s firewalling rules implemented in the *Thomas-Buddhikot* hotspot device would protect both the *Thomas-Buddhikot* hotspot device and client devices connected to the *Thomas-Buddhikot* hotspot device from traffic coming from malicious sources. EX1016, ¶75; *supra* §XI.2.d. Accordingly, in my opinion, one of ordinary skill would have understood that the firewall rules constitute restriction settings as claimed because these firewall rules prevent traffic flow through the *Thomas-Buddhikot* hotspot device when traffic flow originates from malicious sources.

108. As also discussed above, *Buddhikot*’s packet-mangling rules implemented in the *Thomas-Buddhikot* hotspot device would determine which access network route (e.g., when forwarding traffic to a web server) or redirection (e.g., when forwarding traffic to a local cache) should be used by the *Thomas-Buddhikot* hotspot device when attempting to forward traffic between client devices connected to the *Thomas-Buddhikot* hotspot device and the cellular network 102. *Supra* §XI.2.d.

109. As also explained, a POSITA would have been motivated to implement *Buddhikot*'s QoS, firewall, and packet-mangling rules in *Thomas*'s hotspot device with a reasonable expectation of success. *Supra* §XI.1.a. Thus, for the same reasons discussed above for 24[b][i], the *Thomas-Buddhikot* combination renders obvious elements 44[a][i] and 44[b][i].

- d. **44[a][ii]: “the first end point device including 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, and”**

110. In my opinion, *Thomas* discloses 44[a][ii]. As depicted in Figure 3, annotated below, *Thomas* discloses that **wireless device 110** includes a **radio frequency front-end 300** that “provides radio frequency (RF) control and signaling capabilities for bi-directional communication for the wireless device 110.” EX1005, ¶33. According to *Thomas*, **DSP 304** converts the signal from analog to digital or digital to analog and “modulates and demodulates data to process signaling received from or transmitted to the **RF front-end 300**.” EX1005, ¶33.

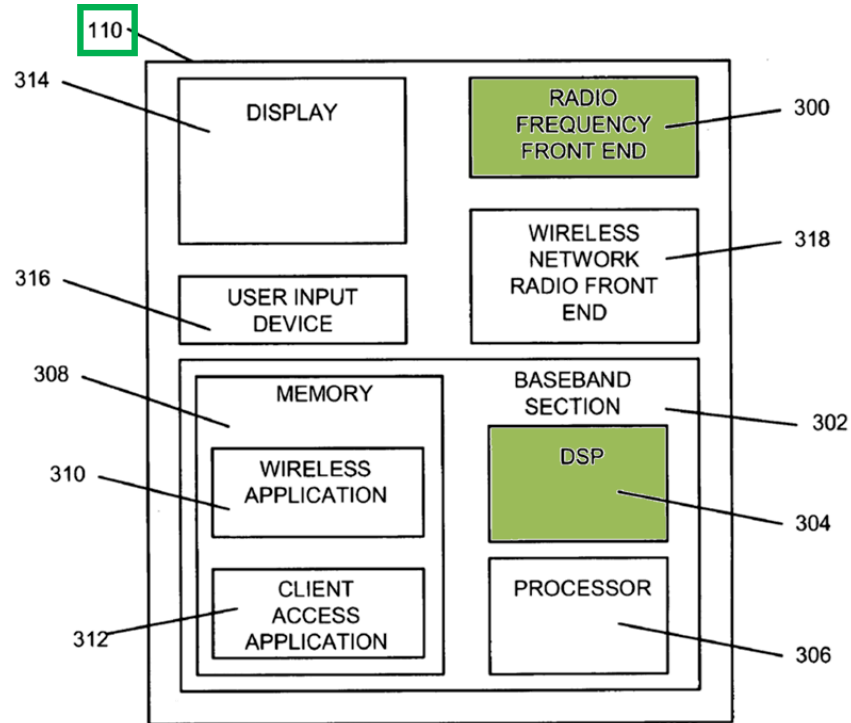
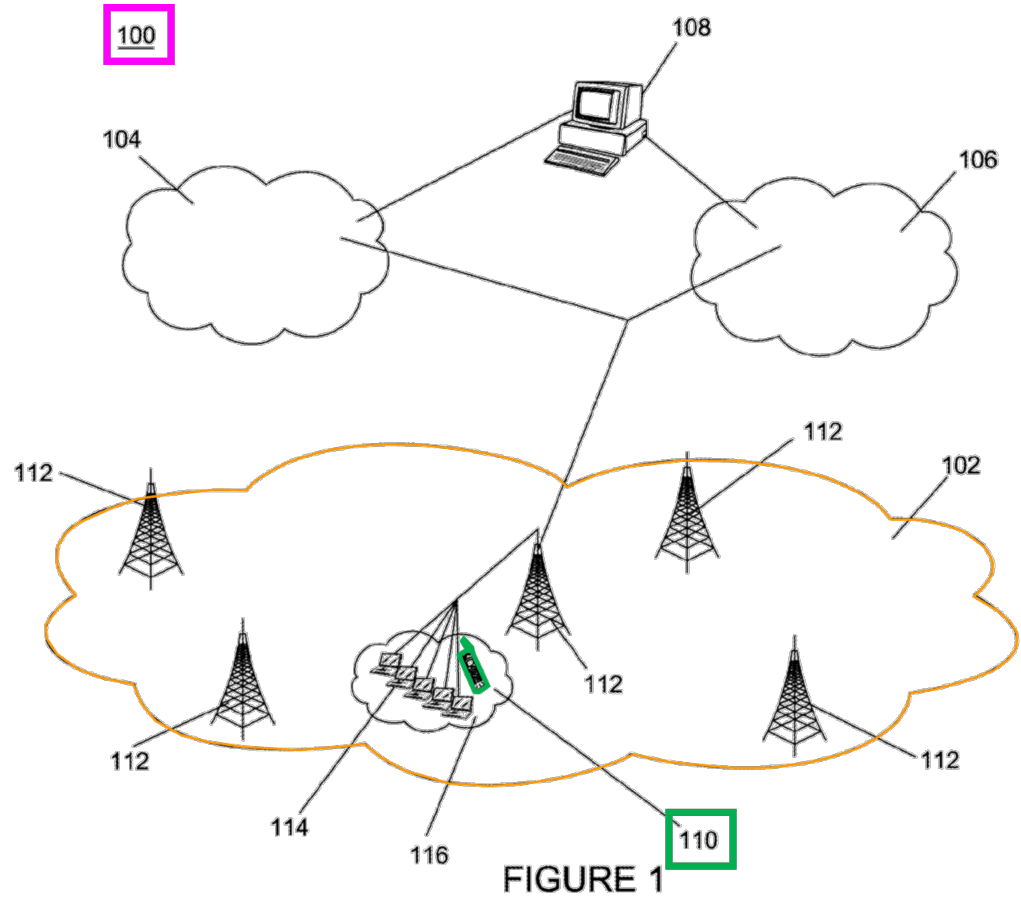


