UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CODE200, UAB; TESO LT, UAB; METACLUSTER LT, UAB; OXYSALES, UAB, AND CORETECH LT, UAB

Petitioners

v.

BRIGHT DATA LTD.,

Patent Owner

Case IPR2021-01492

Patent No. 10,257,319

DECLARATION OF DR. TIM A. WILLIAMS

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Patent Trial and Appeal Board
United States Patent and Trademark Office
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I. INTRODUCTION

1. I, Dr. Tim A. Williams, declare as follows:

2. My full name is Tim Arthur Williams.

3. I have been retained as an independent expert in this matter by counsel for Patent Owner Bright Data Ltd. ("Bright Data"). I have been asked to provide my opinions on certain references in the above-identified *inter partes* review ("IPR") proceeding, IPR2021-01492, involving U.S. Patent No. 10,257,319 ("the '319 Patent"). I have also been asked to provide my opinions on certain references in the related IPR proceeding, IPR2021-01493, involving U.S. Patent No. 10,484,510 ("the '510 Patent"). I have reviewed the papers and exhibits in each of these IPR proceedings. I have reviewed the Board's Institution Decisions in each of these IPR proceedings.

4. In the case of *Bright Data Ltd. v. NetNut Ltd.*, Case No. 2:21-cv-00225 (E.D. Tex.)(the "NetNut Litigation" hereafter); I also reviewed related patents, including U.S. Patent Nos. 10,491,713 ("the '713 Patent") and 11,050,852 ("the '852 Patent") and 11,044,346 ("the '346 Patent"), and their file histories. I reviewed my prior declaration in support of Plaintiff Bright Data Ltd.'s Claim Constructions (Dkt. 106-7) and the Declaration of Dr. Kimberly Claffy in support of Defendant's Responsive Claim Construction Brief (Dkt. 115-1) in the NetNut Litigation. I reviewed the Court's Claim Construction Orders in Case Nos. 2:19-

cv-395 (E.D. Tex.)(Dkts. 191 and 453) and 2:19-cv-396 (E.D. Tex.)(Dkts. 97 and 244) and 2:21-cv-225 (E.D. Tex.)(Dkt. 146). I reviewed the Court's *Alice* Orders in Case Nos. 2:19-cv-395 (E.D. Tex.)(Dkt. 303) and 2:19-cv-396 (E.D. Tex.)(Dkt. 98). I reviewed the Declaration of Dr. Vernon Thomas Rhyne (Dkt. 126-5) and the Declaration of Dr. Michael J. Freedman (Dkt. 138-1) regarding claim construction in the case of *Bright Data Ltd. v. Teso LT, UAB et al*., Case No. 2:19-cv-00395 (E.D. Tex.)(the "Teso Litigation" hereafter). I reviewed the Declaration of Dr. Vernon Thomas Rhyne (Dkt. 86-3) and the Declaration of Dr. Michael J. Freedman (Dkt 88-1) regarding claim construction in the case of *Bright Data Ltd. v. Code200, UAB, et al.*, Case No. 2:19-cv-00396 (E.D. Tex.)(the "Code200 Litigation" hereafter).

5. I have reviewed other exhibits submitted concurrently with this declaration, as cited and discussed herein.

6. In connection with my review of the materials discussed in this declaration, I also had telephone conversations with Bright Data's Chief Technology Officer, Mr. Ron Kol, and Bright Data's consulting source code reviewer from the various Texas litigations involving the '319 and '510 Patents, Mr. Matt McKune.

7. I am being paid for my work preparing this declaration at my normal consulting rate plus reimbursement of direct expenses. My compensation is not

tied to the outcome of this matter and is not based on the substance of the opinions that I provide.

II. QUALIFICATIONS

8. I am an industry professional with over 45 years of experience in wireless communications, computer networking and telecommunications technology. A copy of my CV is attached as Exhibit A.

9. I am currently active currently active as Chief Executive Officer at Beach Technologies, LLC (Danville, CA) a company related to intellectual property consulting.

10. I am also currently active as a Member at Calumet Venture Management (Madison, WI) a company related to the investment into start-up companies.

11. Beginning in 2004, I was the Founder and Chairman at DoceoTech Inc. (Danville, CA) which provides training for engineers in wireless, computer networking, and telephony technologies.

12. From 2008 to 2010, I was Founder and Board Member of BitRail Networks, Inc (Miami, FL). This company designed and produced computer networking equipment. One market the company served was edge devices for residential and community access.

13. From 2006 to 2015, I was Founder and Board Member of BEEcube, Inc. (Freemont, CA). This company built high speed computing and computer networking equipment. One market the company served was networking equipment for backhaul networks used in 5G cellular networks.

14. From 2004 to 2008, I was Founder and CEO of SiBEAM, Inc. This company designed and produced wireless networking IC and equipment.

15. From 1999 to 2000, I was Interim CEO and Advisory Board Member of Atheros Communications, Inc. (Palo Alto, CA) . This company designed and produced wireless networking IC and equipment.

16. From 1998 to 2000, I was CTO of Picazo Communications, Inc. (San Jose, CA). This company built computer networking equipment to provide VoIP PBX functionality.

17. From 1991 to 1998, I was Co-Founder, CTO, VP Engineering of Wireless Access, Inc. (Santa Clara, CA). This company developed over the air communication protocols for communication between the subscriber device and the network.

18. From 1979 to 1991, I was a Member of the Technical Staff at Motorola, Inc. (Schaumberg, IL and Austin, TX). In IL, I designed protocols for Digital voice communications. In TX, I designed ICs for communications including Telecom, Wireless, Cellular and Computer Networking.

19. I have been engaged in over 200 patent related litigations since 1999. Many of these cases relate to computer networking technologies, including protocols for Internet communications and the architecture of computer networks.

20. I hold degrees from Michigan Technological University (B.S.E.E., 1976) and the University of Texas at Austin (M.S.E.E., 1982 and Ph.D., Electrical Engineering, 1985 and M.B.A., 1991).

21. I am the principal inventor on 28 U.S. Patents all of which relate to communications technologies.

22. I have been a Registered Patent Agent since 2002.

III. LEGAL PRINCIPLES

23. When interpreting a patent, it is my understanding that it is important to view the disclosure and claims of that patent from the level of ordinary skill in that art at the time of the invention. My opinion of the level of ordinary skill in the art is based on my personal experience working and teaching in the technical field of Internet communications, my knowledge of colleagues and others working in that field, my study of the ’319 Patent and its file history, and my knowledge of:

a. The level of education and experience of persons actively working in the field at the time the subject matter at issue was developed;

b. The types of problems encountered in the art at the time the subject matter was developed;

c. The relevant prior art patents and publications;

d. The activities of others working in that field;

e. The prior art solutions to the problems addressed by the relevant art; and,

f. The sophistication of the technology at issue in this case.

24. In determining the level of ordinary skill in the art, I have also considered, among other things: (1) the sophistication of the relevant technology; (2) the rapidity with which innovations are made in that field; and (3) the educational level of active workers in that field. I also understand that these factors are not exhaustive and are merely a useful guide to determining the level of ordinary skill in the art.

25. Taking the above factors into account, based on my experience in the art and my study of the Internet communication systems disclosed in the '319 and '510 Patents (which share the same inventors of Derry Shribman and Ofer Vilenski and a common specification), in my opinion a person of ordinary skill in the art (a "POSA" hereafter) would be an individual who, as of October 8, 2009, the filing date of the shared provisional application, had a Master's Degree or higher in the field of Electrical Engineering, Computer Engineering, or Computer Science or as of that time had a Bachelor's Degree in the same fields and two or more years of

experience in Internet communications. I exceeded that level of skill in the relevant time frame.

26. I understand that Petitioners proposed a POSA would be an individual who, as of October 8, 2009, had at least a bachelor's degree in Computer Science or related field (or equivalent experience), and two or more years' experience working with and programming networked computer systems. Petition at 20. I understand that the Board applied Petitioners' definition in the Institution Decisions in IPR2021-01492 (Paper 12 at 17) and in IPR2021-01493 (Paper 11 at 18). In my opinion, the differences in the proposed POSA definitions have subtle differences, e.g., requirement of a degree, rather than only experience, but my analysis is the same under either definition.

27. Based on the foregoing, I believe that I am qualified to provide reliable opinions in the technical field of the '319 and '510 Patents, including regarding what a POSA would have understood from the specification, drawings, claims, and file histories, as well as from the prior art in the field at the time of the invention (October 8, 2009).

28. When offering opinions about how a POSA would evaluate or understand a particular issue, I have placed myself in the mindset of such a POSA, basing my opinions on the relevant education and skillset of such a POSA.

A. ANTICIPATION

29. It is my understanding that "anticipation" exists only if a single alleged prior art reference discloses each and every limitation of the claim at issue, either expressly or inherently. In other words, every limitation of the claim must appear in a single prior art reference for the reference to anticipate that claim. I also understand that all limitations of the claim must be disclosed in the reference as they are arranged in the claim. I also understand that a requirement of a claim that is missing from a prior art reference may be disclosed inherently if that missing requirement is necessarily present in the prior art. I also understand that to be considered anticipatory, the prior art reference must be enabling and must describe the patentee's claimed invention with sufficient specificity to have placed it in the possession of a POSA. I also understand that a POSA must be able to at once envisage the claimed invention based on the prior art reference without any need for picking, choosing, and combining various disclosures.

B. OBVIOUSNESS

30. I also understand that a patent may be rendered "obvious" based on an alleged prior art reference or a combination of such references plus what a POSA would understand based on his or her knowledge and those references. I understand that a patent cannot be properly granted for subject matter that would have been obvious to a POSA at the time of the alleged invention. It is also my

understanding that in assessing the obviousness of claimed subject matter a POSA should evaluate obviousness over the prior art from the perspective of one of ordinary skill in the art at the time the invention was made (and not from the perspective of either a layman or a genius in that art).

31. It is my further understanding that the question of obviousness is to be determined based on:

a. The scope and content of the prior art;

b. The difference or differences between the subject matter of the claim and the prior art (whereby in assessing the possibility of obviousness one should consider the manner in which a patentee and/or a Court has construed the scope of a claim);

c. The level of ordinary skill in the art at the time of the alleged invention of the subject matter of the claim; and,

d. Any relevant objective factors (the "secondary indicia") indicating non-obviousness as I discuss further below.

32. It is also my understanding that the United States Supreme Court clarified the law of obviousness in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. at 398 and 419 (2007) case ("KSR"), which I have read and incorporate herein by reference. Based on KSR, it is my understanding that to determine whether it would have been obvious to combine known limitations in a manner claimed in a

patent, one may consider such things as the interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, and the background knowledge of a POSA.

33. It is my further understanding that for a claim to be found invalid as obvious, it must be obvious to a POSA at the relevant time. I also understand that the existence of each and every limitation of the claimed invention in multiple prior art references/systems does not necessarily prove obviousness since most, if not all, inventions rely on building blocks of prior art. Obviousness may be found where, for example, the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

34. It is my further understanding that I should consider whether there was a reason that would have prompted a POSA to combine the known limitations in a way the claimed invention does, taking into account such factors as: (1) whether the claimed invention was merely the predictable result of using prior art limitations according to their known function(s); (2) whether the claimed invention provides an obvious solution to a known problem in the relevant field; (3) whether the prior art teaches or suggests the desirability of combining limitations claimed in the invention; (4) whether the prior art teaches away from combining limitations

in the claimed invention; (5) whether it would have been obvious to try the combinations of limitations, such as when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions; and (6) whether the change resulted more from design incentives or other market forces. I also understand that to render a claim obvious, the cited combination of prior art must provide a reasonable expectation of success for the proposed combination.

35. It is also my understanding that in developing opinions as to whether or not certain claimed subject matter would have been obvious, each claim of a given patent should be considered in its entirety and separately from any other claims. In so doing, it is my understanding that while I should consider any differences between the claimed invention and the prior art, I should also assess the obviousness or non-obviousness of the entirety of a claim covering an alleged invention, not merely some portion of it.

36. It is my further understanding that although the KSR decision I identified above has led to the elimination of the "teaching, suggestion or motivation" test as the sole test for judging whether the prior art can be combined for the purposes of an obviousness assertion, the use of "impermissible hindsight" is still inappropriate when making such an assertion. For example, § 2142 of the Manual of Patent Examining Procedure ("MPEP") includes a specific direction to

Patent Examiners that: "[t]he tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." In my opinion, this direction to Examiners is equally applicable to experts who assert that the general knowledge of a POSA and/or a combination of references invalidates a patent claim through obviousness.

37. I have also been informed that in cases such as the decision *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006), the Court of Appeals for the Federal Circuit (the "CAFC") has stated that, "[c]are must be taken to avoid hindsight reconstruction by using the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit." In my opinion, this is also important because, as the Supreme Court also stated in KSR at pp. 418-19, "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.

This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known."

38. Additionally, and also relevant to the above caution to avoid hindsight, it is my understanding that it is not enough to find that prior art references could be combined, and that to show obviousness one must prove that a POSA would actually combine the multiple references to arrive at the claimed invention, including showing that a POSA would be motivated to do so. For example, in the case *PersonalWeb Technologies, LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017), the Federal Circuit clarified that "obviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention." (Emphasis in original.)

39. It is also my understanding that I should consider any objective evidence (sometimes called the "secondary considerations") that may have existed at the time of the invention and afterwards that may shed light on the non-obviousness of the claims, such as:

a. Whether the invention was commercially successful as a result of the merits of the claimed invention (rather than the result of design needs or market-pressure advertising or similar activities);

b. Whether the invention satisfied a long-felt need;

c. Whether others had tried and failed to make the invention;

d. Whether others invented the invention at roughly the same time;

e. Whether others copied the invention;

f. Whether there were changes or related technologies or market needs contemporaneous with the invention;

g. Whether the invention achieved unexpected results;

h. Whether others in the field praised the invention;

i. Whether persons having ordinary skill in the art of the invention expressed surprise or disbelief regarding the invention;

j. Whether others sought or obtained rights to the patent from the patent holder; and,

k. Whether the inventor proceeded contrary to accepted wisdom in the field.

40. It is my further understanding the Board has designated a precedential decision regarding the proper analysis of secondary considerations in the case of *Lectrosonics, Inc. v Zaxcom, Inc.*, IPR2018-01129, Paper 33 (PTAB Jan. 24, 2020)(designated April 14, 2020)("Lectrosonics" hereafter). I understand that for secondary considerations of non-obviousness to be accorded substantial weight, the patentee must establish a nexus between the evidence and the merits of the

claimed invention. *Id.* at 32. "There is no nexus unless the evidence presented is 'reasonably commensurate with the scope of the claims.'" *Id.* I understand that a patentee is entitled to a presumption of nexus "when the patentee shows that the asserted objective evidence is tied to a specific product and that product 'embodies the claimed features, and is coextensive with them.'" *Id.* I understand that "[a] patent claim is not coextensive with a product that includes a 'critical' unclaimed feature that is claimed by a different patent and that materially impacts the product's functionality." *Id.*

41. I understand that "a finding that a presumption of nexus is inappropriate does not end the inquiry into secondary considerations." Lectrosonics at 33. "To the contrary, the patent owner is still afforded an opportunity to prove nexus by showing that the evidence of secondary considerations is the 'direct result of the unique characteristics of the claimed invention.'" *Id.* I understand that "there must be a nexus to some aspect of the claim not already in the prior art." *Id.*

IV. BACKGROUND TO THE FIELD OF TECHNOLOGY

42. In my opinion, a POSA would understand that network components, such as client devices and web servers, communicating over the Internet are identified by Internet Protocol ("IP") addresses. A web server, one type of network component, typically stores content that may be identified by a uniform resource

locator ("URL"). The IP address includes certain information that can be used to geolocate the network component with a particular IP address.

43. In my opinion, a POSA would understand that an IP packet sent over the internet to, for example, a web server includes an IP header and payload. The IP header includes the Source IP Address (the IP address of the sending network component) and the Destination IP Address (the IP address of the receiving network component, for example, the IP address of the web server). The payload includes the data being transmitted, such as a request for a content stored on the web server.

44. In my opinion, a POSA would understand that, normally, a request for content is sent from a client device (discussed in detail below) to a web server. For example, a customer that is considering buying a product from a store may request content associated with that particular product from the store's website. That same customer may also request content associated with that same product at a different store's website. As one example, a customer may request content to see if the product is on sale. Therefore, in my opinion, a POSA would understand that the IP packet would include the Source IP Address associated with the customer's client device.

45. In my opinion, a POSA would understand that, normally, the web server responds to a request for content by sending the requested content back to

the Source IP Address. In some cases, the response to the request for content may be blocked or spoofed due to, for example, the geographic location of the Source IP Address. As another example, multiple requests having the same Source IP Address may become suspicious and subsequently blocked or spoofed by the web server. As yet another example, requests having a commercial IP address, rather than a residential IP address, as the Source IP Address may be blocked or spoofed by the web server.

46. In my opinion, a POSA would understand that, at the time of invention, a different type of network component known as a proxy server may be used as an intermediary between the client device and the web server in order to conceal the original Source IP Address for a request for content. *See* EX. 1001 at Fig. 1. The IP packet will be sent from the original requestor to the proxy server and from the proxy server to the web server. When sending the IP packet from the proxy server to the web server, the proxy server will often replace the original Source IP address of the original requestor with its own IP address. Thus, a POSA would understand that the web server will only "see" the IP address of the proxy server. Instead of being blocked or spoofed, the requested content may be sent back to the original requesting network component via the proxy server.

V. INTRODUCTION TO THE CLAIMS OF THE '319 AND '510 PATENTS

47. All of the patents claiming priority to Provisional Application No. 61/249,624 filed on October 8, 2009 share the same specification.

48. Claim 1 of the '319 Patent is the only independent claim of the '319 Patent. Claim 1 of the ''510 Patent is the only independent claim of the '510 Patent. Claim 1 of the '319 Patent recites a "**first server**" that comprises a web server and Claim 1 of the '510 Patent recites a "web server". The independent claims of the '319 and '510 Patents recite a separate server referred to as the "**second server**". Finally, the independent claims of the '319 and '510 Patents recite a "**first client device**" serving as an intermediary between the web server and the second server.

49. The '319 and '510 Patent claims recite methods performed by elements performed by the "first client device" within a **second server** ↔ **first client device** ↔ **web server** architecture as shown, for example, in the annotated claims in the following table:

'319 Patent	**'510 Patent**
1. A method for use with a **first client device**, for use with a **first server** that comprises a **web server** that is a	1. A method for use with a **web server** thatresponds to Hypertext Transfer Protocol (HTTP) requests and

Hypertext Transfer Protocol (HTTP) server that responds to HTTP requests, the first server stores a first content identified by a first content identifier, and for use with a **second server**, the method by the **first client device** comprising: [step 1] receiving, from the **second server**, the first content identifier; [step 2] sending, to the **first server** over the Internet, a Hypertext Transfer Protocol (HTTP) request that comprises the first content identifier; [step 3] receiving, the first content from the **first server** over the Internet in response to the sending of the first content identifier; and [step 4] sending, the first content by the **first client device** to the **second server**, in response to the receiving of the first content identifier.	stores a first content identified by a first content identifier, the method by a **first client device** comprising: [step 1] establishing a Transmission Control Protocol (TCP) connection with a **second server**; [step 2] sending, to the **web server** over an Internet, the first content identifier; [step 3] receiving, the first content from the **web server** over the Internet in response to the sending of the first content identifier; and [step 4] sending the received first content, to the **second server** over the established TCP connection, in response to the receiving of the first content identifier.

