

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Juniper Networks Inc.,
Petitioner,

v.

Portsmouth Network Corporation
Patent Owner.

Case No. IPR2024-00913
U.S. Patent No. 8,014,394

DECLARATION OF JAMES OLIVIER, Ph.D.

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Declaration of James Olivier, Ph.D.

I, Dr. James L. Olivier, declare under penalty of perjury as follows:

I. INTRODUCTION

1. My name is James L. Olivier, Ph.D. I have been retained on behalf of Patent Owner, Portsmouth Network Corporation, as an independent expert and have been asked to provide my expert opinions regarding U.S. Patent No. 8,014,394. EX1001 (“the ’394 Patent”).

II. PROFESSIONAL BACKGROUND

2. My qualifications for forming the opinions given in this declaration are summarized here and are addressed more fully in my curriculum vitae, which is submitted as Exhibit 2002. My curriculum vitae also includes a list of my publications and technical consulting experience.

3. I am a recent Fulbright award winner in the areas of computer science and blockchain technologies, and I currently serve as an adjunct professor at Southern Methodist University.

4. I possess the knowledge, skills, experience, training, and education to form an expert opinion and testimony in this case. I am an expert in the field of networking technologies and have been an expert in this field since before 2009. I have designed and developed access systems which deliver multimedia traffic such as those described in the ’394 Patent since my work at Marconi. I teach bandwidth

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constraint models, IGMP and PIM snooping, along with multicast trees in my Multiprotocol Label Switching class.

5. I have a Ph.D. from The Ohio State University in Electrical Engineering with minors in Discrete Mathematics, Computer Science, and Microelectronics. My specialty was fault tolerant computing and my Ph.D. dissertation was based on coding theory and was titled “Concurrent Error Detection in Arithmetic Processors using GAN Codes,” in which I developed new codes for use in Arithmetic Processors such as microprocessors. I have published papers on fault tolerant computing and coding theory and continued my work while at the General Motor Research Laboratory.

6. I have extensive experience in network systems design and development and have specialized in networking product development. I have developed and designed equipment for networks since my time at AT&T Bell Laboratories in the 1990s, where I worked on AT&T 5ESS, Network Control Point, and Autoplex Series base stations as a Member of the Technical Staff. These systems made extensive use of a counter-rotating ring network topology known as the Common Network Interface, much like the network described in the '394 Patent. It was there where I first began my work with telecommunication standards bodies as a contributing member of the Asynchronous Transfer Mode (“ATM”) ATM Forum. Later at DSC Communications, I was the Senior Manager of the ATM

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systems engineering group developing ATM packet switches for a new generation base station for Motorola's use in their Centralized Base Station Controller. While at DSC, I was also their corporate representative to the ATM Forum, participating in bi-monthly standards body development. I was one of the first contributors to the wireless standards at the ATM Forum.

7. At Samsung Telecommunications America, I was a Principal Engineer for wireless broadband services over Universal Mobile Telecommunications System ("UMTS"). UMTS is a third-generation ("3G") broadband standard developed by the 3rd Generation Partnership Project ("3GPP"). At Samsung, I worked on designing their next-generation cellular switch, a UMTS mobile switching center ("MSC"). While at Samsung, I was also their corporate representative to the International Telecommunication Union ("ITU"), the United Nations agency responsible for standardizing information and communication technologies. The ITU, under its International Mobile Telecommunications-2000 effort, was part of the 3GPP standards body. It was there that I participated in the development of standards for advanced wireless networks. While at Samsung, I was responsible for the "services portion" of the UMTS switch. This subsystem provided Internet service, email, and the like to the subscribers.

8. At Marconi, I worked on several systems for the access market, such as Digital Subscriber Line ("DSL") modems and Digital Subscriber Line Access

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Multiplexers (“DSLAMs”), along with the design of point-to-point wireless systems. At Navini Networks, I was responsible for layer 2 and layer 3 network protocols for their Wideband Code Division Multiplexed Access (“WCDMA”) wireless base stations and broadband modems. These layers were responsible for packet transmissions for various services over the WCDMA air interface. I was also responsible for the development of a Single Sign On (“SSO”) system which allowed users to gain information relating to their wireless subscription and delete or add services.