FIGURE 3

EX1005, Fig. 3 (annotated).

111. The cellular network 102 of Thomas “provides voice and data services to a wireless device 110 via wireless signals, such as wireless signals based on well established world wide standard transmission formats (e.g., GSM, CDMA, W-CDMA, UMTS, WiMAX, etc.) or any other wireless signals.”

EX1005, ¶25, Fig. 1.



EX1005, Fig. 1 (annotated). *Thomas* discloses that wireless device 110 “may utilize any cellular data network technology (e.g., 2.5G, 3G, 4G, or any future technology).” EX1005, ¶32. Accordingly, *Thomas*’s wireless device 110 includes a radio frequency front-end 300 and DSP 304, the “access network modem,” that communicates data over cellular network 102, the “access network, via 2.5G, 3G, 4G, or any future technology.

- e. 44[a][iii]: “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;

112. In my opinion, *Thomas* discloses 24[a][iii]. As depicted in Figure 3, annotated below, *Thomas* discloses a **wireless network radio front end 318** that “provides communication capabilities for the **wireless device 110**.” EX1005, ¶34.

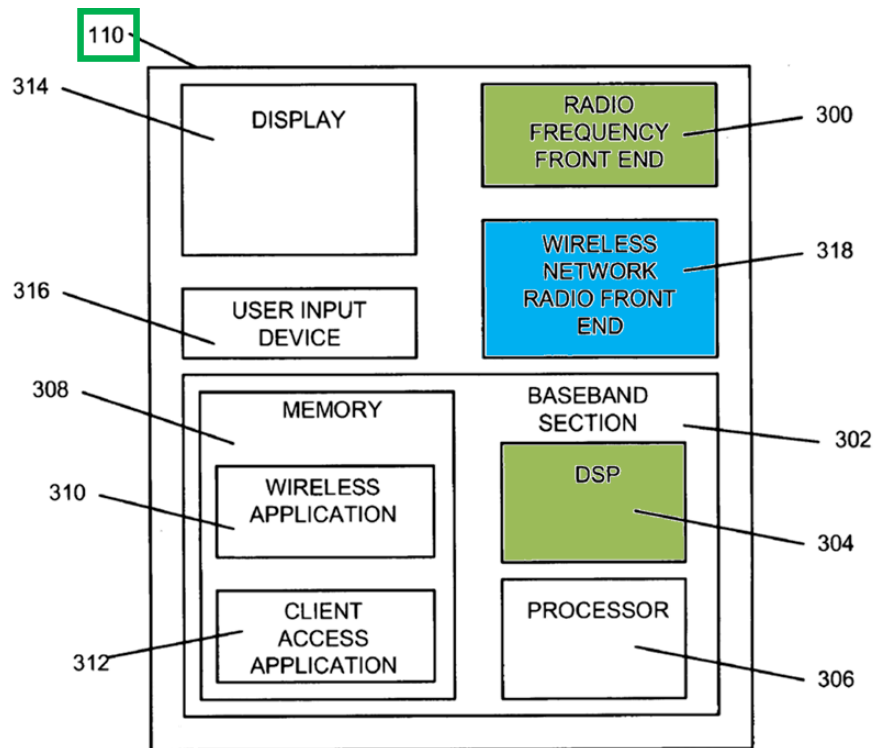
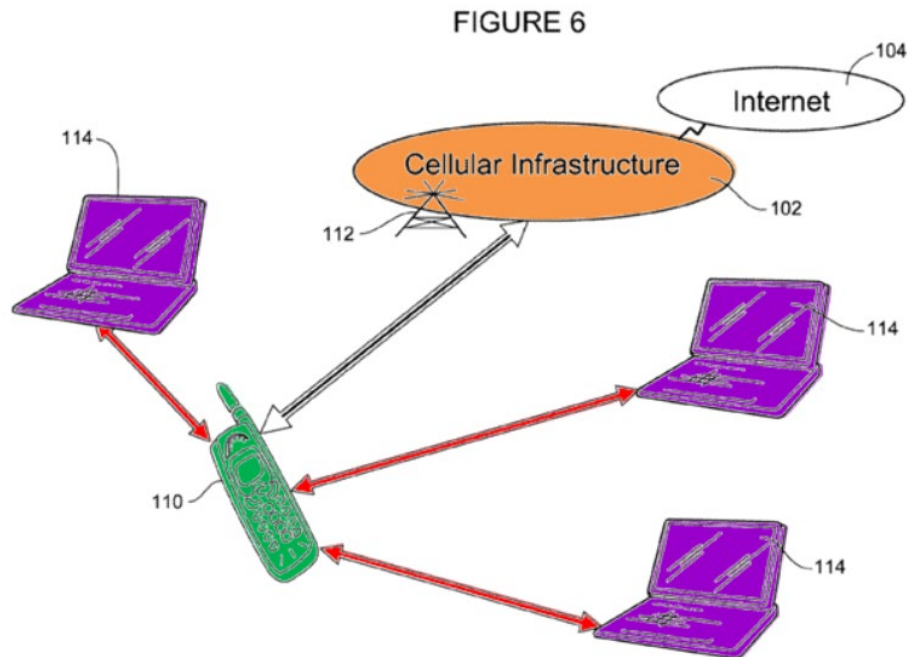