50. Based on my experience in the NetNut Litigation, I note that the '713 and '852 Patents in this same family have claims that additionally recite a "requesting client device" that is not an intermediary. The'713 and '852 Patent claims recite methods comprising elements performed by the "requesting client device" within a **requesting client device** ↔ **second server** ↔ **first client device** ↔ **web server** architecture as shown, for example, in the annotated claims in the following table:

'713 Patent	**'852 Patent**
1. A method for use with a **requesting client device** that comprises an HTTP client and is identified over the Internet by a first Internet Protocol (IP) address, for use with a **first server** that is a **web server** that is Hypertext Transfer Protocol (HTTP) or Hypertext Transfer Protocol Secure (HTTPS) server that respectively responds to HTTP or HTTPS requests and stores a first content identified by a first content identifier, for	1. A method by a **requesting client device** that is identified over the Internet by a first Internet Protocol (IP) address, for use with a **first server** that is a **web server** that is Hypertext Transfer Protocol (HTTP) or Hypertext Transfer Protocol Secure (HTTPS) server that respectively responds to HTTP or HTTPS requests and stores a first content identified by a first Uniform Resource Locator (URL), and for use with a

use with a **second server** distinct from the **first web server** and identified in the Internet by a second IP address, the method by the **requesting client device** comprising: identifying, an HTTP or HTTPS request for the first content; sending, to the **second server** using the second IP address over the Internet in response to the identifying, the first content identifier and a geographical location; and receiving, over the Internet in response to the sending, from the **second server** via a **first client device**, the part of, or the whole of, the first content.	**second server** distinct from the first web server and identified in the Internet by a second IP address, the method by the **requesting client device** comprising: generating an HTTP or HTTPS request that comprises the first URL and a geographical location; sending, to the **second server** using the second IP address over the Internet, the generated HTTP or HTTPS request; and receiving, over the Internet in response to the sending, from the **second server** via a **first client device**, part of, or whole of, the first content, wherein the first content comprises a web-page, an audio content, or a video content.

51. The steps of the independent claims of the '319 and '510 Patents are performed by an intermediary client device – a "**first client device**" – located between the second server and the web server. As discussed below, the common specification discloses a "client device" may be, for example, a requesting client device (e.g., client 102 of Fig. 3) or an intermediary client device (e.g., agent 122 of Fig. 3).

VI. BACKGROUND OF THE COMMON SPECIFICATION

52. The common specification distinguishes two prior art systems. The first prior art system is the traditional use of a proxy server as an intermediary between a client device and a web server. *See* '319 Patent at 2:8-39. The second prior art system is the traditional use of a peer-to-peer system using caching client devices. *See* '319 Patent at 2:40-3:3. The common specification explains that the prior art systems are cost prohibitive and do not handle dynamic content due to the typical cache-storage methods. As one example, the traditional use of a proxy server, as discussed above, would require a proxy server in almost every city within the United States and across the world. As another example, the traditional use of a proxy server, as discussed above, may still result in being blocked by the web server, if the IP address of the proxy server is used so regularly that it becomes recognizable and/or because the IP address of the proxy server is a commercial IP address as opposed to residential IP address.

53. In contrast, Bright Data's novel use of a client device as an intermediary as recited in the claims lowers costs and is able to handle dynamic content. In my opinion, it would not be obvious to a POSA to use a client device, having limited resources unlike a server, as an intermediary proxy.

VII. REVIEW OF THE COMMON SPECIFICATION

54. The common specification of the '319 and '510 Patents provides several exemplary embodiments in the detailed description and the figures showing that both servers and client devices can be configured to operate as intermediaries. For example, Figure 1 and the associated discussion show a proxy server between one or more client devices and a web server in a communication pathway. *See, e.g.,* '319 Patent at Fig. 1 and 2:8-15 ("One solution that has been in use is called a "proxy". FIG. 1 is a schematic diagram providing an example of use of a proxy within a network 2. A proxy, or proxy server 4, 6, 8 is a device that is placed between one or more clients, illustrated in FIG. 1 as client devices 10, 12, 14, 16, 18, 20, that request data, via the Internet 22, and a Web server or Web servers 30, 32, 34 from which they are requesting the data.")

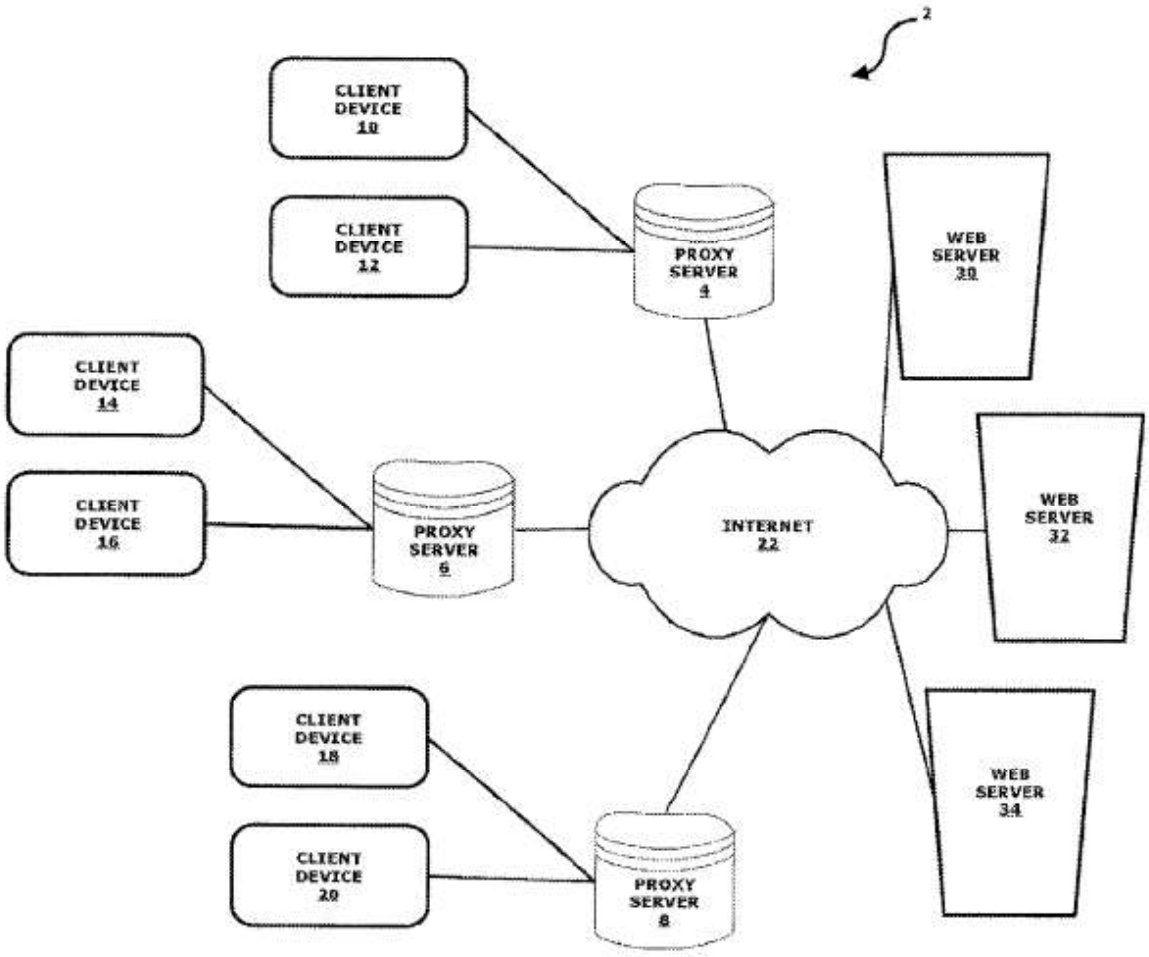


FIG. 1

55. Similarly, Figure 3 shows an exemplary embodiment of network 100 with an agent serving as an intermediary between a client and web server. As described in the specification, the communication network comprises communication devices that can serve as a client, peer, or agent, as well as separate servers and web servers:

> "An example of such a communication network 100 is provided by the schematic diagram of FIG. 3. The network 100 of FIG. 3 contains

> multiple communication devices. Due to functionality provided by software stored within each communication device, which may be the same in each communication device, each communication device may serve as a client, peer, or agent, depending upon requirements of the network 100, as is described in detail herein. It should be noted that a detailed description of a communication device is provided with regard to the description of FIG. 4.
> ….
> The communication network 100 also contains a Web server 152. The Web server 152 is the server from which the client 102 is requesting information and may be, for 65 example, a typical HTTP server, such as those being used to deliver content on any of the many such servers on the Internet. It should be noted that the server 152 is not limited to being an HTTP server. In fact, if a different communication protocol is used within the communication network, the server may be a server capable of handling a different protocol. It should also be noted that while the present description refers to the use of HTTP, the present invention may relate to any other communication protocol and HTTP is not intended to be a limitation to the present invention.
>
> The communication network 100 further contains an acceleration server 162 having an acceleration server storage device 164."

'319 Patent at 4:41-5:10.

56. As each communication device is configured to operate as a client, agent or peer as necessary, in my opinion, a POSA would understand client 102 and agent 122 to both be client devices.

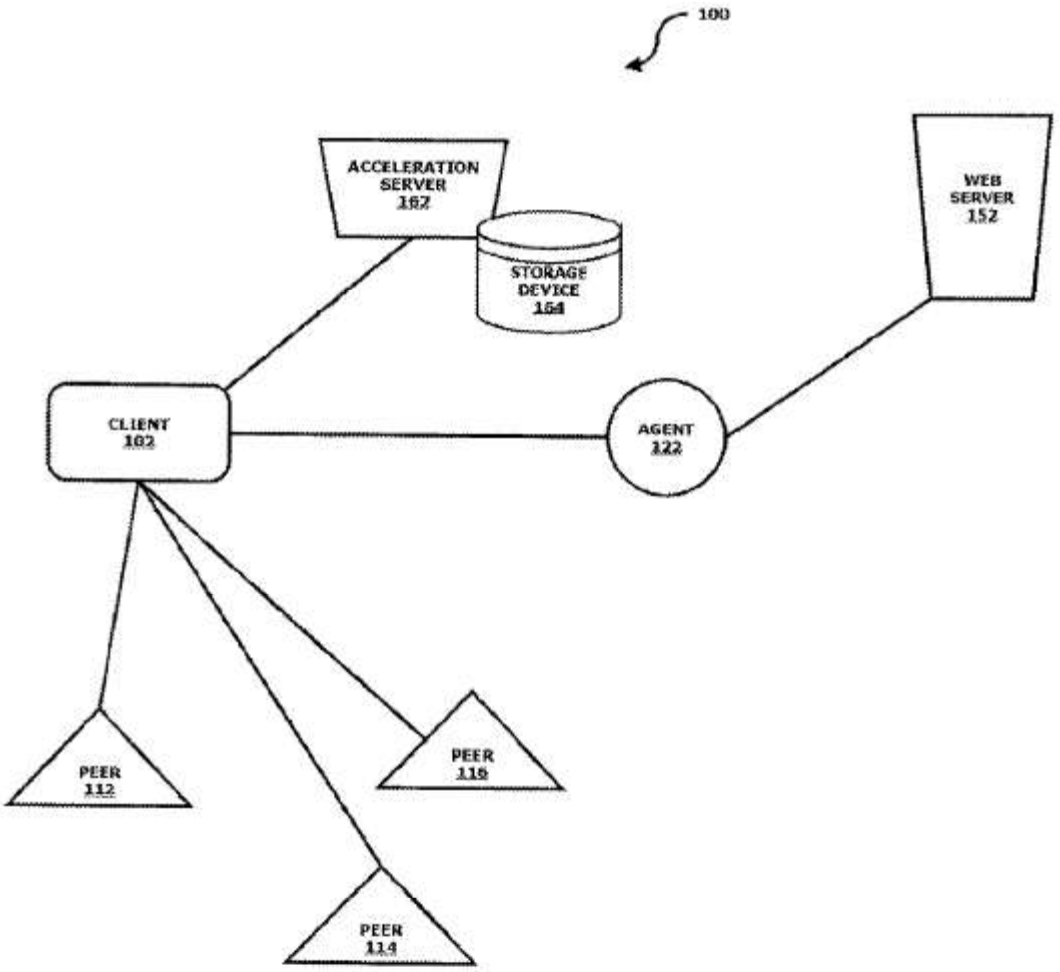


FIG. 3

57. As shown in Figure 3, agent 122, in some embodiments, is a client device which can receive requests for content intended for web server 152. *See, e.g.,* '319 Patent at 5:21-29. The common specification also describes that the 'agent' can request this content directly from the web server. *See, e.g.,* '319 Patent at 15:39-42; 15:51-52; 15:63-16:11.

58. The specification discloses how a communication device can be configured to serve as a client, agent, or peer. *See* '319 Patent at 4:44-50; 5:21-29;

see also '319 Patent at 9:12-50. For example, the specification explains a communication device may execute a client module, peer module, and/or agent module shown in FIG. 6.

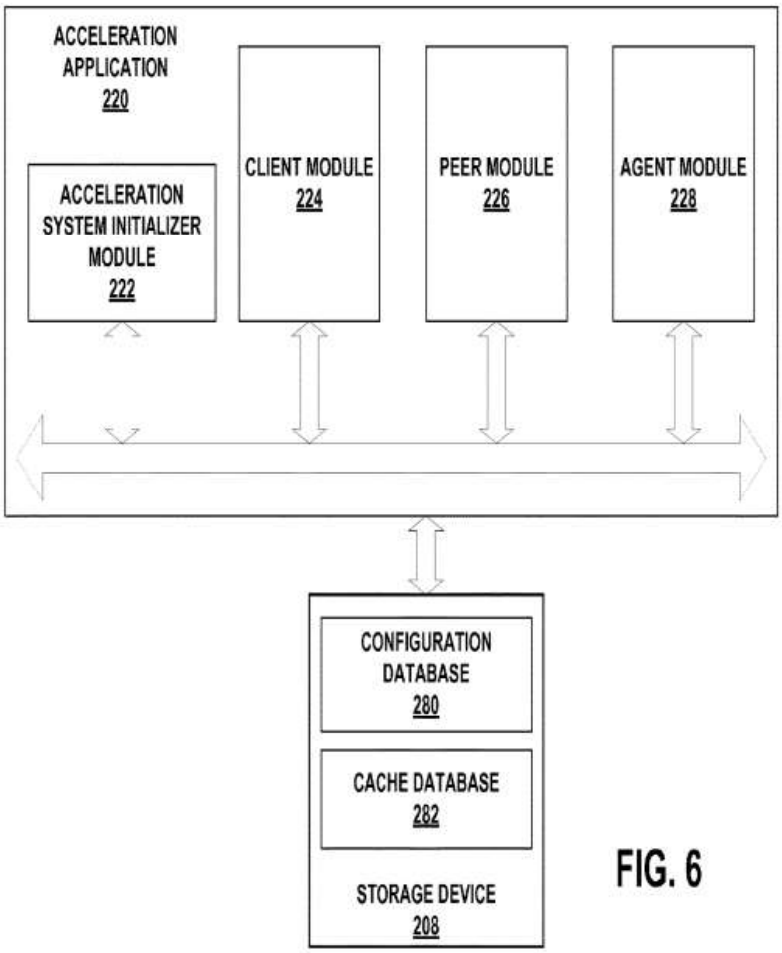
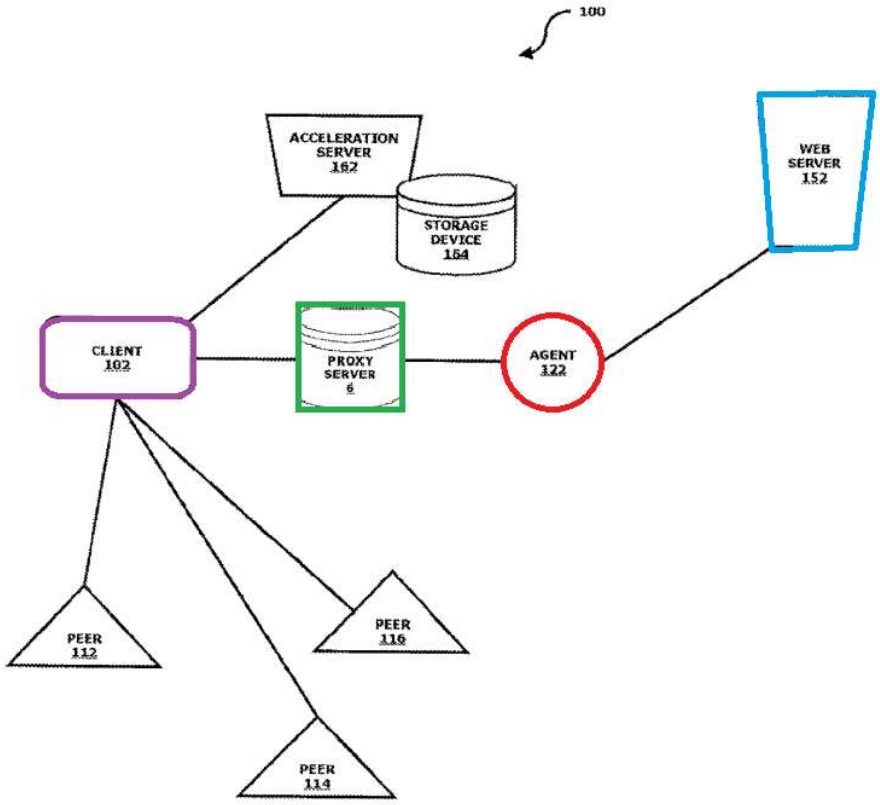


FIG. 6

59. In my opinion, a POSA would understand that proxy server 6 of Figure 1 could be inserted between client 102 and agent 122 of Figure 3, as shown below in a modified version of Figure 3.[1] A POSA would understand the

[1] Petitioners' expert agreed that as of 10/8/2009, using a proxy server between a requesting client device and a web server would be well known to a POSA. EX. 2067 at 51:8-13.

requesting client device ↔ **second server** ↔ **first client device** ↔ **web server** may, for example, correspond to client 102 ↔ proxy server 6 ↔ agent 122 ↔ web server 152, as annotated in the modified figure below. Therefore, a POSA would understand the common specification discloses a **requesting client device** ↔ **proxy server** ↔ **proxy client device** ↔ **web server** architecture as well.



VIII. CLAIM CONSTRUCTION

60. It is my understanding that the first step in a proper invalidity analysis requires construing the relevant claims to determine their scope and meaning in view of the patent's specification, file history, and the understanding of a POSA.

61. I understand the Court previously construed certain terms of the ’319 and ‘510 Patents and entered a Claim Construction Order (EX. 1017) and a Supplemental Claim Construction Order (EX. 1020) in the Teso Litigation. I understand that the Court again construed certain terms of the ‘319 and ‘510 Patents and entered a Claim Construction Order (EX. 2021) in the NetNut Litigation. I understand that the Court previously construed terms of related patents having the same specification in the Code200 Litigation. EX. 2022 and EX. 1020.

62. It appears undisputed that the preamble of claim 1 is limiting and that the terms first server and web server should be given their plain and ordinary meaning. E.g., EX. 1017 at 9; Petition at 21. The constructions for the terms “client device” and “second server’ are disputed as further discussed below.

63. I understand that Petitioners proposed the Board should apply the district court claim constructions from the Teso Litigation in this IPR. E.g., Petition at 21. However, Petitioners deviated from the Court’s construction for the term “client device” and do not attribute any special meaning to the term “communication device.” Also, Petitioners deviated from the Court’s construction for the term “second server” attempting to remove the requirement that it be a server. Petition at 22-23. Petitioners propose a “second server” is “a device that is

operating in the role of a server and that is not the first client device". Petition at 23.