9. Currently I am an Adjunct Professor in the Network Engineering Graduate Program at Southern Methodist University’s School of Electrical Engineering, where I teach MPLS networked-enabled applications. Among the MPLS applications I teach is the use of MPLS in advanced network design, including content delivery networks, (CDNs) service provider network design and Intranet vs. Internet network designs. In my class I also teach DSLAMS, SONET/SDH rings, ADMs, Ethernet switch design and bandwidth allocation models. I also discuss multicast streams in MPLS and Virtual Private networks. I am also the owner of Olivier Consulting, where I provide consulting services for advanced network/product design along with Intellectual Property consulting. This year I received a three-year Fulbright specialist award in the area of computer science for my work at the Hunt Institute for Engineering and Humanity, which is

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part of the Lyle School of Engineering at Southern Methodist University in Dallas, Texas. There, I served as the Program Lead for Transformational Technology. Among the transformational technologies I investigate at the Hunt Institute is the Internet of Things (“IoT”), which makes extensive use of Fourth-Generation and Fifth-Generation networks.

10. I am a co-inventor of U.S. patent No. 8,334,775 issued Dec. 18, 2012 and entitled “RFID-Based Asset Security and Tracking System, Apparatus and Method.” This invention relates to a Radio-Frequency Identification (RFID)-based Global Positioning System (GPS) tracking system to provide control and security of assets. This system integrates an RFID-based detection system with a conventional GPS tracking system. The GPS tracking system includes GPS receivers connected over a network to a centrally based GPS monitoring system.

11. Because of my background, training, and experience, I am qualified as an expert to explain the background of the technology encompassed by the ’394 Patent as well as to offer opinions related to the validity of the claims of the ’394 Patent in view of the prior art references discussed herein.

12. If called upon to do so, I could and would testify truthfully regarding the points stated below in this declaration.

III. COMPENSATION

13. I am being compensated for my independent analysis as an expert with respect to this *inter partes* review proceeding. My work on this matter is being billed at my customary rate of \$725.00 per hour. Also, I am being reimbursed for reasonable expenses I incur in relation to my services. My compensation is not contingent in any way on the content of my analysis, the opinions that I offer, or the outcome of this proceeding. I have no financial interest in Petitioner or Patent Owner, and I have no financial interest in the '394 Patent.

IV. OVERVIEW OF TASK & BASIS FOR OPINIONS

14. I have been asked to review the '394 Patent in light of the materials cited and discussed herein and my knowledge and experience in this field during the relevant time frame, which I understand to be February 11, 1009. I have been asked to provide opinions related to certain issues from the perspective of a person of ordinary skill, having knowledge of the relevant art, February 11, 2009 and—except where otherwise noted—the opinions stated in this declaration are from that perspective. I describe the qualifications and abilities of such a person in the Section “Level of Ordinary Skill in the Art” below. I have also been asked to consider whether certain combinations of references have rendered obvious the inventions described in the claims of the '394 Patent.

15. My findings, as explained below, are based on my study, education, training, and experience as well as items that I reviewed to prepare my opinions, including the documents discussed in Dr. Lavian's declaration and any other items I reference in my below analysis.

16. I understand that other issues may arise that require further explanation, and I will provide that explanation if appropriate. As a result, I respectfully reserve the right to update and supplement this declaration and the information and opinions provided herein.

V. MATERIALS CONSIDERED

17. In preparing this declaration and forming my opinions, I have considered: the claims, specification, and prosecution history of the '394 Patent; the Petition and declaration by Dr. Lavian (including materials discussed in each) and all materials cited and discussed in this declaration. As part of my analysis, I have also considered my own knowledge and experience, including my work and experience in the field.