FIGURE 3

EX1005, Fig. 3. *Thomas*’s wireless device 110 also 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. Thus, as shown in Figure 6 annotated below, *Thomas*’s **wireless device 110** “provid[es] data services

to client computing devices 114 via a shorter range wireless local area network (WLAN) 116” using, for example, 802.11 WLAN. EX1005, ¶¶25-26, Fig. 6.



113. EX1005, Fig. 6 (annotated). Accordingly, in my opinion, *Thomas* discloses that the wireless network radio front end communicates with at least one computing device to provide access to the network infrastructure. EX1005, claim 7. Accordingly, *Thomas*’s wireless device 110 includes a wireless network radio front end 318, the “local area network modem,” that communicates data over 802.11 WLAN 116, the “local area network,” via Wi-Fi.

- f. 44[b]: “generating an access network forwarding policy based on the first service plan elements, the

access network forwarding policy defining a state of a forwarding connection, wherein the forwarding connection is configured to communicate the data between the one or more additional end point devices and the access network via the local area network modem and the access network modem,”

114. In my opinion, the *Thomas-Buddhikot* combination discloses 44[b]. As discussed in 24[b][i], the *Thomas-Buddhikot* hotspot device receives access network forwarding settings, including QoS, firewall, and packet-mangling rules from the *Thomas-Buddhikot* server. *Supra* §XI.2.1.

115. *Thomas* further discloses that in “response to receipt of the start message, the server 108 determines whether the requesting wireless device 110 is authorized to operate within the network.” EX1005, ¶59. According to *Thomas*, “server 108 sends a start response message” upon determining that the wireless device 110 is authorized. EX1005, ¶59. The “start response message” includes parameters such as a response (e.g., okay to run or never start) and a service level sent to the requesting wireless device 110. EX1005, ¶59. Thus, in my opinion, *Thomas*’s server 108 modified to include *Buddhikot*’s QoS, firewalling, and packet-mangling rules in the service level would generate the start message containing these access network forwarding settings. By generating the start message that contains the access network forwarding settings, the *Thomas*-

Buddhikot server generates the access network forwarding policy based on the first service plan elements (e.g., the access network forwarding settings).

116. The access network forwarding settings sent to the *Thomas-Buddhikot* hotspot device also include the “response (e.g., okay to run or never start).” EX1005, ¶59. Therefore, in my opinion, the access network forwarding policy, which is based on the first service plan elements, defines the state (“run or never start”) of the *Thomas-Buddhikot* hotspot device.

117. As discussed for 24[pre][iii], the *Thomas-Buddhikot* hotspot device provides a forwarding connection, or forwarding service, to allow data to flow between its **radio frequency front end 300** (e.g., “access network modem”) and its **wireless network radio front end** (e.g., “local area network modem”). *Supra* §XI.2.d. For example, as discussed in 24[pre][iii], *Thomas*’s wireless device 110 communicates with cellular network 102 via its **radio frequency front end** and with client computing devices 114 through a local area network via its **wireless network radio front end**. EX1005, ¶¶25-26,33-34, Fig. 3. In my opinion, one of ordinary skill would have understood that communicating traffic through wireless device 110 from client computing device 114 to reach Internet 104 would involve forwarding that traffic between the **radio frequency front end**, the “**access network modem**,” and the **wireless network radio front end**, the “**local area network**

modem.” Therefore, in my opinion, determining a state (e.g., “run or never start”) of the *Thomas-Buddhikot* hotspot device also determines the state—active or inactive—of the forwarding connection provided by the *Thomas-Buddhikot* hotspot device.

g. 44[c]: “associating the first end point device with the first service plan;”

118. In my opinion, the *Thomas-Buddhikot* combination discloses 44[c]. For example, *Thomas* discloses that in “response to receiving the start message, the wireless device 110 either starts the client access application 312 or will stop its attempts depending upon whether the parameter set indicated that it was okay to run [the client access application] or whether it should never start.” EX1005, ¶60. *Thomas* also discloses that the start response message sent to wireless device 110 includes a service level. EX1005, ¶59. As I explained, the service level includes one or more settings or rules for forwarding data through wireless device 110. *Supra* §XI.2.d.