64. In their analysis, Petitioners apply purely role-based constructions where any device "operating in the role of a client" is a client device and any device "operating in the role of a server" is a server. E.g., Petition at 22-23; EX. 2067 at 43:17-44:9. Petitioners treat client devices and servers as interchangeable general purpose computers. In my opinion, Petitioners purely role-based constructions are not appropriate, as further discussed below.

65. In my opinion, the purely role-based constructions are not appropriate at least because they directly contradict the Court's Teso Alice Order and the Court's Claim Construction Orders, as discussed below. Additionally, in my opinion, the purely role-based constructions are not appropriate at least because they directly contradict the express claim language, the figures of the specification, the applicant's prosecution history statements, as discussed below. In my opinion, Patent Owner's proposed constructions are appropriate and consistent with intrinsic and extrinsic evidence, as discussed below.

A. PURELY ROLE-BASED CONSTRUCTIONS CONTRADICT THE COURT'S CLAIM CONSTRUCTION ORDERS

66. The Court previously construed the terms "client device" and "second server" in the context of the specification and expressly rejected referring to these

terms as generic devices operating in a particular role. As discussed below, the Court found that a "client device" is a physical communication device, which has a special meaning in the context of the specification. A communication device in the context of the specification is not simply any device that communicates over the Internet. The Court also found that a "second server" is a physical server and that a server is not a communication device in the context of the specification.

67. In my opinion, the purely role-based constructions contradict the Court's claim construction findings because they refer to generic devices operating in a particular role. The purely role-based constructions fail to account for the physical/structural differences between client devices and servers.

68. In the Teso Litigation, the Court construed the term "client device" as "communication device that is operating in the role of a client." EX. 1017 at 12. The Court found that the specification does not include servers as a type of communication device. EX. 1020 at 12.

69. In the NetNut Litigation, Defendant NetNut Ltd. ("NetNut") proposed a construction of "client" as "a device operating in the role of a client" and thereby remove the requirement that it be a "communication device." EX. 2021 at 10. The Court expressly rejected removing the word "communication" from its prior construction of this same term in the Teso Litigation. EX. 2021 at 14. In my opinion, a POSA would understand that 'communication device' has a special

meaning in the context of the specification as referring to a 'client device'. A communication device is not simply any device that communicates over the Internet. The Court has repeatedly emphasized that a "client device" in the context of the specification is not merely a general-purpose computer. See, e.g., EX. 2021 at 14-15.

70. A "communication device" is disclosed as operating in the role of a "client, peer, or agent". '319 Patent at 4:48-49. For example, Fig. 3 of the specification discloses client 102, peers 112, 114, 110; and agent 122, all of which are "client devices" in the context of the specification. Id. The Court acknowledged that "communication device" has a special meaning in the context of the specification and that servers are not a type of communication device. For example, Fig. 6 of the specification discloses communication device 200 may include a client module 224, a peer module 226, or an agent module 228. There is no disclosure of a server module in communication device 200.

71. In the Teso Litigation, the Court construed the term "second server" as "server that is not the client device." EX. 1017 at 14; EX. 1020 at 11 ("The Court is not changing the construction of "first server" and "second server".). During the NetNut Litigation, NetNut proposed that the term "second server" should mean "a device operating in the role of a server". The Court stated it "hereby expressly rejects Defendant's proposal of referring generically to "a

device,"… " EX. 2021 at 20. The Court reiterated that "second server" means "server that is not the client device." EX. 2021 at 23.

72. The specification discloses "servers" as proxy servers, acceleration servers, or web servers. See, e.g., Figures 1 and 3. The Court acknowledged that servers are not disclosed as a type of "communication device" in the specification.

73. In my opinion, the purely role-based constructions are not appropriate because they fail to account for the special meaning of "communication device" in the context of the specification. In my opinion, the purely role-based constructions fail to account for the fact that the "second server" is indeed a server. In my opinion, the purely role-based constructions also fail to account for the fact that a server is not a "communication device". In my opinion, the purely role-based constructions are not appropriate because they genericize these claim terms. In my opinion, the purely role-based constructions are not appropriate because the Court expressly rejected referring to these claim terms as generic devices operating in a particular role. The Court repeatedly recognized that client devices and servers are not interchangeable, general purpose computers in the context of the specification.

B. PURELY ROLE-BASED CONSTRUCTIONS CONTRADICT THE COURT'S TESO ALICE ORDER

74. In my opinion, the purely role-based constructions contradict the technical reasoning provided by the Court in the Teso Alice Order finding the

claims of the '319 and '510 Patents were not abstract. EX. 2024. The defendants in the Teso Litigation attempted to reduce the claimed invention to general purpose computers sending or receiving information over the Internet. EX. 2024 at 6-7. The Court expressly stated that "[i]f the claimed methods in this case were simply the receipt and forwarding of information over the Internet, [Defendants] might have a compelling argument. However, it is the use of non-traditional client devices that transforms the Asserted Claims into non-abstract subject matter." EX. 2024 at 8-9. The Court also found that "[t]he use of a non-traditional network structure with a client device acting as a proxy is designed to produce 'faster and more efficient data communication within a communication network.'" EX. 2024 at 10. The Court also found that "it is not the individual steps of the method that render the Asserted Claims non-abstract, it is the network architecture as a whole." EX. 2024 at 9.

75. In my opinion, the purely role-based constructions are not appropriate at least because they genericize the claimed "client device". In my opinion, the purely role-based constructions fail to account for the specific **second server** ↔ **first client device** ↔ **web server** architecture in which the claimed methods operate.

76. The Court also noted that "[Defendants] specifically represented that they would not take the position that they would later assert that client devices and

servers are interchangeable general use computers…. However, they appear to have taken that position anyway." EX. 2024 at 11. The Court also noted that the defendants represented they would not treat client devices and servers as interchangeable use computes in the Claim Construction Order. EX. 1017 at 15. In my opinion, the instant petitioners are attempting to treat client devices and servers as interchangeable general use computers which is directly contrary to the Court's Alice Order.

C. PURELY-ROLE BASED CONSTRUCTIONS CONTRADICT THE EXPRESS CLAIM LANGUAGE

77. I understand that there is no dispute that the preamble of claim 1 is limiting. The preamble of claim 1 recites a "first client device". The preamble makes clear that the method steps of claim 1 are performed by the "first client device." Therefore, in my opinion, a POSA would understand that the claimed "first client device" is a client device, not a server, regardless of the role being performed at a particular point in time for a particular method step. In my opinion, a POSA would understand that the "first client device" is necessarily and consistently a client device as the claimed methods are performed. The purely role-based constructions do not account for the express claim language at least because, under the purely role-based constructions, the "first client device" is sometimes

operating in the role of a server. Therefore, in my opinion, the purely role-based constructions directly contradict the express claim language.

78. As one example, step 1 of claim 1 of the '319 Patent recites "receiving from the second server, the first content identifier." At this point in time, under the purely role-based constructions, the "first client device" would be operating in the role of a server, not a client. At this same point in time, under the purely role-based constructions, the "second server" would be operating in the role of a client, not a server. In my opinion, the purely role-based constructions contradict the express claim language which makes clear that the "first client device" is a client device regardless of the role being performed at a particular point in time and that the "second server" is a server regardless of the role being performed at a particular point in time. As another example, step 4 of claim 1 of the '319 Patent recites "sending, the first content by the first client to the second server, in response to the receiving of the first content identifier." At this point in time, under the purely role-based constructions, the "first client device" would be operating in the role of a server, not a client. At this same point in time, under the purely role-based constructions, the "second server" would be operating in the role of a client, not a server. In my opinion, the purely role-based constructions contradict the express claim language which makes clear that the "first client device" is a client device regardless of the role being performed at a particular point in time and that the

"second server" is a server regardless of the role being performed at a particular point in time. As shown above, there would be nothing to distinguish a "first client device" from a "second server" under the purely role-based constructions.

79. For at least these reasons, in my opinion, the purely role-based constructions are not appropriate because they contradict the express claim language.

D. PURELY ROLE-BASED CONSTRUCTIONS CONTRADICT THE FIGURES OF THE SPECIFICATION

80. In my opinion, the purely role-based constructions are not appropriate in the context of the '319 and '510 Patents because they contradict the figures of the specification. Under the purely role-based constructions, a POSA would not be able to identify whether an intermediary is a client device or a server.

81. As discussed below, in my opinion, upon reviewing the specification in general, and Figures 1 and 3 in particular, a POSA would understand that proxy server 6 must be structurally different from agent 122. As discussed below, under the purely role-based constructions, proxy server 6 of Figure 1 and agent 122 of Figure 3 would be operating in the same roles at a given point in time. Therefore, under the purely role-based constructions, there would be nothing to distinguish proxy server 6 of Figure 1 (prior art) and agent 122 of Figure 3 (inventive

embodiment). Under the purely role-based constructions, Figure 3 collapses onto Figure 1.

82. In my opinion, these figures inform a POSA that a server is not a client device and that a client device is not a server. Proxy server 6 of Figure 1 (prior art) must be structurally different from agent 122 of Figure 3 (inventive embodiment). This understanding is consistent with Patent Owner's proposed constructions, discussed below. In my opinion, the purely role-based constructions do not account for the structural differences between a proxy server (in Figure 1) and a proxy client device (in Figure 3) and therefore, the purely role-based constructions are not appropriate.

1. REVIEW OF FIGURE 1

83. For example, Figure 1 depicts prior art. '319 Patent at 3:66-67. Figure 1 shows proxy server 6 between client devices 14,16 and web server 32. In my opinion, a POSA would understand that client devices 14,16 are client devices and not servers; and a POSA would understand that web server 32 is a server and not a client device.

84. If a POSA were to apply the purely role-based constructions, in my opinion, client devices 14,16 are operating in the role of a client and web server 32 is operating in the role of a server.

85. In Figure 1, the exemplary intermediary is proxy server 6. In my opinion, a POSA would understand that proxy server 6 is a server and not a client device. As shown in Figure 1, proxy server 6 (i) receives requests from client devices 14,16 and (ii) sends requests to web server 32. If a POSA were to apply the purely role-based constructions, in my opinion, proxy server 6 would be (i) operating in the role of a server when receiving requests from client devices 14,16 and (ii) operating in the role of a client when sending requests to web server 32.

86. Additionally, proxy server 6 (iii) receives a response from web server 32 and (iv) sends the received response from web server 32 to client devices 14,16. If a POAS were to apply the purely role-based constructions, in my opinion, proxy server 6 would be (iii) operating in the role of a client when receiving responses from web server 32 and (iv) operating in the role of a server when sending the received responses on to client devices 14,16.

2. REVIEW OF FIGURE 3

87. Figure 3 is an exemplary embodiment of the present invention. '319 Patent at 4:3-5. Figure 3 shows agent 122 between client 102 and web server 152. In my opinion, a POSA would understand that client 102 is a client device and not a server; and a POSA would understand that web server 152 is a server and not a client device.

88. If a POSA were to apply the purely role-based constructions, in my opinion, client 102 is operating in the role of a client and web server 152 is operating in the role of a server.

89. In Figure 3, the exemplary intermediary is agent 122. In my opinion, a POSA would understand that agent 122 is a client device and not a server.

90. As shown in Figure 3, agent 122 (i) receives requests from client devices and (ii) sends requests to web server 152. If a POSA were to apply the purely role-based constructions, in my opinion, agent 122 would be (i) operating in the role of a server when receiving requests from client device 102 and (ii) operating in the role of a client when sending requests to web server 152.

91. Additionally, agent 122 (iii) receives a response from web server 152 and (iv) sends the received response from web server 152 to client device 102. If a POSA were to apply the purely role-based constructions, in my opinion, agent 122 would be (iii) operating in the role of a client when receiving responses from web server 152 and (iv) operating in the role of a server when sending the received responses on to client device 102.

3. COMPARISON OF FIGURES 1 AND 3

92. If a POSA were to apply the purely role-based constructions, proxy server 6 (in Figure 1) and agent 122 (in Figure 3) would be operating in the same roles at a given point in time. If one were to apply the purely role-based

constructions, there is nothing to distinguish the architectures of Figure 1 and Figure 3. Therefore, in my opinion, a POSA would understand that proxy server 6 must be structurally different from agent 122, consistent with Patent Owner's proposed constructions. In my opinion, these figures inform a POSA that a server is not a client device and that a client device is not a server. That is, proxy server 6 is not the same as agent 122 and vice versa.

93. In my opinion, proxy server 6 of Figure 1 (prior art) must be structurally different from agent 122 of Figure 3 (inventive embodiment) because, as discussed above, proxy server 6 and agent 122 would be operating in the same roles at a given moment in time. Therefore, in my opinion, the purely role-based constructions are not appropriate because they fail to account for these structural differences between proxy servers and proxy client devices.

E. PURELY ROLE-BASED CONSTRUCTIONS CONTRADICT THE APPLICANT'S PROSECUTION HISTORY STATEMENTS

94. In my opinion, the purely role-based constructions ignore the applicant's prosecution history statements, discussed in detail below. In my opinion, based on these statements, a POSA would understand a "client device" is not a "server" and vice versa. In my opinion, a POSA would understand that the determination of whether a component is a "client device" or a "server" is not based on the role being performed at a given moment in time. In the context of the

'319 and '510 Patents, it would be improper to call one component a client device and another identical component a server.

95. In my opinion, my understanding of the structural differences between proxy servers and proxy client devices is consistent with the related prosecution histories. For example, in each of the Notices of Allowance, the examiner acknowledged that the "environment" in which the methods are performed is novel. *See, e.g.,* Notice of Allowance of the parent '936 Patent dated 6/29/2018, EX. 2026 at 44; Notice of Allowance of the '319 Patent dated 1/23/2019, EX. 1002 at 50; Notice of Allowance of the child '510 Patent dated 10/3/2019, EX. 2066 at 41. This understanding is also consistent with the Court's Teso Alice Order acknowledging the non-traditional use of client devices in this particular architecture makes the methods non-abstract. EX. 2024 at 8-9. In my opinion, a POSA would understand that a proxy client device is not the same as a proxy server in the context of the '319 Patent.

1. PROSECUTION HISTORY OF PARENT PATENT NO. 10,069,936

96. The patent prosecution history of the parent '936 Patent, clearly distinguishes client devices from servers. During prosecution, the examiner had rejected then-pending claims over the Garcia reference. *See, e.g.,* EX. 2026 at 458. Applicant responded by amending the claims to specify that the 'devices' being

used as intermediaries are 'clients' in contrast to the teachings of Garcia. EX. 2026 at 215. As Applicant stated, the "the 'device' was equated in the Garcia reference to the cache server 306, which is clearly **a dedicated device and performs a server functionality**. The Garcia reference is silent, and actually teaches away from identifying and using another client device for supporting a content request by a specific client." EX. 2026 at 215 (emphasis in original).

97. The examiner responded that the arguments are moot in view of the new ground(s) of rejection. EX. 2026 at 172. The examiner conceded that "Garcia fails to teach a group of clients for data communication between the web server and a requesting client via one or more clients selected from the group; and (f) the selected client receiving the content from the web server; and (g) the requesting client receiving the content from the selected client." EX. 2026 at 174. The functions performed by "the selected client" of the '936 Patent may be equated to the "first client device" of the '319 Patent. In response, Applicant argued that client devices are different from servers (EX. 2026 at 163-164) and further distinguished the Garcia reference (EX. 2026 at 164-165). The examiner conceded that "Garcia fails to teach a group of clients for data communication; (a) each of the devices sending its identifier to the first server; (b) the first server receiving and storing the identifiers of the devices; (d) the first server selecting one of the clients from the group; and (f) the selected client receiving the content from the web server; and (g)

the requesting client receiving the content from the selected client." EX. 2026 at 124. In response, Applicant again argued that client devices are different from servers (EX. 2026 at 96-97). In the next action, the examiner withdrew rejections based on Garcia and issued new rejections based on other references. EX. 2026 at 77.

98. In my opinion, the examiner recognized a server cannot be equated to a client device regardless of the role being performed at a given moment in time. This understanding is consistent with other statements by Applicant during prosecution as discussed below.

99. Applicant stated that "[t]here is a clear distinction in the art and as taught by the Garcia reference between clients and servers." EX. 2026 at 163. Applicant stated that "[c]lient devices, such as client 105 in the Garcia reference, are end-units that request information from servers, use client-related software such as Web browser software, communicate over the Internet using ISP connection, and are typically **consumer owned and operated**…" EX. 2026 at 163 (emphasis added). "[A] client device typically connects to the Internet via an ISP using a single connection." EX. 2026 at 163. "Clients are inherently [re]sources limited, such as in bandwidth and storage capability." EX. 2026 at 164.

100. Applicant clearly distinguished servers from client devices: "In contrast, server devices are known in the art to be dedicated devices to store information objects, to be provided to clients upon request." EX. 2026 at 163.

101. In the Notice of Allowance, the examiner acknowledged that "the limitations of the independent claims, **within its environment**, is allowable subject matter over the prior art, in light of the specification". EX. 2026 at 44 (emphasis added). In my opinion, the examiner's acknowledgement of the "environment" in which the claims operate shows that the examiner appreciated the unique architecture disclosed in the common specification and the novel use of a proxy client device within that architecture. In contrast, the references relied on and cited by Petitioners do not disclose or teach the same architecture, nor do they disclose or teach the claimed methods that operate within that architecture, as further discussed below.

102. In my opinion, upon reviewing the prosecution history of the parent '936 Patent, a POSA would understand that there are structural differences between servers and client devices in the context of the specification.

2. PROSECUTION HISTORY OF PATENT NO. 10,257,319

103. The patent prosecution history of the '319 Patent further shows that servers and client devices are not interchangeable general use computers.

104. Applicant stated that "a few types of devices (servers / clients) communicating over a network." EX. 1002 at 281. The applicant argued that "the claims involve specific networking of physical elements such as servers and clients, connected via various networks forming a specific structure and relationships, which are physical apparatuses, and are NO[T] a 'generic computer' as stated in the Action." EX. 1002 at 282. In addition, the applicant further asserted that "the Examiner does not sufficiently establish that the 'ordered combination' of the recited elements also fails to 'transform the nature of the claim' into a patent-eligible application." EX. 1002 at 282. "Specifically, the claimed components as a combination perform functions that are not merely generic – It is respectfully submitted that the conventional arrangement involves fetching data by a client device from a server device, **while the claims disclose a server receiving information from another server via a client device**, which is unique and solves a specific problem such as anonymity when fetching information." EX. 1002 at 282-283 (emphasis added).

105. In the Notice of Allowance, the examiner acknowledged that "the limitations of the independent claims, **within its environment**, is allowable subject matter over the prior art, in light of the specification". EX. 1002 at 50 (emphasis added). In my opinion, the examiner's acknowledgement of the "environment" in which the claims operate shows that the examiner appreciated the unique

architecture disclosed in the common specification and the novel use of a proxy client device within that architecture. In contrast, the references relied on and cited by Petitioners do not disclose or teach the same architecture, nor do they disclose or teach the claimed methods that operate within that architecture, as further discussed below.

106. In my opinion, upon reviewing the prosecution history of the '319 Patent, a POSA would understand that there are structural differences between servers and client devices in the context of the specification.