VI. LEGAL CONSIDERATIONS

18. I am not an attorney. My understanding of the law is based on information provided by counsel for Patent Owner.

19. It is my understanding that assessing the validity/patentability of a U.S. patent claim based on a prior art analysis requires two essential steps. First, one

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must analyze the terms of the patent claims to understand what meaning one of ordinary skill in the art would give the terms. Second, one may then assess validity by comparing a patent claim to the “prior art.” I understand that the teaching of the prior art is viewed through the eyes of a person of ordinary skill in the art at the time the invention was made. My opinion as to what constitutes a relevant person of ordinary skill in the art is set forth below.

20. I understand that a claim is invalid as obvious under 35 U.S.C. § 103 if the differences between the subject matter sought to be patented and the prior art are such that the subject matter of the claim as a whole would have been obvious at the time of the invention to a person having ordinary skill in the art. I have been informed that the following factors are used to determine whether or not the claimed subject matter would have been obvious: (i) the scope and content of the prior art; (ii) the differences between the prior art and the claimed invention; (iii) the level of ordinary skill in the field of the invention; and (iv) any relevant objective considerations of non-obviousness.

21. I also understand that a party asserting obviousness based on a combination of prior art references must demonstrate that one of ordinary skill in the art would have been motivated to combine the teachings of those references to achieve the claimed invention and that the skilled artisan would have had a reasonable expectation of success in doing so. It is my understanding that it is not

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enough to show that one skilled in the art could combine elements of multiple references, but instead there must be some reason that would have prompted a person of ordinary skill in the art to combine the elements in the way the claimed invention does. I understand that there must be some reasoned explanation as to why one of ordinary skill in the art would combine the references.

22. I understand that a combination of references would not have been obvious if the alleged modification(s) to be made to the reference(s) would have been inconsistent with the reference's stated goals or would have rendered the combination inoperable for its intended purpose. I further understand that for something to have been obvious, the party asserting obviousness must explain why a POSITA would have selected components for combination in the manner claimed.

23. I also understand that a party asserting obviousness based on a single prior art reference must nonetheless show a motivation to modify the reference.

24. I have been informed that a prior art reference must be considered in its entirety, i.e. as a whole, including portions that would lead away from the claimed invention.

25. It is my further understanding that obviousness cannot be based on a hindsight combination of components selected from prior art references. I also understand that an invention would not have been obvious simply because all of the elements of the invention may have been known separately in the prior art.

26. My opinions address what would have been logical to, and within the skill level of, a person of ordinary skill in the art (“POSITA”) at the time of the invention, given the state of the relevant art, the knowledge and skill that a POSITA would have, the teachings of the references discussed below, and how a POSITA would have understood those teachings. My opinions also address whether a POSITA would have had a reasonable expectation of the modified systems discussed below successfully yielding the results discussed below. I understand that a POSITA is a hypothetical person. I understand that a POSITA thinks along the lines of conventional wisdom. I understand that a POSITA is also a person of ordinary creativity, not an automaton (see Section “Level of Ordinary Skill in the Art,” below, for qualifications of a POSITA).

27. I understand that a claim term is given the meaning that the term would have to a POSITA at the time of the invention, which generally is the ordinary and customary meaning of the term. I further understand that the ordinary and customary meaning of a term may be evidenced by a variety of sources, including the words of the claims themselves, the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art. I also understand that a patentee can act as a lexicographer by clearly expressing an intent to define a claim term.

VII. LEVEL OF ORDINARY SKILL IN THE ART

28. Counsel for Patent Owner has informed me that a person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention.

29. For the purpose of this Declaration, and based on my opinions herein, the time of invention for the '394 Patent is February 11, 2009. However, I understand that the conception dates of the inventions may have been earlier than that date. Any earlier or later conception date around February 11, 2009 would not alter my opinions herein.