119. Additionally, *Buddhikot* discloses a gateway device includes agents that install firewalling and packet-mangling rules. EX1016, ¶75. As I explained, one of ordinary skill in the art would have been motivated to cause installation of *Buddhikot*’s firewalling and packet-mangling rules on *Thomas*’s hotspot device. *Supra* §XI.1.a. Further, in my opinion, one of ordinary skill would have understood

that by starting the client access application 312 of *Thomas* and installing the firewalling and packet-mangling rules of *Buddhikot*, the *Thomas-Buddhikot* hotspot device would be associated with the first service plan that includes the firewalling and packet-mangling rules.

h. 44[d]: “translating the access network forwarding policy to first instructions; and,”

120. In my opinion, the *Thomas-Buddhikot* combination discloses 44[d]. For example, *Thomas* discloses that “software running on the wireless device 110 enables the distribution of the data services offered by the cellular network 102 to be distributed in local area networks (LAN) or small area networks supported by 802.11 and analogous WLAN technologies supported on the wireless device 110.” EX1005, ¶¶30, 46. Both *Thomas* and *Buddhikot* disclose programming rules and using software to control the data flow through the *Thomas-Buddhikot* hotspot device. As I explained, one of ordinary skill in the art would have been motivated to install *Buddhikot*’s firewalling and packet-mangling rules on *Thomas*’s hotspot device. *Supra* §XI.1.a. In my further opinion, one of ordinary skill in the art would have understood that to program software and/or install rules, the rules in the access network forwarding policy must be translated into program instructions to be executed by a processor of the *Thomas-Buddhikot* hotspot device.

- i. **44[e]: “providing the first instructions to one or more policy implementation agents, the one or more policy implementation agents capable of implementing the access network forwarding policy for the first end point device.”**

121. In my opinion, *Thomas* discloses 44[e]. According to *Thomas* “software running on the wireless device 110 enables forwarding of data between client devices connected to wireless device 110 via WLAN technologies and cellular network 102.” EX1005, ¶¶30, 46. *Thomas*’s wireless device 110 “route[s] the packets for communication sessions between a laptop and the Internet 104.” EX1005, ¶50. In my review of the ’425 patent, the specification explains that “agents and other functions are designed with a mixture of software and hardware.” EX1001, 42:63-65. Therefore, in my opinion, the *Thomas-Buddhikot* hotspot device, including its software, constitutes a policy implementation agent because the *Thomas-Buddhikot* hotspot device forwards the traffic between client computing devices 114 and the internet according to the access network forwarding policy.

122. As further explained in 24[pre][iii], software configured to forward data between a radio frequency front end and a wireless network radio front end of *Thomas*’s hotspot device constitutes one or more policy implementation agents. *Supra* §XI.2.d. For example, *Thomas* discloses that “software running on the

wireless device 110 enables the distribution of the data services offered by the cellular network 102 to be distributed in local area networks (LAN) or small area networks supported by 802.11 and analogous WLAN technologies.” EX1005, ¶30. *Thomas*’s wireless device 110 also includes a client-access application 312 that provides application-level point-of-presence capabilities for wireless device 110. EX1005, ¶34. *Thomas* also discloses that “[f]irewall . . . services may . . . be configured to operate on either the wireless device 110 or the server 108.” EX1005, ¶42. Therefore, in my opinion, *Thomas*’s **client-access application and associated software** are a “**policy implementation agent**” and *Thomas*’s **firewall**, is a “**firewall agent**, which together constitute a “forwarding agent.”

123. As also explained, the policy implementation agent in the *Thomas-Buddhikot* hotspot device forwards data based on parameters such as, for example, metered usage, quality of service requirements, firewalling and packet-mangling rules, and other factors that are included in the access network forwarding policy. *Supra* §XI.2.d. For example, *Thomas* provides several access network forwarding policies, such as metering usage of the forwarding service and controlling the number of concurrent users of the forwarding service. *See* EX1005, ¶54 (“The usage may be metered based on some combination of the time duration of connection, number and size of packets sent or received, or other factors.”); *see*

also id., ¶69 (“The number of concurrent users may also be controlled by the server 108 based upon a ‘service level.’”). In my opinion, metering usage based on a service level or QoS or controlling the number of concurrent users of a forwarding service, as disclosed by *Thomas*, constitutes the claimed settings associated with an access network forwarding policy.

17. Claim 49: “The method of claim 44, wherein a particular restriction setting is on a usage of a forwarding connection of the access network forwarding service, wherein the forwarding connection connects the one or more additional end point devices to the access network via the forwarding agent.”