3. PROSECUTION HISTORY OF CHILD PATENT NO. 10,484,510

107. In the patent prosecution history of the child '510 Patent, in the Notice of Allowance, the examiner again acknowledged that the "environment" of the claimed methods was novel over the prior art. EX. 2066 at 41. In my opinion, the examiner's acknowledgement of the "environment" in which the claims operate shows that the examiner appreciated the unique architecture disclosed in the common specification and the novel use of a proxy client device within that architecture. In contrast, the references relied on and cited by Petitioners do not disclose or teach the same architecture, nor do they disclose or teach the claimed methods that operate within that architecture, as further discussed below.

F. PURELY ROLE-BASED CONSTRUCTIONS ARE NOT APPROPRIATE

108. For at least the reasons discussed above, in my opinion the purely role-based constructions are not appropriate. The purely role-based constructions appear to be based on the description of a traditional client-server model and are improperly divorced from the specification. The purely role-based constructions do not account for the specific **second server** ↔ **first client device** ↔ **web server** architecture in which the claimed methods operate.

109. For example, the specification references RFC 2616, but in no way limits the meaning of client device or server to the definitions of "client" and "server" in RFC 2616, which is directed at a request/response protocol in a traditional client-server model. *See* '319 Patent at 16:21-28 (describing HTTP protocol, defined by RFC 2616, to define HTTP headers).The applicant was fully aware that he could recite a specific protocol in the claims, as was done, for example, in dependent claim 15 of the '319 patent (referencing "HTTP header"). However, RFC 2616 was not used to define the terms client devices and servers as described in the specification or used in the claims. Unlike RFC 2616, the specification distinguishes "communication devices" (including client devices) from servers.

110. Under the purely role-based constructions, any generic computer ↔ computer ↔ computer pathway would satisfy both the requirements of client

device and server. The purely role-based constructions broaden these claim terms so as to be interchangeable. The purely role-based constructions are therefore not appropriate in my opinion. As discussed above, the Court already rejected the argument that the method claims are abstract because they are more than general purpose computers sending and receiving information. E.g., EX. 2024 at 8-9. As found in the Court's Alice Order, it is the configuration of the components in a specific architecture used in a specific way that makes the claimed methods non-abstract.

111. In my opinion, with respect to Figs. 1 and 3, there is no way to distinguish an intermediary client device and an intermediary server under the purely role-based constructions. As discussed above with respect to, for example, the '713 and '852 Patents, the "second server" and the "first client device" of claim 1 are both intermediaries between a requesting client device and a web server. Under the purely role-based constructions, an intermediary would be operating in the role of a client and in the role of a server albeit at different points in time. Under the purely role-based constructions, there is nothing to distinguish the "second server" and the "first client device" of claim 1. In my opinion, this further shows that the purely role-based constructions are not appropriate.

G. PATENT OWNER'S PROPOSED CONSTRUCTION FOR "CLIENT DEVICE"

112. Based upon the common specification, in my opinion, a POSA would understand the term "client device" to mean a "consumer computer." *See, e.g.,* '319 Patent at 2:44-46 ("In the network 50, files are stored on computers of consumers, referred to herein as client devices."). Alternatively, a POSA would understand the term "client device" to mean a "consumer communication device". In my opinion, these proposed constructions are consistent with the claim language, the specification, and the prosecution histories distinguishing servers from client devices.

113. In my opinion, a POSA would understand a client device is a communication device in the context of the specification. This is consistent with the Court's constructions in the Teso Litigation and in the NetNut Litigation. EX. 1017, EX. 1020, EX. 2021. As described in the specification, "each communication device may serve as a client, peer, or agent" ('319 Patent at 4:48-49) which in my opinion, informs a POSA that client 102, peers 112, 114, 116, and agent 122 are all "client devices" in the context of the specification. *See also* '319 Patent at 4:44-50; 5:21-29.

114. The specification discloses HOW a communication device can be configured to serve as a client, agent, or peer. *E.g.*, '319 Patent at 4:44-50; 5:21-29; *see also* '319 Patent at 9:12-50. For example, as discussed above, the specification

discloses a **requesting client device** ↔ **proxy server** ↔ **proxy client device** ↔ **web server** architecture which may correspond to client 102 ↔ proxy server 6 ↔ agent 122 ↔ web server 152. A POSA would understand that the disclosed clients, peers, and agents shown in, for example, FIG. 3 are all "client devices" in the context of the specification. the specification also explains a communication device may execute a client module, peer module, and/or agent module shown in FIG. 6.. Therefore, in my opinion, A POSA would understand in the context of the specification, a client device is a consumer computer with specific software to operate in accordance with the claims.

115. In the specification, this software is disclosed, for example, in Figure 6 showing acceleration application 220 on communication device 200. Figure 6 and the associated text disclose communication devices having client, peer, and agent modules, but no server module. In my opinion, a POSA would understand from the specification that one "client device" may be configured to be the requesting client device and another "client device" may be configured to be the proxy client device. In my opinion, a POSA would understand the term "client device" to have a consistent definition for either the Requestor or the Proxy.

116. With respect to the modified version of Figure 3 annotated above, in my opinion, a POSA would understand that client 102 corresponds to the requesting client device.

117. With respect to the modified version of Figure 3 annotated above, in my opinion, a POSA would understand that agent 122 corresponds to the proxy client device. Agent 122 is disclosed as a "client device" (as opposed to a server) that is selected, for example, because agent 122 is closest to the web server 152 (*e.g.*, '319 Patent 5:27; *see also id.* at 5:30-34).

118. In the context of the specification, a client device would be understood to be, more specifically, a consumer computer like a laptop, desktop, tablet, or smartphone. *See, e.g.*, '319 Patent at 2:44-46 ("In the network 50, files are stored on **computers of consumers**, referred to herein as **client devices**.")(emphasis added). In my opinion, the specification explicitly states that "computers of consumers" are "referred to herein as client devices" and the term "client devices" is used in the claims. *See, e.g.*, '319 Patent at 2:44-46. Therefore, in my opinion, a POSA would understand a "client device" is a consumer computer in the context of the specification. This understanding is also consistent with statements made by Applicant during prosecution of the application that issued as the '936 Patent, discussed above. In my opinion, in the context of the specification, a POSA would understand that a consumer device is distinguished from a commercial device. A POSA would also understand that a consumer device is not a dedicated proxy server.

119. A "consumer" is commonly defined as "a person who buys goods or services for their own use" or "someone who buys goods or services for personal use". *E.g.*, https://dictionary.cambridge.org/us/dictionary/english/consumer (EX. 2030) and EX. 2031 at 5 and EX. 2032 at 4; *E.g.,* https://www.collinsdictionary.com/us/dictionary/english/consumer (EX. 2033) and EX. 2034 at 4. This is also consistent with statements made by Applicant during prosecution of the application that issued as the '936 Patent, where the applicant stated that client devices are "typically consumer owned and operated." EX. 2026 at 163.

120. Further, in my opinion, given that the above recited architectures in the '319 and '510 Patent claims distinguish between client devices and servers (e.g. **proxy server** ↔ **proxy client device** ↔ **web server**) a POSA would understand that the mere inclusion of three interchangeable general use computers in pathway such as a generic **computer** ↔ **computer** ↔ **computer** architecture would not by itself disclose the recited architecture of the '319 and '510 Patents. The District Court repeatedly acknowledged that a client device is not merely a general-purpose computer. *E.g.*, EX. 2021 at 14-15 (NetNut C.C. Order referencing prior orders by the same court).

121. In my opinion, the recited architecture in the claims of the '319 and '510 Patents distinguishes the novel use of a client device, rather than a proxy

server, as an intermediary. This understanding is consistent with the Teso Alice Order finding the claims of the '319 and '510 Patents are not abstract. EX. 2024 at 8-9 ("If the claimed methods in this case were simply the receipt and forwarding of information over the Internet, Teso might have a compelling argument. However, it is the use of non-traditional client devices that transforms the Asserted Claims into non-abstract subject matter.") This understanding is also consistent with the Teso C.C. Order, the Teso Supplemental C.C. Order, and the NetNut C.C. Order. EX. 1017, EX. 1020, and EX. 2021.

122. In my opinion, a POSA would understand that a client device is typically portable and easily moved, like, for example, a laptop, desktop, tablet or smartphone. I also agree with the applicant's statements during prosecution that a client device is not a dedicated network element. By contrast, a server is a dedicated network element, as discussed below. I also agree with the applicant's statements during prosecution that a client device typically uses a single or relatively few connections, unlike a server. I also agree with the applicant's statements during prosecution that a client device is resource limited (e.g., bandwidth and storage), unlike a server.

123. In my opinion, a POSA would understand that a client device is typically understood (a) to be regularly switched off and taken offline; (b) to be capable of processing only a limited number of requests at any given time, which

may for example include a single user login; and/or (c) to have lesser fault tolerance, lesser reliability, and lesser scalability, prioritizing value to client device users over system costs.

124. In my opinion, a POSA would understand "client" to be consistent with its plain and ordinary meaning in the context of "client device" discussed above. A POSA's understanding of client and client device is further evidenced by extrinsic materials with a definition of client as "an application that runs on a personal computer or workstation and relies on a server to perform some operations." EX. 2035; *see also* Tanenbaum, et al., "Fifth Edition Computer Networks", EX. 2036 at 5 ("the employees have simpler machines, called clients, on their desks, with which they access remote data, for example, to include in spreadsheets they are constructing"); *see also* Tanenbaum, "Fourth Edition Computer Networks", EX. 2037 at 7.

125. In my opinion, given the specifications discussion of problems associated with the prior art system of using a proxy server as an intermediary (*e.g.*, '319 Patent at 2:8-39) a POSA would NOT consider a proxy client device to encompass a proxy server.

126. In my opinion, a POSA would understand there are structural differences between client devices and servers in the context of the specification and I have seen no contradictory disclosure in the specification or in the

prosecution histories. Rather, client devices are repeatedly distinguished from servers in the specification and the prosecution histories.

H. PATENT OWNER'S PROPOSED CONSTRUCTION FOR "SECOND SERVER"

127. As discussed above, consistent with the Teso C.C. Order, the Teso Supplemental C.C. Order, the Teso Alice Order, and the NetNut C.C. Order, a POSA would understand that the recited architecture in the claims of the '319 and '510 Patents is not merely satisfied by a generic computer ↔ computer ↔ computer architecture.

128. As discussed above, the claim language itself distinguishes client devices and servers. The specification also distinguishes client devices and servers. A POSA would understand that the mere inclusion of interchangeable general-purpose computers in a pathway such as a generic computer ↔ computer ↔ computer pathway would not by itself disclose the architecture of the claimed methods. In the context of the specification, it would be improper to call one component a client device and another identical component a server. There are many prosecution history statements that client devices and servers are different physical elements, they are different types of network components. In allowing the issued claims, the examiner found that client devices are distinguished from servers.

129. The Court has repeatedly acknowledged that a server is not a communication device. *E.g.,* Teso Supplemental C.C. Order, EX. 1020 at 10. Even if a server is "operating as a client" according to the RFCs, that does not transform a server into a communication device in the context of the '319 Patent. Regardless of the role being performed, a server is not a communication device.

130. In my opinion, the "second server" is separate and distinct from the "first client device" of the claims, consistent with the Court's constructions. In my opinion, a server is structurally different from a client device as disclosed in the specification or recited in the patent claims. As discussed above comparing Figures 1 and 3, a POSA would understand that a client device is structurally different from a proxy server. In my opinion, a POSA would understand that agent 122 of Figure 3 is not the same as proxy server 6 of Figure 1.

131. In my opinion, a POSA would understand the "second server" recited in the claims to be a server that is not a client device. This proposed construction is consistent with the claim language, the specification, and the prosecution histories distinguishing servers from client devices. A POSA would understand that, in general, a "server" is not a "client device" in the context of the specification. For example, the Court construed "client device" as a communication device in the Teso Litigation and in the NetNut Litigation. Based on the Court's construction for

"client device", a server is not a client device at least in part because a server is not a communication device.

132. In my opinion, a POSA would understand that a server is not a consumer computer. A POSA would consider a server to be a commercial network element, rather than a consumer device. A POSA would understand that, unlike a client device, a server is not portable or moved about by a consumer. I also agree with the applicant's statements during prosecution that a server is a dedicated network element, unlike a client device. I also agree with the applicant's statements during prosecution that a server is typically capable of a large number of connections, unlike a typical client device.

133. Further, in my opinion, a POSA would understand a server (a) to remain online with greater availability and maximum up time to receive requests almost all of the time (switching off servers can be catastrophic to a network); (b) to efficiently process multiple requests from multiple client devices at the same time; (c) to generate various logs associated with the client devices and traffic from/to the client devices; (d) to primarily interface and respond to the client devices, oftentimes without a Graphical User Interface ("GUI"); (e) to have greater fault tolerance and higher reliability with lower failure rates; and/or (f) to provide scalability for increasing resources to serve increasing client demands. These server-attributes distinguish a server from a client device.

134. A POSA's understanding of server is further evidenced by extrinsic materials with a definition of server as "A computer or device on a network that manages network resources. Servers are often dedicated, meaning that they perform no other tasks besides their server tasks." EX. 2035; *see also* Tanenbaum, et al., "Fifth Edition Computer Networks", EX. 2036 at 5 ("data are stored on powerful computers called servers") and EX. 2036 at 6 ("one server can handle a large number (hundreds or thousands) of clients simultaneously"); *see also* Tanenbaum, "Fourth Edition Computer Networks", EX. 2037 at 7.

135. To the extent that the Board's constructions are intended to construe any intermediary computer operating in a **computer ↔ computer ↔ computer** architecture as both a client and server, as discussed above, such construction is inconsistent with the disclosure in the '319 Patent, the patent prosecution history of at least the '319 Patent, the Teso C.C. Order, Teso Supplemental C.C. Order, the Teso Alice Order and the NetNut C.C. Order. A POSA would NOT understand the recited client devices and servers to be merely interchangeable general use computers.

IX. OVERVIEW OF CROWDS (EX. 1006)

136. I agree with Dr. Rhyne's summary of Crowds (EX. 1006) submitted in EX. 2006. Crowds describes a system comprised of groups ("crowds") of user computers that can interact with one or more web servers. EX. 1006 at 8-9, EX.

2006 at ¶ 22. In order to participate in a crowd, a user installs software on his/her computer to initiate a process called a "jondo." EX. 1006 at 8, EX. 2006 at ¶ 22. "When the jondo is started, it contacts a server called the *blender* to request admittance to the crowd." EX. 1006 at 8, EX. 2006 at ¶ 22(emphasis in original). If a jondo gets admitted to a crowd, "the blender reports to [the new] jondo the current membership of the crowd and information that enables this jondo to participate in the crowd." EX. 1006 at 8, EX. 2006 at ¶ 22.

137. The user can "select[] this jondo as her web proxy by specifying its host name and port number in her web browser as the proxy for all services. Thus, any request coming from the browser is sent directly to the jondo." EX. 1006 at 8, EX. 2006 at ¶ 23. "Upon receiving the first user request from the browser, the jondo initiates the establishment of a random *path* of jondos that carries its users' transactions to and from their intended web servers." EX. 1006 at 8, EX. 2006 at ¶ 23(emphasis in original). "More precisely, the jondo picks a jondo from the crowd (*possibly itself*) at random, and forwards the request to it." EX. 1006 at 8, EX. 2006 at ¶ 23(emphasis added).

138. "When this jondo receives the request, it flips a biased coin to determine whether or not to forward the request to another jondo; the coin indicates to forward with probability pf." EX. 1006 at 8, EX. 2006 at ¶ 23. "So, each request travels from the user's browser, through some number of jondos, and

finally to the end server." EX. 1006 at 8, EX. 2006 at ¶ 23. "[S]erver replies traverse the same path as the requests, only in reverse." EX. 1006 at 8, EX. 2006 at ¶ 23. Figure 2 of Crowds depicts various members of a crowd and a possible set of paths:

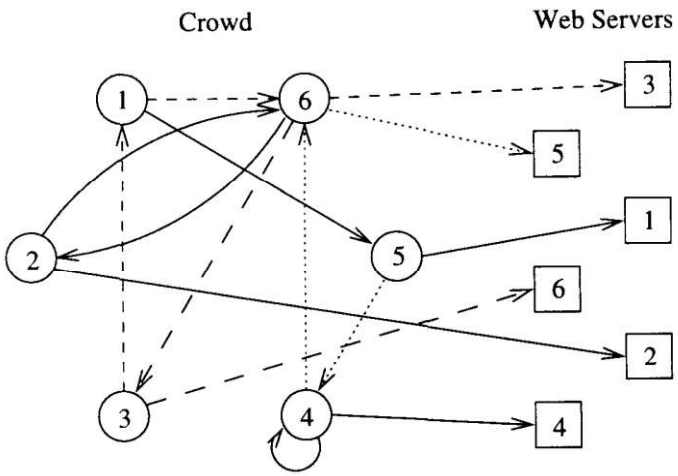


Fig. 2. Paths in a crowd (the initiator and web server of each path are labeled the same).

139. Notably, each jondo is merely a process running on a user's computer. Thus, the only disclosed architecture(s) in Crowds is/are as follows:

(i) User Computer ↔ Web Server

(ii) User Computer ↔ User Computer ↔ Web Server

EX. 2006 at ¶ 25.

140. As explained above, because a user's jondo may (when it "flips the coin") decide to transmit the user's request directly to the appropriate web server (without sending the request to another jondo), the identity(s) of the members of

the crowd do not (necessarily) remain anonymous to the web server. Rather, the system of Crowds offers a user "some degree of deniability" (that it originated a particular request) – not necessarily anonymity. EX. 1006 at 2, EX. 2006 at ¶ 26.

141. Finally, in addition to numerous security risks described in Crowds, the system suffers from a number of additional weaknesses such as: (i) unpredictable or "particularly pronounced" latency (EX. 1006 at 19, EX. 2006 at ¶ 27); and (ii) an inability to handle firewalls ("Firewalls present a problem for Crowds.") (EX. 1006 at 25, EX. 2006 at ¶ 27). Because of the limitations associated with the Crowds architecture and implementation, "Crowds will be most useful across academic institutions, as a service provided by Internet service providers, and within large corporations." EX. 1006 at 25, EX. 2006 at ¶ 27.

A. ANALYSIS OF THE "MAPPED PATH" UNDER PURELY ROLE-BASED CONSTRUCTIONS

142. Petitioners rely on Figure 2 of Crowds and analyze the "Mapped Path" of jondo 5→ jondo 4→ jondo 6→ web server 5 in the grounds. Figure 2 of Crowds is reproduced below with annotations highlighting the Mapped Path. Below, I provide my opinions on the Mapped Path under the purely role-based constructions.

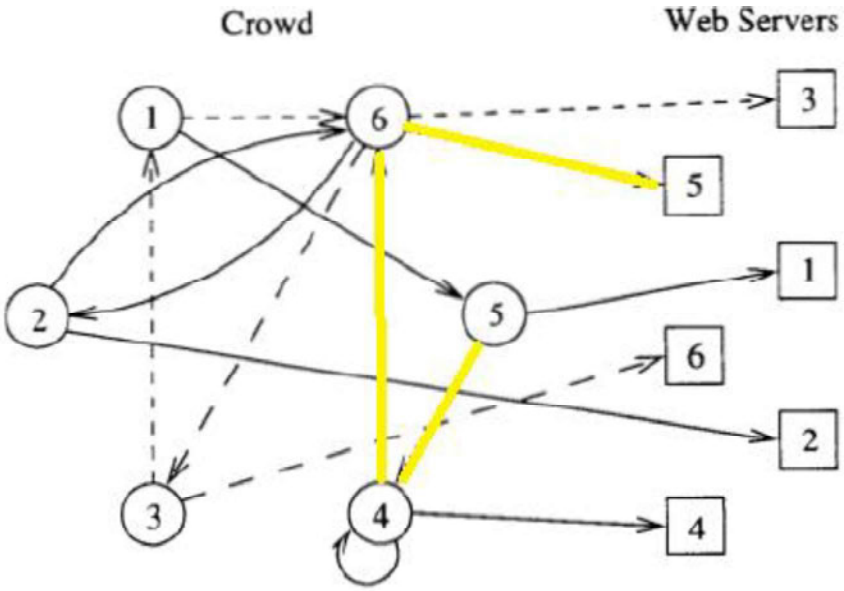


Fig. 2. Paths in a crowd (the initiator and web server of each path are labeled the same).