30. Dr. Lavian opined that a POSITA “at least a bachelor’s degree in electrical engineering, computer engineering, computer science, or a closely related field, and approximately two or more years of experience in computer and networking technology. Alternatively, a person of ordinary skill in the art would have had additional education (for example a Master’s degree or similar post-graduate work) and fewer years of experience, or vice versa” EX1002 (Lavian Decl.) at ¶ 78.

31. I agree with Dr. Lavian’s opinion on the qualifications of a POSITA and have applied this definition throughout my analysis.

32. I am well aware of the qualifications of such a skilled artisan because I have worked with, supervised, and hired engineers with similar capabilities over the

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years. By 2009, I had received a Ph.D. and had more than over 17 years of practical experience in the industry. Over these years I worked with and hired many individuals who met the above criteria of persons of ordinary skill in the art.

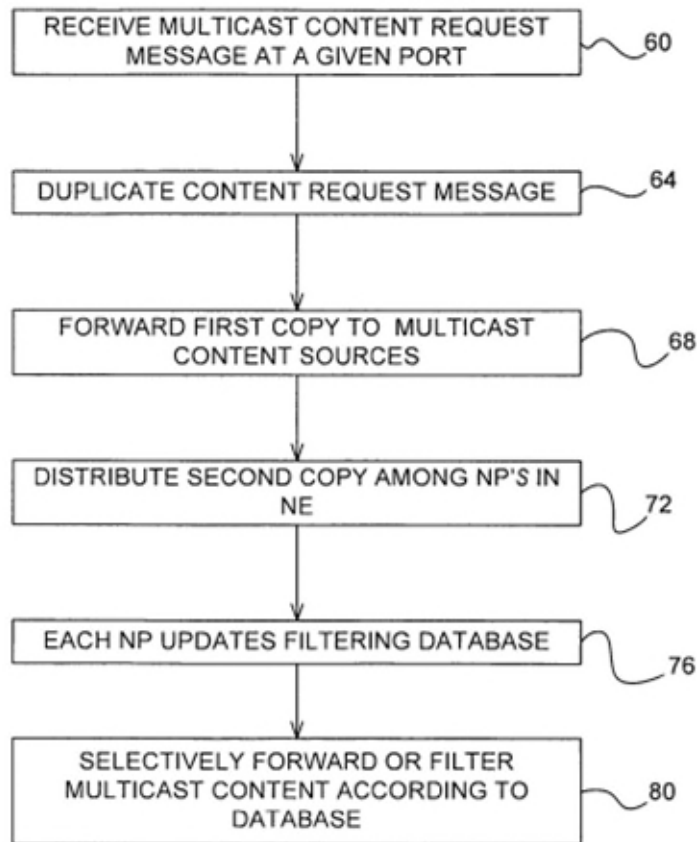
VIII. Claim Construction

33. In understand that for IPR petitions filed after November 13, 2018 the Patent Trial and Appeal Board (“Board”) construes claim terms as having their ordinary and customary meaning to a person of ordinary skill in the art at the time of invention. I have applied this standard in rendering my opinions on claim construction.

IX. The ’394 Patent

34. The ’394 Patent discloses “methods and systems for delivering multicast traffic over communication networks.” EX1001 at 1:6–8. The ’394 Patent discloses techniques to rapidly adapt to multicast forwarding requests. *Id.* at 4:60–62. For example, Figure 2 of the ’394 Patent is reproduced below.

FIG. 2



EX1001 at FIG. 2.

35. Figure 2 of the '394 Patent illustrates an exemplary method to respond to a multicast content request. A network element, such as a line card, may first receive a multicast content request (e.g., a request to start or stop receiving certain multicast content). The network element then duplicates the request and forwards a first copy of the request to multicast sources. A second copy of the request is distributed to network processors (e.g., processing units) in the network element. Each network processor that receives the second copy may then update their

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respective databases accordingly. The network element may then selectively forward multicast content based on the updated databases. *Id.* at 7:27–8:35. The independent claims of the '394 Patent map out this process. *See, e.g., id.* at claim 1.