124. In my opinion, the *Thomas-Buddhikot* combination discloses claim 49. *Thomas* discloses that “multiple client computing devices 114 may join during an active session of the client access application 312.” EX1005, ¶64. Therefore, in my opinion, *Thomas*’s hotspot device provides a forwarding connection that allows more than one client devices 114 to exchange data with *Thomas*’s cellular network 102. As I explained for claim 32, data is forwarded in the *Thomas-Buddhikot* hotspot device based on QoS rules as taught by *Buddhikot*. *Supra* §XI.10. As I also explained, the QoS rules restrict the bandwidth for multiple connected client devices so that all connected client devices may continue to exchange data with the cellular network 102. *Supra* §XI.10. In my opinion, one of skill in the art would have understood that the QoS rules of *Buddhikot* that cause bandwidth restrictions

would constitute restriction settings on the forwarding connection usage of the *Thomas-Buddhikot* hotspot device.

18. Claim 50: “The method of claim 44, wherein the one or more policy implementation agents include the first end point device.”

125. In my opinion, *Thomas* discloses claim 50. As explained above in [44]e, in my opinion, the *Thomas-Buddhikot* hotspot device, including its software, constitutes a policy implementation agent because the *Thomas-Buddhikot* hotspot device forwards the traffic between client computing devices 114 and the internet according to the access network forwarding policy. *Supra* §XI.16.i.

B. Ground 2: Claim 33 Is Obvious over *Thomas*, *Buddhikot*, and *Haller*

1. Claim 33: “The network system of claim 24, wherein at least one of the one or more access network forwarding settings is a function of a time of day.”

126. Claim 33 depends from claim 24, which would have been obvious as discussed above. *Supra* §XI.2. In my opinion, the *Thomas-Buddhikot-Haller* combination discloses the additional features of claim 33. For example, *Haller*’s cellular phone hotspot device includes service level verification software to enforce service level agreements with users. EX1013, ¶¶54-56, 61, 140. *Haller* discloses that a user may “generate an unlimited amount of cellular traffic from device 106 during the night but a limited amount during the day.” EX1013, ¶141.

Haller further explains that “during the day, if the limited amount [of cellular traffic] is exceeded no more traffic can be generated from device 106 and packets are dropped” by the service level verification software. EX1013, ¶141.

Accordingly, the *Thomas-Buddhikot* hotspot device as modified by *Haller* would include access network forwarding settings to restrict the amount of data being forwarded by the *Thomas-Buddhikot* hotspot device based on a time of day.

127. In my opinion, one of skill in the art would have been motivated to combine *Haller*’s access network forwarding setting restrictions based on the time of day with the *Thomas-Buddhikot* hotspot device and would have had a reasonable expectation of success. Like *Thomas* and *Buddhikot*, *Haller* is also analogous art to the ’425 patent. *Haller* is also in the same field of endeavor: mobile devices and wireless access points for computer networking. EX1013, Abstract, ¶¶7, 15, 35-37, 54, 56, Figs. 1-6. Like *Thomas* and *Buddhikot*, *Haller* also shares a common goal with the ’425 patent: using end-user devices to bridge or route traffic from other devices to a network system, such as the internet, and includes services to improve the customizability and monetization of mobile-hotspot technology, for example through usage control, user interactivity and notifications via graphical user interfaces, and billing features. EX1013, Abstract, ¶¶7, 15, 35-37, 54, 56, 90-91, 104, 121-124, 129, 139-141, Figs. 1-6.

128. *Haller* discloses limiting traffic during the day because many users desire to access the network, but at night, when the demand is lower, *Haller* allows use of an unlimited amount of cellular traffic. EX1013, ¶141. As I explained, the *Thomas-Buddhikot* network system implements forwarding settings based on bandwidth. *Supra* §§VI.A.2.d, VI.A.2.i. In my opinion, one of ordinary skill in the art would have been motivated to implement *Haller*'s time-of-day-based traffic control in the *Thomas-Buddhikot* network system so that a maximum number of users could access the network via the *Thomas-Buddhikot* hotspot device when demand is high during the day. This combination would have maximized the number of users that can connect to the *Thomas-Buddhikot* hotspot device and minimized the number of users that are denied access to the access network. This would improve overall user experience while reducing overall user dissatisfaction with the *Thomas-Buddhikot* hotspot device.

129. In my opinion, combining *Haller*'s bandwidth rules with the *Thomas-Buddhikot* network system would have been a combination of familiar elements, bandwidth control rules, according to known methods, implementing the bandwidth control rules in a manner similar to implementation of the firewall and packet-mangling rules, to obtain predictable results of maximizing the number of connected users.

130. 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.

C. Ground 3: Claims 39, 43, and 45 Are Obvious over *Thomas*, *Buddhikot*, and *Polson*

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

131. Like *Thomas* and *Buddhikot*, *Polson* is also analogous art to the '425 patent. *Polson* is in the same field of endeavor as the '425 patent: 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* shares a common goal with the '425 patent: using end-user devices to bridge or route traffic from other devices to a network system, such as the internet, and includes services to improve the customizability and monetization of mobile-hotspot technology for example through 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.

a. Different settings for different access networks

132. *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.

133. 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.

134. 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.

135. As I discussed, *Thomas*, *Buddhikot*, and *Polson* are analogous art to the '425 patent. *Supra* §. *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 WiFi connection could access the network using a minimum bandwidth. This would ensure user satisfaction with the connection.