143. In the Mapped Path, jondo 5 sends a request to jondo 4. At that point in time, under the purely role-based constructions, jondo 5 is operating in the role of a client. Jondo 4 receives the request from jondo 5. At that point in time, under the purely role-based constructions, jondo 4 is operating in the role of a server.

144. In the Mapped Path, jondo 4 sends the request to jondo 6. At that point in time, under the purely role-based constructions, jondo 4 is operating in the role of a client. Jondo 6 receives the request from jondo 4. At that point in time, under the purely role-based constructions, jondo 6 is operating in the role of a server.

145. In the Mapped Path, jondo 6 sends the request to web server 5. At that point in time, under the purely role-based constructions, jondo 6 is operating in the role of a client. Web server 5 receives the request from jondo 6. At that point in

time, under the purely role-based constructions, web server 5 is operating in the role of a server.

146. In the Mapped Path, web server 5 sends a response to jondo 6. At that point in time, under the purely role-based constructions, web server 5 is operating in the role of a server. Jondo 6 receives the response from web server 5. At that point in time, under the purely role-based constructions, jondo 6 is operating in the role of a client.

147. In the Mapped Path, jondo 6 sends the response to jondo 4. At that point in time, under the purely role-based constructions, jondo 6 is operating in the role of a server. Jondo 4 receives the response from jondo 6. At that point in time, under the purely role-based constructions, jondo 4 is operating in the role of a client.

148. In the Mapped Path, jondo 4 sends the response to jondo 5. At that point in time, under the purely role-based constructions, jondo 4 is operating in the role of a server. Jondo 5 receives the response from jondo 4. At that point in time, under the purely role-based constructions, jondo 5 is operating in the role of a client.

X. CROWDS DOES NOT DISCLOSE CLAIM 1 OF THE '319 PATENT

149. As discussed above, in my opinion, the purely role-based constructions of "client device" and "second server" are not appropriate. Even so,

under the purely role-based constructions, in my opinion, Crowds does not disclose each and every limitation of claim 1 of the '319 Patent as discussed below. Moreover, under Patent Owner's proposed constructions, in my opinion, Crowds does not disclose each and every limitation of clam 1 of the '319 Patent as also discussed below.

A. CROWDS DOES NOT DISCLOSE THE PREAMBLE OF CLAIM 1 UNDER PURELY ROLE-BASED CONSTRUCTIONS

150. The preamble of claim 1 recites a "first client device" and a "second server". Petitioners allege that jondo 6 corresponds to the "first client device" and that jondo 4 corresponds to the "second server". Petition at 30. In my opinion, Crowds does not disclose a "first client device" or a "second server" as recited in the preamble of claim 1 under the purely role-based constructions. There is no way for a POSA to determine whether jondos 6 and 4 are client devices or servers under the purely role-based constructions because, as further discussed below, jondos 6 and 4 operate in different roles at different points in time. In my opinion, the "first client device" is necessarily and consistently a client device during the performance of method claim 1. Similarly, in my opinion, the "second server" is necessarily and consistently a server during the performance of method claim 1. For at least these reasons, in my opinion, Crowds does not disclose the preamble of claim 1 under the purely role-based constructions.

B. CROWDS DOES NOT DISCLOSE CLAIM 1, STEP 1 UNDER PURELY ROLE-BASED CONSTRUCTIONS

151. Claim 1, step 1 of the '319 Patent recites the first client device "receiving, from the second server, the first content identifier." Petitioners allege that jondo 6 corresponds to the "first client device" and that jondo 4 corresponds to the "second server" of claim 1. Petition at 31. Petitioners allege that jondo 6 receives a request comprising the first content identifier from jondo 4. Petition at 31.

152. In my opinion, Crowds does not disclose the "first client device" receiving the first content identifier from the "second server" as recited in claim 1. In my opinion, Petitioners fail to apply the purely role-based constructions at the particular point in time, for the particular transaction, recited in step 1 of claim 1.

153. In my opinion, under the purely role-based constructions, when jondo 6 receives a request from jondo 4, jondo 6 is operating in the role of a server, not a client. Therefore, under the purely role-based constructions, jondo 6 cannot be a client device during performance of this method step.

154. Moreover, in my opinion, under the purely role-based constructions, when jondo 4 sends a request to jondo 6, jondo 4 is operating in the role of a client, not a server. Therefore, under the purely role-based constructions, jondo 4 cannot be a server during performance of this method step.

155. For at least these reasons, in my opinion, Crowds does not disclose claim 1 of the '319 Patent under the purely role-based constructions for "client device" and "second server."

C. CROWDS DOES NOT DISCLOSE CLAIM 1, STEP 4 UNDER PURELY ROLE-BASED CONSTRUCTIONS

156. Claim 1, step 4 of the '319 Patent recites the first client device ""sending, the first content by the first client device to the second server, in response to the receiving of the first content identifier." Petitioners allege that jondo 6 corresponds to the "first client device" and that jondo 4 corresponds to the "second server" of claim 1. Petition at 36. Petitioners allege that jondo 6 sends the received first content to jondo 4. Petition at 36.

157. In my opinion, Crowds does not disclose a "first client device" sending the received first content to a "second server" as recited in claim 1. In my opinion, Petitioners fail to apply the purely role-based constructions at the particular point in time, for the particular transaction, recited in step 4 of claim 1.

158. In my opinion, under the purely role-based constructions, when jondo 6 is sending a response to jondo 4, jondo 6 is operating in the role of a server, not a client. Therefore, under the purely role-based constructions, jondo 6 cannot be a client device during performance of this method step.

159. Moreover, in my opinion, under the purely role-based constructions, when jondo 4 is receiving a response from jondo 6, jondo 4 is operating in the role of a client, not a server. Therefore, jondo 4 cannot be a server during performance of this method step.

160. For at least these reasons, in my opinion, Crowds does not disclose claim 1 of the '319 Patent under the purely role-based constructions for "client device" and "second server".

D. CROWDS DOES NOT DISCLOSE THE ARCHITECTURE OF CLAIM 1 UNDER PATENT OWNER'S PROPOSED CONSTRUCTIONS

161. In my opinion, Crowds does not disclose a first client device located between a second server and a web server as recited in claim 1. All jondos of Crowds are identical user computers. Petitioners fail to distinguish the jondos other than the role being performed at a particular point in time. As explained above, the client devices and servers of claim 1 are not interchangeable general use computers.

162. In my opinion, jondo 4 of Crowds does not correspond to the "second server" of claim 1 under Patent Owner's proposed constructions. As discussed above, in my opinion, a POSA would understand the "second server" of claim 1 to be, for example, a proxy server located between a requesting client device and a proxy client device.

163. Petitioners argue that "jondo 4 may be regarded as a server (and thus the second server) for at least the reason that jondo 4 provides a service to requesting jondo 5." Petition at 30. Petitioners rely only on the purely role-based constructions for this analysis of jondo 4 and Petitioners ignore that, under the same logic, jondo 6 (alleged "first client device") provides a service to jondo 4 and would then also have to be a server. In my opinion, Petitioners arbitrarily identify one jondo as a "client device" and another identical jondo as a "server" to improperly map Crowds onto the claims.

164. In my opinion, Crowds does not disclose (or teach) that jondo 4 is a server under Patent Owner's proposed constructions. For example, in my opinion, the jondos of Crowds are user computers and there is no indication that the user computers are dedicated network elements. Also, in my opinion, there is no indication that the jondos of Crowds remain online with greater availability and maximum up time. As another example, in my opinion, there is no disclosure that jondos of Crowds are capable of a large number of connections. For example, Crowds states that the browser used running on the jondo's user computer allowed a maximum of only 4 simultaneous network connections. EX. 1004 at 14-15. Also, Crowds does not provide scalability for increasing resources. Crowds itself provides "little insight into how performance is affected as the crowd size grows"

for example "a crowd involving hundreds of computers, each simultaneously issuing requests." EX. 1004 at 17.

165. Further, in my opinion, the jondos of Crowds are interchangeable network components and there are no differences between them. Therefore, in my opinion, it is not appropriate to call one jondo a "client device" and another identical jondo a "server" in the context of the '319 Patent. In my opinion, Crowds itself distinguishes jondos and servers, for example in Figure 2, which shows jondos having circular icons and servers having square icons. In my opinion, a POSA would understand that the jondos (circular icons) of Crowds are not servers. Petitioner's own expert opined that "all jondos are client devices." EX. 1005 at ¶55.

166. In my opinion, Petitioners ignores the **second server** ↔ **first client device** ↔ **web server** architecture in which the claimed methods of the '319 Patent operate. My understanding is consistent with at least the Teso Alice Order finding the claims of the '319 and '510 Patents are not abstract. EX. 2024 at 8-9

167. My understanding is also consistent with the examiner's analysis during prosecution. In my opinion, Crowds discloses a traditional peer-to-peer system that does not operate within the **second server** ↔ **first client device** ↔ **web server** architecture of the '319 Patent. It appears that the examiner reviewed at least 16 other peer-to-peer systems during prosecution of the '319 Patent. See

code (56). In my opinion, the examiner agreed that the claimed inventions of the '319 Patent are easily distinguishable from traditional peer-to-peer systems.

168. In my opinion, because Crowds does not disclose the **second server** ↔ **first client device** ↔ **web server** architecture in which the claimed methods of the '319 Patent operate, Crowds does not anticipate at least independent claim 1 of the '319 Patent. In my opinion, Crowds does not disclose each and every limitation of claim 1 "as arranged in the claim" and a POSA would not "at once envisage" the invention of claim 1. In my opinion, Crowds does not disclose the **second server** ↔ **first client device** ↔ **web server** architecture with "sufficient specificity" to disclose each and every limitation of at least claim 1 of the '319 Patent "as arranged in the claim."

XI. CROWDS DOES NOT TEACH CLAIM 1 OF THE '319 PATENT ALONE OR IN COMBINATION

169. As discussed above, in my opinion, Crowds does not disclose the method of claim 1 under the purely role-based constructions. In my opinion, the purely role-based constructions are not appropriate. Also, in my opinion, Crowds does not disclose the specific architecture in which the claimed methods operate under Patent Owner's proposed constructions. At minimum, Crowds does not disclose that jondo 4 is a server under Patent Owner's proposed constructions.

170. In my opinion, Crowds does not teach that a jondo may be a server as Petitioners allege. See Petition at 41. Petitioners state that "jondos in Crowds clearly operate on consumer-class computers" (Petition at 40) and then state that "a POSITA could have put some higher-powered devices (such as data center servers) in the "mix," to run as proxy servers (like a jondo), without (in those instances) running their own web browsers." Petition at 41. Petitioners allege this would have been an obvious substitution of known equipment with predictable results. I disagree. Crowds does not disclose or teach putting a data center server in the "mix". Crowds does not disclose or teach a crowd member that does not run its own web browser. Crowds explains that, "if admitted, the blender reports to this jondo the current membership of the crowd and information that enables this jondo to participate in the crowd." EX. 1006 at 8. Crowds states that "the user selects this jondo as her web proxy by specifying its host name and port number in her web browser as the proxy for all services." Id. Crowds also states that "any request coming from the browser is sent directly to the jondo." Id. This jondo is referred to as the initiator in Crowds. Crowds also explains that "upon receiving the first user request from the browser, the jondo initiates the establishment of a random path of jondos that carries its users' transactions to and from their intended web servers." Id.

171. Based on the teachings of Crowds, a POSA would understand that if there is no browser running on the user's computer, then the jondo could not be an initiator. Petitioners' expert appears to agree that Crowds does not disclose a jondo that does not run its own web browser. EX. 2067 at 120:17-22. Also, Crowds does not disclose or teach that the blender distinguishes jondos in the crowds, for example, Crowds does not disclose or teach that the blender separates jondos that may or may not be initiators. Crowds does not teach that there is any difference between an initiator and other crowd members. In fact, Crowds teaches that the initiator benefits from Crowds by being a possible jondo for other crowd members. For at least these reasons, in my opinion, Petitioner's alleged modification of Crowds is contrary to the teachings of Crowds.

172. Additionally, Petitioners seem to acknowledge that a POSA would have been aware, in 2009, of equipment commonly used as "servers" which are not the same as the jondos of Crowds. See Petition at 41.

173. In my opinion, Petitioners fail to explain why a POSA would have modified jondo 4 to be a "server" and keep jondo 6 as a "client device". In my opinion, Petitioners contradict the disclosure of Crowds which teaches jondos are both initiators and intermediaries for other jondos. In my opinion, a POSA would not be motivated to modify jondo 4 to be, for example, a dedicated network element.

174. Additionally, Petitioners provide no analysis that RFC 2616 would cure the deficiencies of Crowds discussed above with respect to claim 1. In my opinion, for at least the reasons discussed above with respect to claim 1, the combination of Crowds and RFC 2616 therefore does not teach or suggest the challenged claims of the '319 Patent.

A. TEACHING AWAY BY CROWDS

175. Additionally, in my opinion, a POSA would not be motivated to arrive at the claimed methods of the '319 Patent based on the teachings of Crowds for at least three reasons discussed below. In my opinion, there is no guidance or disclosure in Crowds that would inform a POSA to do so.

176. First, in my opinion, unlike the claimed methods of the '319 Patent, Crowds does not provide the initiator, i.e., the original requesting jondo, anonymity as to the target web server. Crowds states that it merely offers an initiator "some degree of deniability" that it originated a particular request. EX. 1004 at 2. Based on the flip of a biased coin (EX. 1004 at 8), a jondo may decide to pick itself from a crowd such that a jondo may send a request directly to the target web server.

177. For example, Figure 2 of Crowds discloses the exemplary path of jondo 4→ jondo 4→web server 4. In such a case, jondo 4 sends the request directly to the target web server and the target web server would be able to "see" the

jondo's IP address. As a result, jondo 4 is not anonymous to the web server 4. As another example, Figure 2 of Crowds discloses the exemplary path of jondo 4→ jondo 6→ jondo 2→ web server 2. Even with the use of intermediary jondo 6, jondo 2 sends the request directly to the target web server and the target web server would be able to "see" the jondo's IP address. As a result, jondo 2 is not anonymous to the web server 2.

178. Second, Crowds teaches that an increase in deniability results in an increase in latency. E.g., EX. 1004 at 19. Crowds itself discloses that the architecture leads to unpredictable or "particularly pronounced" latency. EX. 1004 at 19. In my opinion, Crowds therefore fails to achieve the benefits of the '319 Patent.

179. Third, in my opinion, unlike the methods disclosed in the '319 Patent, Crowds does not teach the initiator may purposefully select a jondo to form a pathway. See also e.g., claim 6 of the '319 Patent ("…a second client device selected from a plurality of client devices…"). For example, the '319 Patent explains that a proxy client device can be selected based on the geographic proximity of the proxy client device to the web server. See, e.g., '319 Patent at 13:25-29; *see also id.* at 5:25-27; 13:62-64; 15:6-12; 16:65-17:6. In contrast, Crowds states that the pathway is determined at random, where the use of any additional jondos is based on the flip of a biased coin. EX. 1004 at 8.

XII. CROWDS DOES NOT DISCLOSE OR TEACH THE CHALLENGED, DEPENDENT CLAIMS

180. Because Crowds does not disclose or teach independent claim 1 for the reasons discussed above, Crowds does not disclose or teach dependent claims 2, 14-15, 17-19, or 21-29 of the '319 Patent. *See* Paper 12 at 8. I understand that a dependent claim incorporates all of the limitations of the preceding claim(s) from which it depends. At minimum, Crowds does not disclose the use of a first client device located between a second server and a web server as claimed in the '319 Patent.

A. CROWDS DOES NOT DISCLOSE OR TEACH DEPENDENT CLAIM 18 OF THE '319 PATENT

181. In addition to the reasons discussed above with respect to claim 1, in my opinion, the combination of Crowds and RFC 2616 (Ground 2) does not disclose or teach the limitations of claim 18 under either construction. Petitioners and their expert rely on the "keep-alive" mechanism disclosed in RFC 1122. Petition at 43; EX. 1005 at ¶105. However, RFC 1122 is not a reference relied on in Ground 2. In my opinion, Petitioners fail to show the combination of Crowds and RFC 2616 teaches the limitations of claim 18.

B. CROWDS DOES NOT DISCLOSE OR TEACH DEPENDENT CLAIM 19 OF THE '319 PATENT

182. In addition to the reasons discussed above with respect to claim 1, in my opinion, Crowds does not disclose or teach the limitations of claim 19 under either construction. In my opinion, Petitioners fail to show that Crowds discloses or teaches "storing of the first content" and "sending… the stored first content" as recited in claim 19. Petition at 37. Petitioners provide no additional obviousness analysis of claim 19 in Ground 2. Petition at 43-44.

183. Petitioners stated that Crowds "discloses (and states how a user could download from the Internet for installation) a software package that implements a jondo, whose operation is per claim 1". Petition at 37; see also EX. 1005 at ¶76. Neither Petitioner nor its expert provide any analysis to show that the software package causes the processor on the jondo to store the first content or send the stored first content as recited in claim 19. The cited portion of Crowds (page 91) does not disclose or teach storing the first content either.

184. For at least these reasons, in my opinion, Crowds does not disclose or teach claim 19 of the '319 Patent.

C. CROWDS DOES NOT DISCLOSE OR TEACH DEPENDENT CLAIM 24 OF THE '319 PATENT

185. In addition to the reasons discussed above with respect to claim 1, in my opinion, Crowds does not disclose or teach the limitations of claim 24 under

either construction. In my opinion, Petitioners fail to show that Crowds discloses or teaches the first client device establishing a Transmission Control Protocol (TCP) connection with the second server using TCP/IP protocol as recited in claim 24. Petitioners provide no additional obviousness analysis of claim 24 in Ground 2. Petition at 43-44.

186. In my opinion, the portions of Crowds cited and relied upon by Petitioners only disclose establishing a TCP connection in the context of a jondo sending a request for content. Petition at 37-38. For example, Crowds discloses that when a jondo is admitted to a crowd, that jondo does not establish any TCP connections with other jondos until that first jondo receives a request for content from the user's browser. EX. 1004 at 8.

187. In my opinion, Crowds does not disclose a "first client device" establishing a TCP connection with a "second server" as recited in claim 24 under the purely role-based constructions. In the Mapped Path, 5→4→6→5 and in the context of jondo 4 sending a request for content to jondo 6, jondo 4 is operating in the role of a client and jondo 6 is operating in the role of a server under the purely role-based constructions. Therefore, in my opinion, under the purely role-based constructions, jondo 4 cannot correspond to the "second server" as Petitioners allege because at that point in time, when jondo 4 is sending a request to jondo 6, jondo 4 is operating in the role of a client, not a server. Moreover, in my opinion,

under the purely role-based constructions, jondo 6 cannot correspond to the "first client device" as Petitioners allege because at that point in time, when jondo 6 is receiving a request from jondo 4, jondo 6 is operating in the role of a server, not a client.