X. Prosecution of the '394 Patent

36. The application issued as the '394 Patent was filed on February 11, 2009. During prosecution, the Examiner rejected the claims based on prior art, such as Naik (U.S. 2006/0146857) and Liu (U.S. 2002/0191628). In the response to this rejection, the applicant stated "Naik does not disclose processing units that each store a list containing all of the multicast pairings in the network element. Claim 1 has been amended, for the purpose of clarity only, to clarify that each of the lists contains pairings of multiple processing units. Regarding the step of "distributing the request among the multiple processing units, and **updating the respective list in each processing** unit responsively to the request[.]" Ex. 1002 at p. 174.

XI. OVERVIEW OF PRIOR ART REFERENCES

A. U.S. Patent No. 7,983,205 (Blease)

37. U.S. Patent No. 7,983,205 (EX1005; "Blease") is entitled "Outgoing Interface Mapping for Multicast Traffic.

38. Blease is directed to techniques for transmitting multicast traffic from a network device to subscriber devices within a computer network. These subscriber

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devices are connected to the network device via one or more network switches, such as DSLAMs or Ethernet switches.

39. Blease describes an exemplary embodiment where subscriber devices connect to router 42 via network switches. EX1005 Col. 8:39-46. Blease goes on to describe that router 42 contains interface cards and a single control unit 44 containing multicast forwarding information. When router 42 receives a multicast packet via "one of inbound links 55, control unit 44 forwards the packet on a set of outbound links 56 in accordance with multicast forwarding information 48. EX 1005 Col 8:64-68. Fig. 4 from Blease shows block diagram illustrating an exemplary router in accordance with an embodiment of the invention.

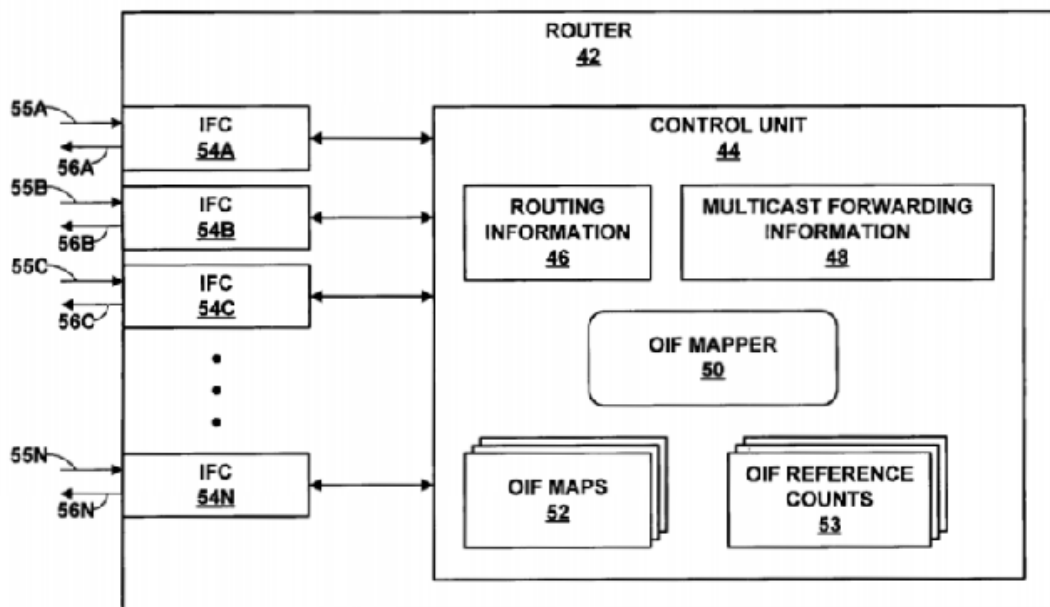


FIG. 4

B. U.S. Patent Pub. No. 2005/0041665 (Weyman)

40. Weyman is titled “System and Method for Distributed Multicast Routing,” and published on Feb. 25, 2005. Weyman is directed to “packet-switched communication networks” and “a fabric of units organized as a single virtual multicast router and units intended for or capable of use in such a fabric.” EX1006 (Weyman) at [0001]. Weyman discloses connecting “a multiplicity of single bridge devices units” that are connected through fabric ports to create a distributed fabric. *Id.* at [0030]. Traffic is forwarded in a way that the bridging of data traffic through the distributed fabric appears identical to the bridging of data traffic through a single bridging unit. *See id.* at [0031].