136. One of skill in the art would have been motivated to implement *Polson*'s limitation on the number of simultaneous WiFi connections on the *Thomas-Buddhikot* hotspot device to obtain the same benefits of an adequate minimum bandwidth for each WiFi 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 WiFi 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.

137. 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 WiFi 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 WiFi 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.

2. **Claim 39: "The network system of claim 24, wherein the one or more access network forwarding settings includes at least one setting that is different for different access**

networks, each providing an access network forwarding service.”

138. Claim 39 depends from claim 24, which would have been obvious as I discussed above. *Supra* §XI.2. In my opinion, the combination of *Thomas-Buddhikot-Polson* further discloses the additional features of claim 39. As I explained above, the *Thomas-Buddhikot* hotspot device provides access network forwarding services based on one or more forwarding settings. *Supra* §§XI.2.d, XI.2.1. *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.

139. As I previously discussed, one of skill in the art would have found it obvious to combine *Polson*’s multiple WWAN capability with the *Thomas-*

Buddhikot hotspot device so that the *Thomas-Buddhikot* hotspot device could be used with different cellular networks in different geographic locations. *Supra* §XI.C.1. In my opinion, one of skill in the art would have also found that at least one access network forwarding setting, for example throughput or cumulative number of bits, would vary for each of the different access networks based on the service agreement associated with the cellular network being used by the *Thomas-Buddhikot* hotspot device as modified by *Polson*.

3. Claims 43 and 45:

- a. Claim 43: “The network system of claim 24, wherein a particular restriction setting restricts 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.”**

140. Claim 43 depends from claim 24, which would have been obvious as discussed above. *Supra* §XI.2. In my opinion, the *Thomas-Buddhikot* hotspot device alone or in combination with *Polson* discloses the additional features of claim 43. As I previously explained, the *Thomas-Buddhikot* combination discloses a network system in which the forwarding service connects the one or more additional client devices to the access network through the forwarding agent on the *Thomas-Buddhikot* hotspot device. *Supra* §XI.12. As I also explained, the *Thomas-*

Buddhikot combination discloses restriction settings for the forwarding connection.

Supra §§XI.2.1, XI.16.c.

141. *Thomas* further discloses restriction settings that define a maximum number of end point devices that can connect with *Thomas*'s hotspot device. EX1005, ¶¶59, 69. For example, the start response message sent by *Thomas*'s server 108 to *Thomas*'s wireless device 110 includes parameters such as a "number of available IP addresses." EX1005, ¶¶59, 69. In my opinion, one of skill in the art would have understood that the *Thomas-Buddhikot* hotspot device would be prevented from connecting additional client devices if the total number of connected devices reached the maximum number of available IP addresses. Therefore, in my opinion, the *Thomas-Buddhikot* hotspot device discloses the additional limitations of claim 43.

142. In my opinion, *Polson* also discloses the additional limitations of claim 43. *Polson*'s gateway inquires of "a server associated with the gateway or with a wireless service provider, as to the existence and features of a service agreement associated with one of a number of inputs . . . Exemplary features include a limitation on a number of simultaneous WiFi or Ethernet LAN connections of the gateway." EX1015, ¶78. As I previously discussed, one of skill in the art would have found it obvious to combine *Polson*'s maximum number of

simultaneous WiFi or Ethernet LAN connections with the *Thomas-Buddhikot* hotspot device. *Supra* §XI.C.1.

b. Claim 45: “The method of claim 44, wherein a particular restriction setting restricts use of the forwarding connection of the network access forwarding service to a maximum number of additional end point devices.”

143. Claim 45 depends from claim 44, which would have been obvious as discussed above. *Supra* §XI.16. The *Thomas-Buddhikot* hotspot device alone or in combination with *Polson* discloses the additional features of claim 45 for the same reasons as claim 43. *Supra* §XI.C.3.a.

144. For example, as I previously explained, the *Thomas-Buddhikot* combination discloses a network system in which the forwarding service connects the one or more additional client devices to the access network through the forwarding agent on the *Thomas-Buddhikot* hotspot device. *Supra* §XI.12. As I also explained, the *Thomas-Buddhikot* combination discloses restriction settings for the forwarding connection. *Supra* §§XI.2.1, XI.16.c.

145. *Thomas* further discloses restriction settings that define a maximum number of end point devices that can connect with *Thomas*’s hotspot device. EX1005, ¶¶59, 69. For example, the start response message sent by *Thomas*’s server 108 to *Thomas*’s wireless device 110 includes parameters such as a “number

of available IP addresses.” EX1005, ¶¶59, 69. In my opinion, one of skill in the art would have understood that the *Thomas-Buddhikot* hotspot device would be prevented from connecting additional client devices if the total number of connected devices reached the maximum number of available IP addresses. Therefore, in my opinion, the *Thomas-Buddhikot* hotspot device discloses the additional limitations of claim 43.