188. In my opinion, Crowds does not disclose a "first client device" establishing a TCP connection with a "second server" as recited in claim 24 under Patent Owner's proposed constructions. As discussed above, in my opinion, jondo 4 is not a server.

189. For at least these reasons, in my opinion, Crowds does not disclose or teach claim 24 of the '319 Patent.

XIII. OVERVIEW OF BORDER (EX. 1012)

190. I agree with Dr. Rhyne's summary of Border (EX. 1012) submitted in EX. 2006. Border describes "a communication system for receiving web content." EX. 1012 at Abstract, EX. 2006 at ¶28. As shown in Border Figs. 1 and 2 (reproduced below), "[a] downstream proxy server receives a URL request message from a web browser, in which the URL request message specifies a URL content that has an embedded object." EX. 1012 at 3:34-38, EX. 2006 at ¶28. "An upstream proxy server receives the URL request message from the downstream proxy server." EX. 1012 at 3:34-38, EX. 2006 at ¶28. "The upstream proxy server selectively forwards the URL request message to a web server and receives the

URL content from the web server. EX. 1012 at 3:34-38, EX. 2006 at ¶28. "The upstream proxy server forwards the URL content to the downstream proxy server and parses the URL content to obtain the embedded object ***prior to receiving*** a corresponding embedded object request message initiated by the web browser." EX. 1012 at 3:34-38, EX. 2006 at ¶28 (emphasis added).

FIG. 1

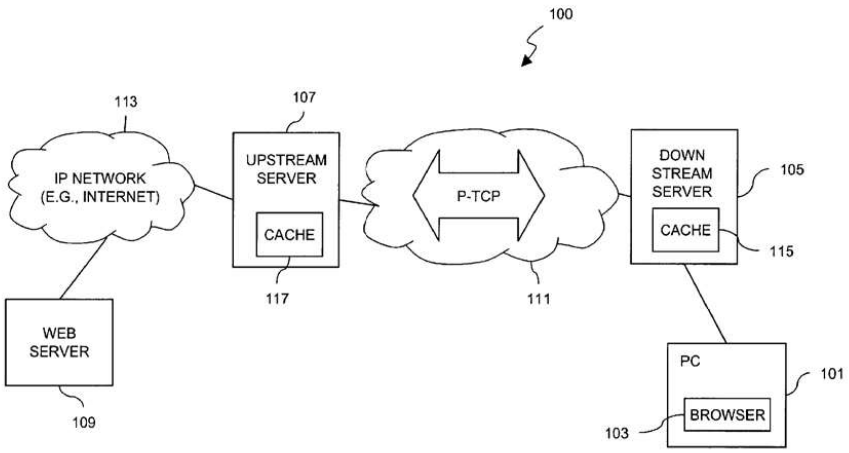
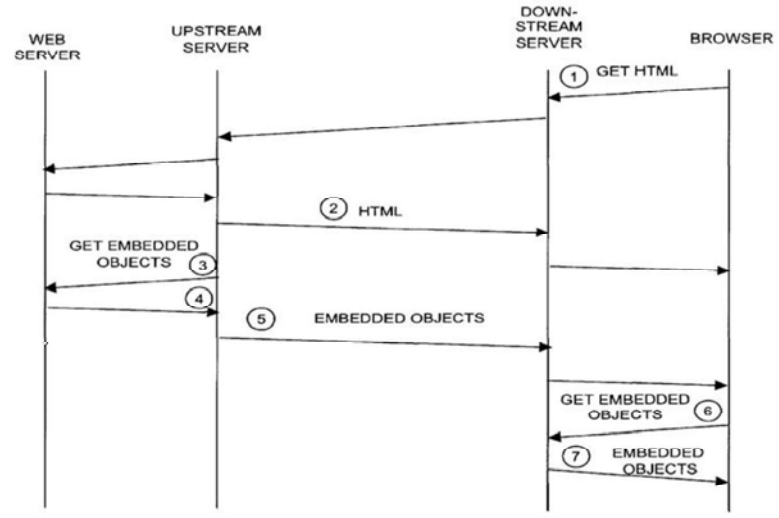


FIG. 2



191. As described in the specification, the system of Border relates to obtaining "embedded objects" from a web server (or from a local cache) "prior to receiving corresponding embedded object requests initiated by [a] web browser." EX. 1012 at 5:45-49, EX. 2006 at ¶29.

192. To that end, the disclosed system incorporates two servers, each having its own cache: "downstream server 105 checks its cache 115 to determine whether the requested URL has been previously visited" (EX. 1012 at 5:19-21, EX. 2006 at ¶30) and "upstream server 117 in turn searches for the URL HTML in its cache 117" (EX. 1012 at 5:33-35, EX. 2006 at ¶30).

193. "[I]f the HTML page is not found in cache 117, the server 117 issues the GET URL HTML request [to-sic] web server 109 for the HTML page." EX. 1012 at 5:34-36, EX. 2006 at ¶30. "[U]pstream server 117 parses the HTML page and requests the embedded objects within the HTML page from the web server 109; the embedded objects are requested prior to receiving corresponding embedded object requests initiated by the web browser 103." EX. 1012 at 43-48, EX. 2006 at ¶30.

194. "[D]ownstream proxy server 105 initiates and maintains a TCP connection to the upstream proxy server 107 as needed to carry HTTP transactions." EX. 1012 at 7:50-53, EX. 2006 at ¶31."The persistent TCP connection may also be set up when the first transaction is required and torn down

after the connection has been idle for some period." EX. 1012 at 7:56-58, EX. 2006 at ¶31.

195. The disclosed architecture over which Border operates is:

User Computer ↔ Downstream Server ↔ Upstream Server ↔ Web Server

EX. 2006 at ¶32.

XIV. BORDER DOES NOT DISCLOSE CLAIM 1 OF THE '319 PATENT

196. As discussed above, in my opinion, the purely role-based constructions of "client device" and "Second server" are not appropriate. Even so, under the purely role-based constructions, in my opinion, Border does not disclose each and every limitation of claim 1 of the '319 Patent as discussed below. Moreover, under Patent Owner's proposed constructions, in my opinion, Border does not disclose each and every limitation of claim 1 of the '319 Patent as also discussed below.

A. BORDER DOES NOT DISCLOSE THE PREAMBLE OF CLAIM 1 UNDER PURELY ROLE-BASED CONSTRUCTIONS

197. The preamble of claim 1 recites a "first client device" and a "second server". Petitioners allege that upstream server 107 corresponds to the "first client device" and that downstream server 105 corresponds to the "second server". Petition at 46. In my opinion, Border does not disclose a "first client device" or a "second server" as recited in the preamble of claim 1 under the purely role-based

constructions. There is no way for a POSA to determine whether upstream/downstream servers 107, 105 are client devices or servers under the purely role-based constructions because, as further discussed below, upstream/downstream servers 107,105 operate in different roles at different points in time. In my opinion, the "first client device" is necessarily and consistently a client device during the performance of method claim 1. Similarly, in my opinion, the "second server" is necessarily and consistently a server during the performance of method claim 1. For at least these reasons, in my opinion, Border does not disclose the preamble of claim 1 under the purely role-based constructions.

B. BORDER DOES NOT DISCLOSE CLAIM 1, STEP 1 UNDER PURELY ROLE-BASED CONSTRUCTIONS

198. Claim 1, step 1 of the '319 Patent recites the first client device "receiving, from the second server, the first content identifier." Petitioners allege that upstream server 107 corresponds to the "first client device" and that downstream server 105 corresponds to the "second server". Petition at 46-47. Petitioners allege that downstream server 105 sends a request comprising the first content identifier to upstream server 107. Petition at 47.

199. In my opinion, Border does not disclose the "first client device" receiving the first content identifier from the "second server" as recited in claim 1.

In my opinion, Petitioners fail to apply the purely role-based constructions at the particular point in time, for the particular transaction, recited in step 1 of claim 1.

200. In my opinion, under the purely role-based constructions, when downstream server 105 sends a request to upstream server 107, downstream server 105 is operating in the role of a client, not a server. Therefore, under the purely role-based constructions, downstream server 105 cannot be a server during performance of this method step.

201. Moreover, in my opinion, under the purely role-based constructions, when upstream server 107 receives a request form downstream server 105, upstream server 107 is operating in the role of a server, not a client. Therefore, under the purely role-based constructions, upstream server 107 cannot be a client device during performance of this method step.

202. For at least these reasons, in my opinion, Border does not disclose claim 1 of the '319 Patent under the purely role-based constructions for "client device" and "second server".

C. BORDER DOES NOT DISCLOSE CLAIM 1, STEP 4 UNDER PURELY ROLE-BASED CONSTRUCTIONS

203. Claim 1, step 4 of the '319 Patent recites the first client device "sending, the first content by the first client device to the second server, in response to the receiving of the first content identifier." Petitioners allege that

upstream server 107 corresponds to the "first client device" and that downstream server 105 corresponds to the "second server". Petition at 51. Petitioners allege that upstream server 107 sends the HTML page to the downstream server 105. Petition at 51.

204. In my opinion, Border does not disclose the "first client device" sending the received first content to the "second server" as recited in claim 1. In my opinion, Petitioners fail to apply the purely role-based constructions at the particular point in time, for the particular transaction, recited in step 4 of claim 1.

205. In my opinion, under the purely role-based construction, when upstream server 107 sends a response to downstream server 105, upstream server 107 is operating in the role of a server, not a client. Therefore, under the purely role-based constructions, upstream server 107 cannot be a client device during performance of this method step.

206. Moreover, in my opinion, under the purely role-based constructions, when downstream server 105 receives a response from upstream server 107, downstream server 105 is operating in the role of a client, not a server. Therefore, under the purely role-based constructions, downstream server 105 cannot be a server during performance of this method step.

207. For at least these reasons, in my opinion, Border does not disclose claim 1 of the '319 Patent under the purely role-based constructions for "client device" and "second server".

D. BORDER DOES NOT DISCLOSE THE ARCHITECTURE OF CLAIM 1 UNDER PATENT OWNER'S PROPOSED CONSTRUCTIONS

208. In my opinion, Border does not disclose a first client device located between a second server and a web server as recited in claim 1. The upstream/downstream servers of Broder are identical, except for the role being performed at a particular point in time.

209. In my opinion, a POSA would understand that the upstream/downstream servers of Border are servers and not client devices. In my opinion, Border does not disclose that upstream server 107 is a client device under Patent Owner's proposed constructions. In my opinion, Border does not disclose the specific second server ↔ first client device ↔ web server architecture of the '319 Patent.

210. As previously discussed, a server is not a type of communication device within the context of the '319 Patent. Therefore, a server, such as upstream server 107, is not a client device in the context of the '319 Patent. Moreover, Petitioners do not identify any differences between the upstream/downstream

servers that would make one server a client device and another server a server in the context of the '319 Patent.

211. Petitioners argue that the upstream/downstream servers of Border may run on general purpose computers. Petition at 47; see also Petition at 56. However, as discussed above, the claimed components of the '319 Patent are not merely general purpose computers. Petitioners ignore that the claim 1 of the '319 Patent operates within a specific physical architecture in a specific way. As confirmed by the Court, a generic computer ↔ computer ↔ computer architecture does not disclose the specific architecture of the '319 Patent. The claims of the '319 Patent are more than general purpose computers sending and receiving information. EX. 2024 at 8-9. Petitioners fail to explain why one proxy server would be a server and another proxy server would be a client device under Patent Owner's proposed constructions. Petitioners identify no teaching in Border that would motivate a POSA to arrive at the specific second server ↔ first client device ↔ web server architecture of the '319 Patent.

XV. BORDER DOES NOT TEACH CLAIM 1 OF THE '319 PATENT

212. As discussed above, Border does not distinguish upstream/downstream servers running on general purpose computers. See Petition at 56. Petitioners additionally argue that "any computing device capable of operating a "proxy" as defined in RFC 2616, could serve as a first client device."

Petition at 56. As discussed above, RFC 2616 relates to a request/response protocol in a traditional client-server model. RFC 2616 does not disclose or teach the specific architecture of the '319 Patent. Also, RFC 2616 defines "proxy" as an "intermediary program which acts as both a server and a client." EX. 1013 at 9. RFC 2616 defines "client" as a "program that establishes connections for the purpose of sending requests" and RFC 2616 defines "server" as an "application program that accepts connections in order to service requests by sending back responses". EX. 1013 at 8. RFC 2616 explains that "[a]ny given program may be capable of being both a client and a server; our use of these terms refers only to the role being performed by the program **for a particular connection**." EX. 1013 at 8 (emphasis added). In my opinion, the definitions in RFC 2616, referring only to the role being performed for a particular connection, actually supports my above criticism of the purely role-based constructions where an intermediary may be operating in different roles at different points in time for different connections. In my opinion, Petitioners ignore the different roles being performed at different points in time for different connections in order to improperly map the references onto the claims. Additionally, as discussed above, under the purely role-based constructions, an intermediary may operate in different roles and there is no way to distinguish an intermediary server versus an intermediary client device.

213. In my opinion, Petitioners fail to show that a POSA would be motivated to keep downstream server 105 as a server and modify upstream server 107 to be a client device as recited in claim 1 of the '319 Patent under Patent Owner's proposed constructions. In my opinion, upstream server 107 is a server and not a client device.

214. Additionally, Petitioners provide no analysis that RFC 2616 would cure the deficiencies of Border discussed above with respect to claim 1. In my opinion, for at least the reasons discussed above with respect to claim 1, the combination of Border and RFC 2616 therefore does not teach or suggest the challenged claims of the '319 Patent

A. TEACHING AWAY BY BORDER

215. Additionally, in my opinion, a POSA would not be motived to arrive at the claimed methods of the '319 Patent based on the teachings of Border for at least the reasons discussed below. In my opinion, there is no guidance or disclosure in Border that would inform a POSA to do so.

216. In my opinion, Border is not directed to addressing the problem of initiator anonymity. Border discloses a fixed architecture involving an upstream proxy server and a downstream proxy server that selectively request URL content and embedded objects to the extent the requested information is not already stored in the caches of those servers for the purpose of reducing response time. The

alleged advantage of the system of Border is that "the upstream proxy server forwards the URL content to the downstream proxy server and parses the URL content to obtain the embedded object ***prior to*** the web browser having to issue an embedded object request message." EX. 1012 at 2:54-58 (emphasis added).

217. Thus, Border offers a different network structure directed toward solving a different problem from that of the '319 Patent. Accordingly, the architecture and operation of Border is completely different than that of the challenged claims. Border does not disclose the use of a second server ↔ first client device ↔ web server architecture as claimed in the '319 Patent. Rather, Border discloses the use of a downstream proxy server and upstream proxy server by utilizing the caches of the proxy servers to access stored URL content, to obtain embedded objects by the upstream server in anticipation of subsequent requests, and to selectively send such content to the downstream server, to reduce the latency of requests by an initiating user station. As a result, Border fails to achieve the benefits of the '319 Patent.

XVI. BORDER DOES NOT DISCLOSE OR TEACH THE CHALLENGED, DEPENDENT CLAIMS

218. Because Border does not disclose or teach independent claim 1 for the reasons discussed above, Border does not disclose or teach dependent claims 12, 14-15, 17-19, 21-22, 24-25, or 27-29 of the '319 Patent. *See* Paper 12 at 8. I

understand that a dependent claim incorporates all of the limitations of the preceding claim(s) from which it depends. At minimum, Border does not disclose the use of a first client device located between a second server and a web server as claimed in the ’319 Patent.

A. BORDER DOES NOT DISCLOSE OR TEACH DEPENDENT CLAIM 18 OF THE ‘319 PATENT

219. In addition to the reasons discussed above with respect to claim 1, in my opinion, the combination of Border and RFC 2616 (Ground 4) does not disclose or teach the limitations of claim 18 under either constructions. Petitioners and their expert rely on the “keep alive” mechanism disclosed in RFC 1122. Petition at 58; EX. 1005 at ¶149. RFC 1122 is not a reference relied upon in Ground 4. In my opinion, Petitions fail to show the combination of Border and RFC 2616 teaches the limitations of claim 18.

XVII. OVERVIEW OF MORPHMIX (EX. 1008)

220. I agree with Dr. Rhyne’s summary of MorphMix (EX. 1008) submitted in EX. 2006. MorphMix discloses “a peer-to-peer-based dynamic mix network…”. EX. 1008 at 115. As shown below, Fig. 5.1 of MorphMix depicts the “Basic Idea of MorphMix.”

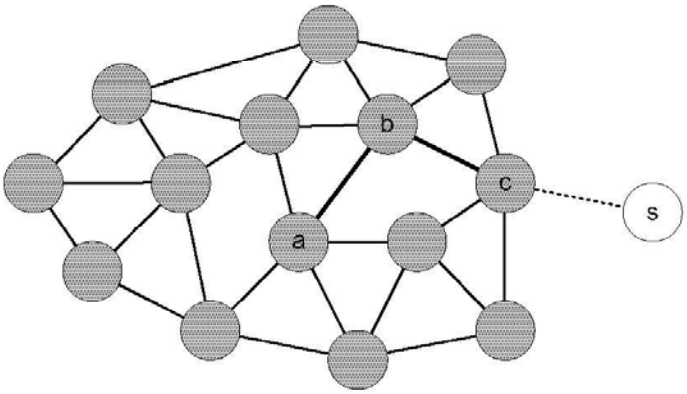


Figure 5.1: *Basic idea of MorphMix.*

221. In the disclosed system, "[a]t any time, Morphmix consists of a set of participating nodes." EX. 1008 at 118, EX. 2006 at ¶34. Nodes can join and leave the system at any time and must therefore not necessarily participate in the MorphMix protocol all the time. EX. 1008 at 118, EX. 2006 at ¶34. "We assume that at any time, a node knows about some other nodes, i.e., their IP addresses, the ports on which the MorphMix application is listening for incoming connection requests, and their public keys." EX. 1008 at 118, EX. 2006 at ¶34. "Learning about other nodes requires a peer discovery mechanism …" EX. 1008 at 118, EX. 2006 at ¶34.

222. "A node that is participating in MorphMix has established a *virtual link* to one or more other MorphMix nodes at any time." EX. 1008 at 119, EX. 2006 at ¶35 (emphasis original). "In MorphMix, a virtual link means that (1) there is a TCP connection between the two nodes and (2) they share a symmetric key

that is only known to these two nodes." EX. 1008 at 119, EX. 2006 at ¶35. "In Figure 5.1, a has five neighbors because it has established virtual links to five other nodes." EX. 1008 at 119, EX. 2006 at ¶35.

223. "Since MorphMix is basically a circuit-based mix network, a node establishes a circuit via some other nodes to access servers in the Internet anonymously." EX. 1008 at 119, EX. 2006 at ¶36. A node can be established by "[a]nyone who has access to a computer that is connected to the Internet should be able to join and use MorphMix after having installed the MorphMix software." EX. 1008 at 116, EX. 2006 at ¶36.

224. MorphMix operates by creating one or more anonymous tunnels – "[A]n anonymous tunnel is set up hop-by-hop in the sense that the initiator picks the first intermediate node and establishes the layer of encryption with it." EX. 1008 at 134, EX. 2006 at ¶37. "Then the initiator tells the first intermediate node to append another node to the tunnel and establishes the layer of encryption with the second intermediate node." EX. 1008 at 134, EX. 2006 at ¶37. "This continues until the initiator decides the tunnel is long enough." EX. 1008 at 134, EX. 2006 at ¶37. "The key is that the initiator selects only the first intermediate node and each node along the anonymous tunnel then picks the following node." EX. 1008 at 134, EX. 2006 at ¶37.