146. In my opinion, *Polson* also discloses the additional limitations of claim 43. *Polson*’s gateway inquires of “a server associated with the gateway or with a wireless service provider, as to the existence and features of a service agreement associated with one of a number of inputs . . . Exemplary features include a limitation on a number of simultaneous WiFi or Ethernet LAN connections of the gateway.” EX1015, ¶78. As I previously discussed, one of skill in the art would have found it obvious to combine *Polson*’s maximum number of simultaneous WiFi or Ethernet LAN connections with the *Thomas-Buddhikot* hotspot device. *Supra* §XI.C.1

D. Ground 4: Claims 35, 37, 38, 47, and 48 Are Obvious over *Thomas, Buddhikot, and Weintraub*

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

147. Like *Thomas* and *Buddhikot*, *Weintraub* is also analogous art to the ’425 patent. *Weintraub* is also 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 to bridge or route traffic from other devices to a network system, such as the internet, and include services to improve the customizability of mobile-hotspot technology, for example by usage control, user interactivity and notifications via graphical user interfaces. EX1017, Abstract, ¶¶10-15, 19, 21, 25-27, 31-32, Figs. 1-8.

a. Network traffic classification of the data

148. *Weintraub* discloses network traffic classifications such as VOIP, IM, and e-mail. EX1017, ¶¶25-26. *Weintraub* also discloses restricting traffic based on a variety of factors, including a time of day or the size of an attachment. EX1017, ¶26. In my opinion, one of skill in the art would have been motivated to implement *Weintraub*'s restriction settings based on network traffic classification in the *Thomas-Buddhikot* hotspot device to manage bandwidth restrictions. For example, when the network experiences high demand, such as during the daytime, one of skill in the art would have been motivated to restrict network traffic associated with VOIP or large email attachments. Such traffic would consume large amounts of available bandwidth, leaving less bandwidth for other users.

149. 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

150. *Weintraub* also discloses parental control policies that allow a parent to restrict specific content, such as adult content, from devices associated with young children in the household. 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.

151. 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. Claims 35 and 48:

- a. Claim 35: “The network system of claim 34, wherein the one or more restriction settings includes restriction settings that vary depending on a network traffic classification of the data.”**

152. Claim 35 depends from claim 34, which would have been obvious as discussed above. *Supra* §XI.11. In my opinion, the *Thomas-Buddhikot-Weintraub* combination also discloses the additional features of claim 35. For example, *Weintraub* discloses a variety of restriction settings that are based on a network traffic classification. EX1017, ¶26. *Weintraub*'s “[p]olicies may also be defined, for example, for instant messaging (e.g., to restrict instant messaging based on time

of day, based on the IM destination (or origination), based on the content of an instant message, etc.), Voice over IP (e.g., SIP) communications (e.g., to restrict communications based on source/destination, time of day, domain, etc.), peer-to-peer transmissions (e.g., to restrict transmissions based on source/destination, etc.), e-mail transmissions (e.g., to restrict transmissions based on source/destination, time of day, attachments, words in the e-mail transmissions, etc.), streaming media (e.g., to restrict media based on time of day, ratings, etc.), and/or other types of traffic.” EX1017, ¶26.

153. In my opinion, one of skill in the art would have understood that implementing *Weintraub*’s teachings on the *Thomas-Buddhikot* hotspot device would allow the *Thomas-Buddhikot* hotspot device to restrict traffic based on a network classification, such as the type of data, at various times throughout the day to ensure sufficient bandwidth may be provided to all users. As I explained above, one of skill in the art would have found it obvious to combine the teachings of *Thomas*, *Buddhikot*, and *Weintraub*. *Supra* §XI.D.1.a.

b. Claim 48: “The method of claim 44, wherein the one or more restriction settings include restriction settings that vary depending on a network traffic classification of the data.”

154. Claim 48 depends from claim 44, which would have been obvious as discussed above. *Supra* §XI.16. In my opinion, the *Thomas-Buddhikot-Weintraub*

combination discloses the additional features of claim 48 for the same reasons as claim 35. *Supra* §XI.D.3.a.

155. For example, *Weintraub* discloses a variety of restriction settings that are based on a network traffic classification. EX1017, ¶26. *Weintraub*'s "[p]olicies may also be defined, for example, for instant messaging (e.g., to restrict instant messaging based on time of day, based on the IM destination (or origination), based on the content of an instant message, etc.), Voice over IP (e.g., SIP) communications (e.g., to restrict communications based on source/destination, time of day, domain, etc.), peer-to-peer transmissions (e.g., to restrict transmissions based on source/destination, etc.), e-mail transmissions (e.g., to restrict transmissions based on source/destination, time of day, attachments, words in the e-mail transmissions, etc.), streaming media (e.g., to restrict media based on time of day, ratings, etc.), and/or other types of traffic." EX1017, ¶26.

156. In my opinion, one of skill in the art would have understood that implementing *Weintraub*'s teachings on the *Thomas-Buddhikot* hotspot device would allow the *Thomas-Buddhikot* hotspot device to restrict traffic based on a network classification, such as the type of data, at various times throughout the day to ensure sufficient bandwidth may be provided to all users. As I explained above,

one of skill in the art would have found it obvious to combine the teachings of *Thomas, Buddhikot, and Weintraub. Supra* §XI.D.1.a.