225. The architecture and configuration of MorphMix suffers from a number of problems. For example, "a centralized lookup service that keeps track of the nodes that are currently participating in MorphMix is out of the question." EX. 1008 at 135, EX. 2006 at ¶37. "Free riding" is also a problem in MorphMix, where "users only consume but do not provide the files that they download to others." EX. 1008 at 143, EX. 2006 at ¶37.

226. The disclosed architecture over which MorphMix operates is: Peer ↔ Peer ↔ Server (EX. 2006 at ¶38).

XVIII. MORPHMIX DOES NOT DISCLOSE CLAIM 1 OF THE '319 PATENT

227. As discussed above, in my opinion, the purely role-based constructions of "client device" and "second server" are not appropriate. Even so, under the purely role-based constructions, in my opinion, MorphMix does not disclose each and every limitation of claim 1 of the '319 Patent as discussed below. Moreover, under Patent Owner's proposed constructions, in my opinion, MorphMix does not disclose each and every limitation of claim 1 of the '319 Patent as also discussed below.

A. MORPHMIX DOES NOT DISCLOSE THE PREAMBLE OF CLAIM 1 UNDER PURELY ROLE-BASED CONSTRUCTIONS

228. The preamble of claim 1 recites a "first client device" and a "second server". Petitioners allege that node (c) corresponds to the "first client device" and

that node (b) corresponds to the "second server". Petition at 61-62. In my opinion, MorphMix does not disclose a "first client device" or a "second server" as recited in claim 1 under the purely role-based constructions. There is no way for a POSA to determine whether nodes (c) and (b) are client devices or servers under the purely role-based constructions because, as further discussed below, nodes (c) and (b) operate in different roles at different points in time. In my opinion, the "first client device" is necessarily and consistently a client device during the performance of method claim 1. Similarly, in my opinion, the "second server" is necessarily and consistently a server during the performance of method claim 1. For at least these reasons, in my opinion, MorphMix does not disclose the preamble of claim 1 under the purely role-based constructions.

B. MORPHMIX DOES NOT DISCLOSE CLAIM 1, STEP 1 UNDER PURELY ROLE-BASED CONSTRUCTIONS

229. Claim 1, step 1 of the '319 Patent recites the first client device "receiving, from the second server, the first content identifier." Petitioners allege that node (c) corresponds to the "first client device" and that node (b) corresponds to the "second server". Petition at 62. Petitioners allege that node (b) sends the first content identifier to node (c). Petition at 62.

230. In my opinion, MorphMix does not disclose a "first client device" receiving the first content identifier from the "second server" as recited in claim 1.

In my opinion, Petitioners fail to apply the purely role-based constructions at the particular point in time, for the particular transaction, recited in step 1 of claim 1.

231. In my opinion, under the purely role-based constructions, when node (b) sends a request to node (c), node (b) is operating in the role of a client, not a server. Therefore, under the purely role-based constructions, node (b) cannot be a server during performance of this method step.

232. Moreover, in my opinion, under the purely role-based constructions, when node (c) receives a request from node (b), node (c) is operating in the role of a server, not a client. Therefore, under the purely role-based constructions, node (c) cannot be a client device during performance of this method step.

233. For at least these reasons, in my opinion, MorphMix does not disclose claim 1 of the '319 Patent under the purely role-based constructions for "client device" and "second server."

C. MORPHMIX DOES NOT DISCLOSE CLAIM 1, STEP 4 UNDER PURELY ROLE-BASED CONSTRUCTIONS

234. Claim 1, step 4 of the '319 Patent recites the first client device ""sending, the first content by the first client device to the second server, in response to the receiving of the first content identifier." Petitioners allege that node (c) corresponds to the "first client device" and that node (b) corresponds to

the "second server". Petition at 67. Petitioners allege that node (c) sends the first content to node (b). Petition at 67.

235. In my opinion, MorphMix does not disclose a "first client device" sending the received first content to a "second server" as recited in claim 1. In my opinion, Petitioners fail to apply the purely role-based constructions at the particular point in time, for the particular transaction, recited in step 4 of claim 1.

236. In my opinion, under the purely role-based constructions, when node (c) sends the first content to node (b), node (c) is operating in the role of a server, not a client. Therefore, under the purely role-based constructions, node (c) cannot be a client device during performance of this method step.

237. Moreover, in my opinion, under the purely role-based constructions, when node (b) receives the first content from node (c), node (b) is operating in the role of a client, not a server. Therefore, under the purely role-based constructions, node (b) cannot be a server during performance of this method step.

238. For at least these reasons, in my opinion, MorphMix does not disclose claim 1 of the '319 Patent under the purely role-based constructions for "client device" and "second server".

D. PETITIONERS DO NOT ANALYZE MORPHMIX UNDER PATENT OWNER'S PROPOSED CONSTRUCTIONS

239. Petitioners do not provide analysis under Patent Owner's proposed constructions and rely only on the purely role-based construction for "second server". Petitioners do not suggest any modifications to node (b) of MorphMix. Petitioners allege that "MorphMix discloses that node b in the above example is a "server" as commonly understood because node b accepts a connection from node a in order to send back a response." Petition at 63. However, Petitioners identified node (c) as a client device even though node (c) accepts a connection from node (b) in order to send back a response. In my opinion, Petitioners improperly identify one node as a "client device" and another identical node as a "server" in order to improperly map MorphMix onto the claims.

240. Petitioners additionally argue that a "sender" of messages is a client and a "recipient" of messages is a server under the purely role-based constructions. Petition at 64. However, as I explained above, MorphMix does not disclose at least steps 1 and 4 of claim 1 under the purely role-based constructions. Petitioners ignore that node (b) and node (c) perform the same roles as intermediaries between node (a) and server (s). Petitioners state that "a node can act as a client in one relation and as a server in another" but fail to consider the relation recited in each method step. Under the purely role-based constructions, node (b) operates in the role of a server in relation to node (a); and node (b) operates in the role of a client

in relation to node (c). As explained above, the purely role-based constructions are not appropriate and contradict at least the express language of claim 1.

241. Petitioners additionally argue that MorphMix discloses an embodiment in which "a common MorphMix node outside a NAT gateway is accessed as a proxy by multiple users." Petition at 64. Petitioner alleges that in this embodiment, that common node would be node (a) and therefore node (a) qualifies as a "second server" that sends the first content identifier to node (c). Petition at 64. Thus far, Petitioner has alleged that node (b) corresponds to the "second server" of claim 1. See, e.g., Petition at 62. Now, Petitioner alleges that node (a) qualifies as the "second server" of claim 1. Petition at 64. In my opinion, Petitioner's analysis is improper. Additionally, for the same reasons discussed above with respect to node (b), node (a) is not a server under the purely role-based constructions, at least when node (a) sends application data through node (b) to node (c). At that particular point in time, node (a) is operating in the role of a client under the purely role-based constructions. Additionally, node (a) is not a server under Patent Owner's proposed constructions. In my opinion, a POSA would understand that node (a) is a client device, not a server.

E. MORPHMIX DOES NOT DISCLOSE THE ARCHITECTURE OF CLAIM 1 UNDER PATENT OWNER'S PROPOSED CONSTRUCTIONS

242. In my opinion, MorphMix does not disclose a "first client device" located between a second server and a web server. All of nodes (a), (b), and (c) of MorphMix are identical user computers. Petitioners fail to distinguish the nodes other than the role being performed at a particular point in time. Petitioners provide no additional analysis that would qualify node (b) as a server under Patent Owner's proposed constructions. *See, e.g.,* Petition at 63-64. As explained above, the client devices and servers of claim 1 are not interchangeable general use computers.

243. In my opinion, node (b) of MorphMix does not correspond to the "second server" of claim 1 under Patent Owner's proposed constructions. As discussed above, in my opinion, a POSA would understand the "second server" to be, for example, a proxy server located between a requesting client device and a proxy client device.

244. In my opinion, node (b) of MorphMix would be understood by a POSA as a client device, not a server. As discussed above, a POSA would understand that a client device is not a server in the context of the '319 Patent. In my opinion, MorphMix does not disclose the second server – first client device – web server architecture of claim 1. A server is not a communication device in the context of the '319 Patent. In my opinion, node (b) is a client device, not a server.

XIX. MORPHMIX DOES NOT TEACH CLAIM 1 OF THE '319 PATENT

245. In my opinion, there is no teaching in MorphMix that would motivate a POSA to modify node (b) to be a server. There is no teaching in MorphMix that any node, much less node (b), can be a server. Instead, MorphMix teaches that each node is a peer – not a server. "MorphMix is a peer-to-peer based mix network and consequently, we no longer distinguish between clients and mixes and simply refer to them as nodes." EX. 1008 at 118; see also EX. 1008 at 168 ("In this section, we have presented the basic idea and functionality of MorphMix, a peer-to-peer based dynamic mix network for low-latency applications. In contrast to static mix networks, there is no distinction between clients and mixes in MorphMix. Rather, every participating node is both a client and a mix at the same time.").

246. Petitioners rely on their anticipation analysis (see Petition at 71-72) with respect to node (b) and state that "a MorphMix node may be set up as a server outside a NAT gateway" (Petition at 72). As discussed above, Petitioners' analysis fails under the purely role-based constructions and Petitioners provide no additional analysis that would qualify node (b) as a server under Patent Owner's proposed constructions. Additionally, MorphMix teaches that having all users access MorphMix through this single node is disadvantageous because the anonymity of users may be compromised by an attacker. EX. 1008 at 163.

247. There is no teaching in MorphMix of incorporating a physical server into the network. Morphmix actually teaches against using servers because it discloses a peer-to-peer based dynamic mix network. In my opinion, a POSA would not be motivated to use servers instead of the dynamic peers of MorphMix. Petitioners provide no analysis that RFC 2616 would cure these deficiencies of MoprhMix. For at least these reasons, in my opinion, the combination of MorphMix and RFC 2616 does not teach claim 1 of the '319 Patent. Claim 1 operates within a specific physical architecture in a specific way. In my opinion, MorphMix does not disclose or teach the architecture of claim 1. In my opinion, MorphMix does not disclose or teach the physical implementation or operation of claim 1.

A. TEACHING AWAY BY MOPRHMIX

248. As discussed above, the architecture and configuration of MoprhMix suffers from a number of problems. For example, "a centralized lookup service that keeps track of the nodes that are currently participating in MorphMix is out of the question." EX. 1008 at 135. "Free riding" is also a problem in MorphMix, where "users only consume but do not provide the files that they download to others." EX. 1008 at 143. Additionally, MorphMix suffers from poor performance and increased latency: "Compared to Figure 8.1, the download times are significantly longer. The better the bandwidth of the node, the more severe the performance

penalty from which it suffers." Id. at 227. Finally, a MorphMix tunnel completely fails when any node along a tunnel fails or leaves: "The most significant limitation of MorphMix is that if any node along a tunnel can no longer be reached for any reason, the tunnel fails." Id. at 256. Thus, in my opinion, MorphMix fails to achieve the benefits of the '319 Patent. In my opinion, a POSA would not be motivated to arrive at the claimed methods of the '319 Patent based on the teachings of MorphMix.

XX. MORPHMIX DOES NOT DISCLOSE OR TEACH THE CHALLENGED, DEPENDENT CLAIMS OF THE '319 PATENT

249. Because MorphMix does not disclose or teach independent claim 1, for the reasons discussed above, MorphMix does not disclose or teach dependent claims 2, 14-15, 17-19, or 21-29 of the '319 Patent. *See* Paper 12 at 8. I understand that a dependent claim incorporates all of the limitations of the preceding claim(s) from which it depends. At minimum, MorphMix does not disclose the use of a first client device located between a second server and a web server as claimed in the '319 Patent.

A. MORPHMIX DOES NOT DISCLOSE OR TEACH DEPENDENT CLAIM 18 OF THE '319 PATENT

250. In addition to the reasons discussed above with respect to claim 1, in my opinion, the combination of MorphMix and RFC 2616 (Ground 6) does not disclose or teach the limitations of claim 18 under either construction. Petitioners

and their expert rely on the "keep-alive" mechanism disclosed in RFC 1122. Petition at 75; EX. 1005 at ¶ 209 (citing earlier discussion with respect to Crowds and Border). With respect to Crowds, Petitioners and their expert rely on RFC 1122 which is not a reference relied upon in Ground 2. Petition at 43; EX. 1005 at ¶105. With respect to Border, Petitioners and their expert rely on RFC 1122 which is not a reference relied upon in Ground 4. Petition at 58; EX. 1005 at ¶149. In my opinion, Petitioners fail to show the combination of MorphMix and RFC 2616 teaches the limitations of claim 18.

B. MORPHMIX DOES NOT DISCLOSE OR TEACH DEPENDENT CLAIM 19 OF THE '319 PATENT

251. In addition to the reasons discussed above with respect to claim 1, in my opinion, MorphMix does not disclose or teach the limitations of claim 19 under either construction. In my opinion, Petitioners fail to show that MorphMix discloses or teaches "storing of the first content" and "sending…the stored first content" as recited in claim 19. Petition at 69. Petitioners provide no additional obviousness analysis of claim 19 in Ground 6. Petition at 76.

252. Petitioners stated that "MorphMix discloses downloading and installing from the Internet, by the first client device, a software application that includes computer instructions that, when executed by a computer processor, cause the processor to perform the steps of claim 1." Petition at 69. Neither Petitioner nor

its expert provide any analysis to show that the software application causes the processor on node (c) to store the first content or send the stored first content as recited in claim 19. Petitioners do not cite any portion of MorphMix in support of their allegations. I note that Petitioners' expert testified that he is not aware of any disclosure in MorphMix where node (b) operates as a caching proxy. EX. 2067 at 79:14-18.

253. For at least these reasons, in my opinion, MorphMix does not disclose or teach claim 19 of the '319 Patent.

XXI. PETITIONERS' EXPERT'S TESTIMONY SHOULD BE GIVEN LITTLE WEIGHT

254. Petitioners relied on the declaration of Mr. Teruya (EX. 1005) in this proceeding. I understand that Mr. Teruya was deposed on December 15, 2022 in connection with this proceeding. EX. 2067. In my opinion, Mr. Teruya's testimony in this proceeding should be given little weight because, as discussed below, the inconsistencies in the technical positions he has taken call into question his analysis and opinions.

255. In my opinion, Mr. Teruya was using hindsight in his analysis. Mr. Teruya testified that he "would look at the claim in a patent and [he] would see if the description of that particular claim… could exist in the prior art." EX. 2067 at 34:23-35:7. Mr. Teruya also testified that "of course" he would read the claim to

see what the particular nuts and bolts were and then go look at the reference to see if those same nuts and bolts were present. EX. 2067 at 40:14-41:1. Mr. Teruya testified that, for example, "if we're analyzing MorphMix, and you're applying it to the '319 patent, then what you have – have to ask me to do is apply the architecture of the '319 patent onto MorphMix because MorphMix defines itself very differently…." EX. 2067 at 85:6-86:1.

256. In my opinion, Mr. Teruya failed to consider any teaching away from the claimed inventions. For example, Mr. Teruya testified that he did not review the entirety of MorphMix or Crowds and he was only looking at, for example, function and flow. EX. 2067 at 74:5-25 and 116:25-117:9.

257. In my opinion, Mr. Teruya understands that a client sends requests/receives responses while a server receives requests/sends responses under the purely role-based constructions, but as discussed further below, Mr. Teruya fails to apply this understanding consistently. Mr. Teruya explained that a node can act as a client in one relation and as a server in another; where responding and providing information would be acting as a server and where requesting and receiving information would be acting as a client. *See* EX. 2067 at 55:24- 56:15; EX. 1005 at ¶165; see also EX. 2067 at 57:17-24; see also EX. 2067 at 67:24-68:21; see also EX. 2067 at 70:9-14. Mr. Teruya expressly testified that if a node is sending a request then it is functioning as a client. EX. 2067 at 84:21-24; see also

EX. 2067 at 77:11-25. Mr. Teruya expressly testified that if a node receives a request, then it is operating in the role of a server (EX. 2067 at 81:18-23) and if a node is "returning data from a request coming in, then it's operating in the role of a server" (EX. 2067 at 79:23-81:8).

258. When questioned on his application of the purely role-based constructions, Mr. Teruya's deposition testimony was entirely inconsistent with his recited understanding and Mr. Teruya ignored that intermediary devices operate in different roles at different points in time for different connections.

259. For example, with respect to MorphMix, Mr. Teruya testified that when node (b) sends a request to node (c), node (b) is operating in the role of a server. EX. 2067 at 81:24-82:13; see also EX. 2067 at 102:20-103:3. Mr. Teruya testified that he "defined" node (b) as a second server. EX. 2067 at 102:9-19. In my opinion, Mr. Teruya is using hindsight when opining that node (b) of MorphMix corresponds to the "second server" of the claims. Mr. Teruya had previously stated in his declaration, and testified regarding claim construction, that a node sending a request is operating in the role of client. See also e.g., EX. 1005 at ¶166. When questioned on MorphMix, Mr. Teruya did not consistently apply the purely role-based constructions because, in my opinion, Mr. Teruya was improperly mapping the reference onto the claims. In my opinion, Mr. Teruya is unable to justify his application of the purely role-based constructions.

260. As another example, with respect to Crowds, Mr. Teruya testified that when jondo 4 receives a request from jondo 5, jondo 4 is operating as a server. EX. 2067 at 107:3-7. Then, Mr. Teruya testified that when jondo 6 receives a request from jondo 4, jondo 6 is operating in the role of a client. EX. 2067 at 107:8-12. Again, like with MorphMix, Mr. Teruya is unable to justify his application of the purely role-based constructions because he had already "defined" jondo 6 as a "client device" when improperly mapping Crowds onto the claims of the '319 Patent.

261. In my opinion, Mr. Teruya ignores the specific architecture in which the claimed methods operate. Mr. Teruya ignores the use of a proxy client device as recited in claim 1. Mr. Teruya testified that claim 1 of the '319 Patent recites little more than the basic functionality of a proxy server. EX. 2067 at 50:16-51:7; EX. 1005 at ¶37; see also EX. 2067 at 53:22-54:8.

XXII. BRIGHT DATA PRACTICES THE CHALLENGED CLAIMS

262. My understanding is that Bright Data (which has undergone a number of name changes) provides a residential proxy service. In my opinion, Bright Data's residential proxy service practices the methods claimed in the '319 Patent, as discussed below. Bright Data's residential proxy service provides various users' client devices, such as a laptop, desktop, tablet, or smartphone, as a proxy to other users' requesting client devices.

263. The residential IP addresses of proxy client devices are registered. Bright Data currently provides approximately 72 million residential IP addresses associated with real users, in approximately 195 countries, to be used as proxy client devices in its residential proxy service. *See* https://brightdata.com/proxy-types/residential-proxies (EX. 2038).[2]

264. As confirmed during my conversation with Mr. Kol and as shown in Bright Data's network diagram (EX. 2039), Bright Data's residential proxy service operates in the following way:

[2] I also understand that Bright Data also provides a Software Development Kit ("SDK") to app developers such that a user may agree to configure its client device to participate in the service as a proxy client device in exchange for free or discounted apps. See also https://brightdata.com/proxy-types/residential-proxies (EX. 2038)("How does Bright Data acquire its residential IPs?").

a. Upon using the residential proxy service, the customer's client device establishes a TCP connection between itself and the web server, though the Super Proxy and through one or more proxy client devices. Each Super Proxy is a proxy server located somewhere in the world. During my conversation with Mr. Kol, he explained that Bright Data currently has more than 4,000 Super Proxies worldwide, including in the United States.

b. A customer sends an HTTP request for content identified by a URL to a Super Proxy. The Super Proxy sends the request for content identified by a URL to a proxy client device (Peer SDK) that in turn, sends the request for content identified by a URL to a web server using the IP address of the proxy client device as the Source IP Address.

c. The proxy client device obtains the requested content directly from the web server. The proxy client device sends the requested content back to the customer via the Super Proxy through the established connection.