3. Claims 37, 38, 46, and 47

- a. Claim 37: “The network system of claim 24, wherein a particular restriction setting restricts data associated with certain network destinations from the access network forwarding service.”**

157. Claim 37 depends from claim 24, which would have been obvious as discussed above. *Supra* §XI.2. In my opinion, the *Thomas-Buddhikot-Weintraub* combination also discloses the additional features of claim 37. As I explained for 24[pre][iii], the firewall service of the *Thomas-Buddhikot* hotspot device uses packet-mangling rules to protect the *Thomas-Buddhikot* hotspot device and/or client devices connected to the *Thomas-Buddhikot* hotspot device from malicious attacks. *Supra* §XI.2.d. *Weintraub* discloses parental control policies that prohibit a client device within the customer’s premises from accessing adult content from the external network. EX1017, ¶10. In my opinion, one of skill in the art would have understood that implementing *Weintraub*’s access restriction teachings on the *Thomas-Buddhikot* hotspot device would allow the *Thomas-Buddhikot* hotspot device to restrict traffic based on a parental control policy and prohibit data related to adult content from being delivered to a client device connected to the *Thomas-Buddhikot* hotspot device. See EX1001 18:32-52 (describing “firewall function”

that blocks device access to network destinations when service usage is out of policy). As I previously explained, one of skill in the art would have found it obvious to combine the teachings of *Thomas*, *Buddhikot*, and *Weintraub*. *Supra* §XI.D.1.b.

b. Claim 38: “The network system of claim 37, wherein the network destinations that are restricted are determined by a parental control policy.”

158. Claim 38 depends from claim 37, which would have been obvious as discussed above. *Supra* §XI.D.3.a. In my opinion, the *Thomas-Buddhikot-Weintraub* combination also discloses the additional features of claim 38. For example, *Weintraub* discloses restriction settings based on a parental control policy. EX1017, ¶11. The parental control policies of *Weintraub* prohibit a customer device within the customer’s premises from accessing adult content from the external network. EX1017, ¶10. According to *Weintraub*, “[w]hen traffic containing adult content is received from the external network . . . the policy enforcement point may stop the traffic (e.g., by discarding it) prior to reaching the customer device.” EX1017, ¶10, Fig. 1. *Weintraub* explains that “[t]he customers premises may refer to a household where a parent wishes to control, via the policies, the content that may be provided to his/her children or access to communications.” EX1017, ¶11.

159. In my opinion, one of skill in the art would have understood that implementing *Weintraub*'s teachings on the *Thomas-Buddhikot* hotspot device would allow the *Thomas-Buddhikot* hotspot device to restrict traffic based on a parental control policy to prohibit data related to adult content from being delivered to a client device connected to the *Thomas-Buddhikot* hotspot device. As I explained, one of skill in the art would have found it obvious to combine the teachings of *Thomas*, *Buddhikot*, and *Weintraub*. *Supra* §XI.D.1.b.

c. Claim 46: “The method of claim 44, wherein a particular restriction setting restricts data associated with certain network destinations from the access network forwarding service.”

160. Claim 46 depends from claim 44, which would have been obvious as discussed above. *Supra* §XI.16. In my opinion, the *Thomas-Buddhikot* combination discloses claim 46 for the same reasons as claim 37. *Supra* §XI.D.3.a.

161. For example, as I explained for 24[pre][iii], the firewall service of the *Thomas-Buddhikot* hotspot device uses packet-mangling rules to protect the *Thomas-Buddhikot* hotspot device and/or client devices connected to the *Thomas-Buddhikot* hotspot device from malicious attacks. *Supra* §XI.2.d. *Weintraub* discloses parental control policies that prohibit a client device within the customer's premises from accessing adult content from the external network. EX1017, ¶10. In my opinion, one of skill in the art would have understood that

implementing *Weintraub*'s access restriction teachings on the *Thomas-Buddhikot* hotspot device would allow the *Thomas-Buddhikot* hotspot device to restrict traffic based on a parental control policy and prohibit data related to adult content from being delivered to a client device connected to the *Thomas-Buddhikot* hotspot device. As I previously explained, one of skill in the art would have found it obvious to combine the teachings of *Thomas*, *Buddhikot*, and *Weintraub*. *Supra* §XI.D.1.b.

d. Claim 47: “The method of claim 46, wherein the network destinations that are restricted are determined by a parental control policy.”

162. Claim 47 depends from claim 46, which would have been obvious as discussed above. *Supra* §I.A.. The *Thomas-Buddhikot-Weintraub* combination discloses the additional features of claim 46 for the same reasons as claim 38. *Supra* §XI.D.3.b.

163. For example, *Weintraub* discloses restriction settings based on a parental control policy. EX1017, ¶11. The parental control policies of *Weintraub* prohibit a customer device within the customer's premises from accessing adult content from the external network. EX1017, ¶10. According to *Weintraub*, “[w]hen traffic containing adult content is received from the external network . . . the policy enforcement point may stop the traffic (e.g., by discarding it) prior to reaching the

customer device.” EX1017, ¶10, Fig. 1. *Weintraub* explains that “[t]he customers premises may refer to a household where a parent wishes to control, via the policies, the content that may be provided to his/her children or access to communications.” EX1017, ¶11.

164. In my opinion, one of skill in the art would have understood that implementing *Weintraub*’s teachings on the *Thomas-Buddhikot* hotspot device would allow the *Thomas-Buddhikot* hotspot device to restrict traffic based on a parental control policy to prohibit data related to adult content from being delivered to a client device connected to the *Thomas-Buddhikot* hotspot device. As I explained, one of skill in the art would have found it obvious to combine the teachings of *Thomas*, *Buddhikot*, and *Weintraub*. *Supra* §XI.D.1.b.

XII. CONCLUSION

165. For the reasons set forth above, it is my opinion that claims 1-30 of the ’102 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.

166. 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