265. I have also reviewed Bright Data's source code for its residential proxy service. I have compiled a separate appendix with a chart of the '319 Patent claims showing where the claimed features of the '319 Patent are found in Bright Data's residential proxy service, including the source code. EX. 2040 (source code claim chart appendix) and EXS. 2041-2044 (source code itself).

266. In my opinion, the residential proxy service directly corresponds to the network architecture of the modified version of Figure 3 of the '319 Patent where the requesting client device corresponds to client 102, the Super Proxy corresponds to proxy server 6, and the proxy client device corresponds to agent 122. In my opinion, Bright Data's residential proxy service is "reasonably commensurate in scope with the scope of the claims" of the '319 Patent. As discussed herein, the '319 Patent's claims are directed at the novel use of a proxy client device. In my opinion, as discussed herein, Bright Data's residential proxy service embodies the claimed features of the '319 Patent and is coextensive with them.

267. During my conversation with Mr. Kol, I confirmed that the features driving the commercial success of Bright Data's residential proxy service is (a) the proxy client devices have residential IP addresses that lower the risk of blocking by the web server and (b) the scalability of this architecture given the large number of proxy client devices having residential IP addresses, which are the direct result of the unique characteristics of the '319 Patent claims, i.e., the novel use of a proxy client device to fetch content from a web server.

268. In my opinion, it is the use of a client device as a proxy that enables Bright Data to create a network with millions of nodes to act as proxies. This is an extremely scalable solution that solves the problems identified in the prior art in

the background section of the specification. This also solves the problems I discussed in detail regarding blocking/spoofing by a web server. These client devices are otherwise being used by regular consumers for their usual purposes, making proxy requests created by these devices difficult to distinguish from the requests of the owners of the client devices.

269. These advantages are noted in the following press release for an investment that was made in Bright Data (then known as Luminati) by EMK Capital in 2017:

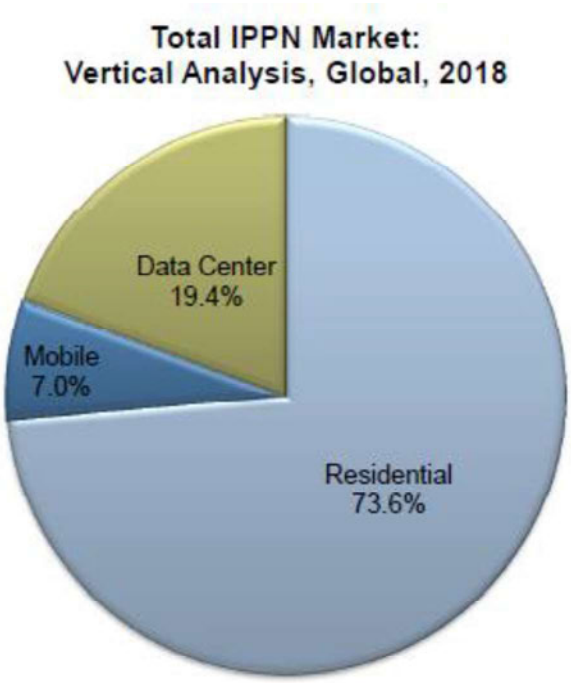
> Luminati is the world's leading enterprise IP proxy network, and helps make the Web more transparent by allowing businesses to see the internet from the consumers' point of view. In the Internet's early days, web pages were simple – every viewer saw the same page. Today, sites are dynamic – they recognize the viewer and show different content, advertisements and prices based on the viewers' geography, demographics, and other identifying information. Websites can also determine if a competitor is comparing prices, or if a security company is auditing them for potential threats. These trends are eliminating the transparency of the Web: for example, they reduce online retailers' ability to compete as retailers can't reliably see the prices that are presented to consumers; similarly these trends make it difficult for security firms to find malicious sites, as such sites are presented only to users of a certain demographic. These developments have also made it difficult for ad networks & website owners to check that the ads they are delivering are safe, because an unscrupulous ad vendor may present malicious ads only to the unsuspecting user but not to the ad network.
>
> Luminati brings back transparency and trust to the Web by enabling its enterprise customers to access the internet through its proprietary network of over 40 million IP addresses. Luminati helps customers to see the Web as it appears to real consumers, without being blocked, slowed or spoofed and to view the Web from different users' perspectives from any city across the globe. Luminati's technology and patent portfolio allow Luminati to operate the only mass-scale residential IP proxy network in the world.
>
> Luminati serves corporate clients, including Fortune 500 companies, in many different sectors which use Luminati's transparency network for ad verification, brand protection, price comparison, fraud prevention, data collection, cyber security, and application performance measurement. Luminati's residential IP service is required for many businesses that need certainty in the accuracy of the data they collect online and the accuracy of the cyber security checks they conduct.

See https://www.emkcapital.com/emk-acquires-luminati-worlds-largest-ip-proxy-network-brings-transparency-internet/ (EX. 2045). I understand that EMK Capital acquired a majority stake in Bright Data (then known as Luminati) at an enterprise value of $200 million in 2017. In my opinion, this acquisition is evidence of commercial success, showing non-obviousness of the '319 Patent's claims.

270. As further evidence of Bright Data's commercial success, I understand that Bright Data's residential proxy service generated revenues of $53.7 million in the year of 2021, as shown below. In my opinion, this revenue is evidence of commercial success, showing non-obviousness of the '319 Patent's claims.

XXIII. SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

271. In my opinion, as discussed above with respect to Bright Data practicing the '319 Patent's claims, the commercial success of Bright Data's residential proxy service is driven by the claimed methods' novel use of a proxy client device. Bright Data's residential proxy service has grown to dominate the market. According to a 2019 Report by Frost & Sullivan, by 2018, residential proxy services accounted for an estimated 73.6% of the "Internet Protocol proxy network (IPPN)" comprising "residential IP proxy networks, data center IP proxy networks, and mobile IP proxy networks." EX. 2046 at 4 and 45. Bright Data itself, became the estimated market leader with an estimated 53.1% of the IPPN market in 2018. EX. 2046 at 48. Frost and Sullivan identified Bright Data's next biggest competitors in the 2018 timeframe as Oxylabs at 13.3% and Geosurf at 10.6% of the IPPN Market. *Id*. Oxylabs is the brand of Bright Data's largest competitor comprising five sister companies, Teso LT, UAB, Metacluster LT, UAB, Oxysales, UAB, Code200, UAB and CoreTech



LT, UAB (collectively, "Oxylabs"). EX. 2047, Teso Trial Transcript Day 3, Tomas Okmanas Testimony at 90:3-93:7.

272. It is my opinion that Bright Data's residential proxy service was a success because the use of client devices as proxies solved a long felt, but unresolved need. While traditional data center server proxies could provide some anonymity for the user in accessing a target web site, that web site could still likely identify data center server IP addresses as proxy addresses, because such data center server IP addresses were usually (a) associated with commercial IP addresses; and (b) limited to a block of IP addresses sharing the same IP address prefix and geographic location. In contrast, Bright Data's proxy client devices have residential IP addresses that vary widely from one another without being limited to one block of IP addresses and can have a wide variety of geographic locations. Further, the use of Bright Data's proxy client devices can dramatically increase the scale of IP addresses that can be included in a proxy network. For example, Bright Data currently touts "72 million+ real residential IPs" "shared by real people in our community-sharing network" in 195 countries. EX. 2048 at 4. By comparison, Bright Data touts having 1.6 million datacenter IPs. EX. 2048 at 7; *see also e.g.* EX. 2049, Teso Trial Transcript Day 1, Ofer Vilenski Testimony at 182:22-197:21. Bright Data was the first company to identify this need and provide a solution using proxy client devices through Bright Data's residential IP network. *Id*. Thus,

it is my opinion that this problem was well-known and that the inventions in the '319 Patent were the first to solve it.

273. During the jury trial in the Teso Litigation, evidence of Oxylabs copying Bright Data's residential proxy service, then under the name "Hola," was presented. For example, Bright Data's Ofer Vilenski and Oxylabs' Tomas Okmanas[3], both testified that they had a meeting to discuss the "SDK,". EX. 2049, Teso Trial Transcript Day 1, Ofer Vilenski Testimony at 202:12-204:8; EX. 2047, Teso Trial Transcript Day 3, Tomas Okmanas Testimony at 131:23-132:7; 152:8-153:6. Specifically, Mr. Vilenski testified that he asked Mr. Okmanas to incorporate Bright Data's SDK in Oxylabs' applications to expand Bright Data's residential proxy network. *Id.* Mr. Okmanas did not agree to incorporate Bright Data's SDK in Oxylabs' applications, but subsequently released their own SDK for Oxylabs' own residential proxy network. EX. 2047, Teso Trial Transcript Day 3, Tomas Okmanas Testimony at 94:23-95:9; 95:20-97:23.

274. Within days of his meeting with Mr. Vilenski, Mr. Okmanas testified that he sent an email to a third party stating that he was "looking for a company that could make me an extension and promote it. Basically what I am looking [for] is a system that works like hola.org." EX. 2047, Teso Trial Transcript Day 3, Tomas Okmanas Testimony at 152:18-153:6. Mr. Okmanas testified that Oxylabs

[3] A founder of Tesonet now Oxylabs.

was originally in the data center proxy space, but wanted to develop its own residential proxy service . EX. 2047, Teso Trial Transcript Day 3, Tomas Okmanas Testimony at 95:20-97:1; 103:18-104:10. Mr. Okmanas testified that he believed that he needed to do what Bright Data (previously known as Luminati and Hola) were doing to be successful. EX. 2047, Teso Trial Transcript Day 3, Tomas Okmanas Testimony at 149:13-150:8. In my opinion, this is strong evidence of copying, which is evidence of non-obviousness.

275. At the conclusion of the trial, a jury verdict was issued finding that none of the asserted patent claims were invalid and Oxylabs' infringement was willful, and that Bright Data was entitled to lost profits. EX. 2001, Jury Verdict. Despite the jury verdict finding infringement and willfulness, Oxylabs updated its website stating "[t]he Court has not issued any orders related to continued use of Oxylabs' residential proxy service…. Oxylabs continues to offer its services in an uninterrupted manner." EX. 2050 at 8, Oxylabs Legal Timeline. In my opinion, the commitment of Bright Data's largest competitor to continue offering its residential proxy service despite the jury verdict of willful infringement is strong evidence of its continuing need to offer the residential proxy service – a strong indication of commercial success.

276. It is my further opinion that Bright Data's residential proxy service has received industry praise including from competitors, and that that praise is tied

to the claims of the '319 Patent as described above. *See, e.g.,* https://earthweb.com/residential-proxies/ (EX. 2051 at 23-24).Additionally, competitors like Oxylabs, Smartproxy, and Microleaves have praised the advantages of using a residential proxy service. *See, e.g.,* https://smartproxy.com/blog/what-is-the-difference-between-proxy-servers-and-data-centers (EX. 2052); https://web.archive.org/web/20170913105635/https://microleaves.com/services/backconnect-proxies?promotion=dNPa (EX. 2053); https://web.archive.org/web/20200701171337/https://oxylabs.io/products/residential-proxy-pool (EX. 2054).

277. In my opinion, the evidence of secondary considerations indicates that the inventions claimed in the '319 Patent would not have been obvious to a POSA at the time of invention.

I declare that the foregoing is true and correct under penalty of perjury of the laws of the United States.

Tim Arthur Williams

Signed in Danville, CA on January 6, 2023

EXHIBIT A

Tim Arthur Williams, Ph.D.
Curriculum Vitae

Dr. Williams has 45 years of professional experience in wireless communications, networking and telecom technology. He is an entrepreneur who has participated in the organization and operation of start up companies that brought wireless LAN, software VoIP PBX, and 2-way paging technology to the marketplace. Dr. Williams holds numerous patents in wireless and signal processing technology. He is an experienced litigation support consultant with experience in patent infringement matters. Dr. Williams is also a registered Patent Agent.

- Wireless LAN
- Cellular and PCS Standards
- Cellular Telephone Architecture
- Digital Signal Processing
- Telecommunications Technology
- VoIP Technology
- Computer Networking
- Wireless Networks & Protocols

Year	University	Degree
1991	University of Texas at Austin	MBA
1985	University of Texas at Austin	Ph.D., Dissertation: "Digital Signal Processing Techniques for Acoustic Log Data"
1982	University of Texas at Austin	MSEE, Thesis: "Cepstral Processing of Speech Signals"
1976	Michigan Technological University	BSEE

Tim Arthur Williams, Ph.D.
Curriculum Vitae

Professional Experience

From: 2008
To: 2010
Organization: Expressume, Inc / Montage Inc. – Milwaukee, WI
Title: Board Member
Summary: This company sells software for human resource recruiting. This company was sold in June 2019.

From: 2008
To: 2014
Organization: Faculte, Inc. – San Jose, CA
Title: Board Member
Summary: This company provided SaaS (Software as a Service) web video based communication products.

From: 2008
To: 2010
Organization: BitRail Networks Inc. – Miami, FL
Title: Founder, Board Member
Summary: This company sold computer networking solutions.

From: 2008
To: Present
Organization: Calumet Venture Management – Madison, WI
Title: Member
Summary: This company provides seed capital and management expertise to small companies.

From: 2006
To: 2015
Organization: BEEcube Inc. – Fremont, CA
Title: Founder, Board Member, Board Advisor
Summary: This company built high speed processing solutions. This company was sold to National Instruments, Inc. in Feb 2015.

From:	2006
To:	2015
Organization:	Topaz Equity, LLC – Danville, CA
Title:	Founder, Board Member
Summary:	This is a private equity investment company. It owned AtomAMPD which develops, markets and sells software based network solutions.

From:	2004
To:	Present
Organization:	DoceoTech Inc. – Danville, CA
Title:	Founder, Chairman
Summary:	This was a training company that provides training for engineers in Wireless, Networking, and Telephony technologies. It is currently owned by Beach Technologies, LLC.

From:	2004
To:	2006
Organization:	SiBEAM, Inc. – Sunnyvale, CA
Title:	Founder, Chief Executive Officer
Summary:	This is a fabless semiconductor company that develops high-speed wireless networking ICs. This company was sold to Silicon Image, Inc. in Apr 2011.

From:	2001
To:	2004
Organization:	JetQue, Inc. – Danville, CA
Title:	Founder, Chief Executive Officer
Summary:	This company created messaging solutions for the mobile professional.

From:	1999
To:	2000
Organization:	Atheros Communications, Palo Alto, CA
Title:	Interim CEO, Advisory Board Member
Summary:	This company builds wireless LAN ICs. Atheros became a public company in May 2004. (ATHR) This company was sold to QCOM in Jan 2011.

From:	1998
To:	2000
Organization:	Picazo Communications, Inc. – San Jose, CA
Title:	Chief Technology Officer, Advisory Board Member
Summary:	This company built and sold software PBXs Telephony equipment using VoIP and Circuit Switched Technologies. The company was purchased by Intel.

From:	1996
To:	Present
Organization:	Beach Technologies, LLC – Danville, CA
Title:	Chief Executive Officer
Summary:	This is a consulting company that provides IP services. It owns DoceoTech LLC and Streaming Knowledge LLC, which perform the same services.

From:	1991
To:	1998
Organization:	Wireless Access, Inc. – Santa Clara, CA
Title:	Co-Founder, Chief Technical Officer, Vice President of Engineering, Vice President of Business Strategy
Summary:	This was a startup company focusing on the Narrow Band PCS equipment market. The company developed the over the air protocols, the subscriber equipment and the ICs to deploy 2-way paging services. The company was sold to Glenarye Electronics.

From:	2014
To:	2021
Organization:	Through Technology, LLC. – Chicago, IL
Title:	Partner
Summary:	This is a private equity investment company. It owns Through Technology Group, PTE LTD, which is registered in Singapore.

From:	1979
To:	1991
Organization:	Motorola, Inc. – Austin, TX – Semiconductor Sector

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Title: Sr. Engineer, Member Technical Staff, Sr. MTS

Summary: Business manager, project leader, and senior technical member of the teams which were responsible for product development of the following systems:

- ADPCM transcoder,
- ISDN U-reference point transceiver,
- CT-2 voice codec and channel modem,
- GSM voice codec and channel modem,
- TDMA voice codec and channel modem
- CDMA voice codec and channel modem, and
- Japanese Digital Cellular voice codec and channel modem.

From: 1976
To: 1979
Organization: Motorola Inc. - Chicago, IL - Communications Sector - Digital Voice Privacy Group
Title: Engineer
Summary: This group built the first commercial digitally encrypted two-way FM land mobile radio system.

Professional Certifications

- Patent Agent – U.S. Patent and Trademark Office #50,790 (Jan 2002)

Issued Patents

Patent	Date	Description
9,787,471	2017	Data Enciphering or Deciphering using a Hierarchical Assignment System
7,904,117	2011	Wireless Communication Device using Adaptive Beamforming
6,781,962	2004	Apparatus and Method for Stored Voice Message Control
6,600,481	2003	Data entry apparatus and method
6,088,457	2000	Method and apparatus for over the air programming a communication device
5,854,595	1998	Communications apparatus and method with a computer interchangeable integrated circuit card
5,557,642	1996	Direct conversion receiver for multiple protocols

5,428,638	1995	Method and apparatus for reducing power consumption in digital communications devices
5,345,406	1994	Bandpass sigma delta converter suitable for multiple protocols
5,101,344	1992	Data processor having split level control store
5,001,661	1991	Data processor with combined adaptive LMS and general multiplication functions
4,989,169	1991	Digital tone detector using a ratio of two demodulators of differing frequency
4,972,356	1990	Systolic IIR decimation filter
4,965,762	1990	Mixed size radix recoded multiplier
4,947,363	1990	Pipelined processor for implementing the least-mean-squares algorithm
4,876,542	1989	Multiple output oversampling A/D converter with each output containing data and noise
4,862,169	1989	Oversampled A/D converter using filtered, cascaded noise shaping modulators
4,843,585	1989	Pipelineable structure for efficient multiplication and accumulation operations
4,843,390	1989	Oversampled A/D converter having digital error correction
4,796,219	1989	Serial two's complement multiplier
4,737,925	1988	Method and apparatus for minimizing a memory table for use with nonlinear monotonic arithmetic functions
4,734,876	1988	Circuit for selecting one of a plurality of exponential values to a predetermined base to provide a maximum value
4,727,508	1988	Circuit for adding and/or subtracting numbers in logarithmic representation
4,722,067	1988	Method and apparatus for implementing modulo arithmetic calculations
4,682,302	1987	Logarithmic arithmetic logic unit
4,618,946	1986	Dual page memory system having storage elements which are selectively swapped between the pages
4,406,010	1983	Receiver for CVSD modulation with integral filtering
4,398,262	1983	Time multiplexed n-ordered digital filter

Patent Applications and Continuation Applications

Appl. Num.	Pub. Date	Description
20070037528	2007	Wireless Communication Device using Adaptive Beamforming
20040252679	2004	Stored Voice message Control Extensions
15/711,590	2017	Data Enciphering or Deciphering using a Hierarchical Assignment

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Published Papers

6 Sept 2016 Putnam, Jonathan D. and Williams, Tim A., The Smallest Salable Patent-Practicing Unit (SSPPU): Theory and Evidence. Available at SSRN: https://ssrn.com/abstract=2835617

Litigation Experience

See attached.