C. U.S Patent No. 8,238,344 (Hu)

41. U.S. Patent No. 8,238,344 (EX1007; “Hu”) is titled “System And Method Of Communicating A Media Stream. Hu discloses using communication devices to deliver multicast content. *Id.* at 2:13-19. In Hu, multicast streams are managed using a “Content Switch” which is illustrated in Figure 1. The content switch 102 in Figure 1 “communicates with a plurality of content sources 132.” Ex. 1007, 2:62-63 “Content switch 102 can include processing logic 104” and “a network interface 108 to communicate with the private IP network 130.” Moreover, the “memory 106 can include a policy module 120 that stores data indicating threshold video traffic loads.” 5:14-16. “The policy module 120 can . . . compare the

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video data traffic load at each of the first plurality of physical ports 122 with a pre-defined threshold.” 5:16-19.

D. U.S. Patent Pub. No. 2009/0290585 (Deng)

42. U.S. Patent Publication No. 2009/0290585 (EX1008; “Deng”) is titled “Data Link Layer Switch [With] Multicast Capability. Deng provides multicasting at an Ethernet switch by sending packets to only those ports having attached hosts that have previously joined the multicast group. EX1008 [0017]. The multicast matcher matches an incoming packet to a target pattern, generates a multicast address from the incoming packet if the incoming packet matches the target pattern, and stores the generated multicast address in the multicast address table. The timer determines an amount of time that the generated multicast address remains in the multicast address table. EX1008 [0018].

E. U.S. Patent No. 8,102,848 (“Rao”)

43. U.S. Patent No. 8,102,848 (EX1024; “Rao”) is titled “Multicast High Availability Enhancements for Faster Convergence. Rao describes a multicast packet data router which makes use of route processor module, RPM. Rao teaches when a route processor module ‘RPM’ fails another RPM takes its place. These RPMs are in active standby mode, closely linked together. “Each route processing management card RPM_y includes an Ethernet switch ES_{Wy}, a control processor CP_y, two route processors RP_{y.1} and RP_{y.2}, the line card control ports CP_{x.y}, and

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two master/slave ports MSy.1 and MSy.2. The master/slave ports on the two RPMs are cross-connected, providing redundant communication paths between the two RPMs.” EX1024 5:40-46. Thus, Rao teaches away from initializing an RPM when its pair fails.

44. Rao also teaches that the multicast routing tables in the line card contain **only a portion of the multicast routing information**. “Process MFCU1 receives multicast forwarding updates relevant to the LC1 via IP protocol stack IPSL1”. EX1024 Col 7:62-64. Thus, Rao teaches that only the relevant multicast forwarding information is distributed to the line cards. EX1024 8:53-55.

XII. DR. LAVIAN FAILS TO DEMONSTRATE THAT ANY CLAIM OF THE '394 PATENT WOULD HAVE BEEN OBVIOUS

45. In my opinion, Dr. Lavian fails to demonstrate that any challenged claim would have been obvious. As I discuss below, it is my opinion that Dr. Lavian’s declaration includes numerous, distinct failures. It is therefore my opinion that Dr. Lavian fails to demonstrate any reasonable likelihood of success that any challenged claim would have been obvious.

XIII. A POSITA WOULD NOT HAVE COMBINED BLEASE AND WEYMAN AND HU AS DESCRIBED BY DR. LAVIAN

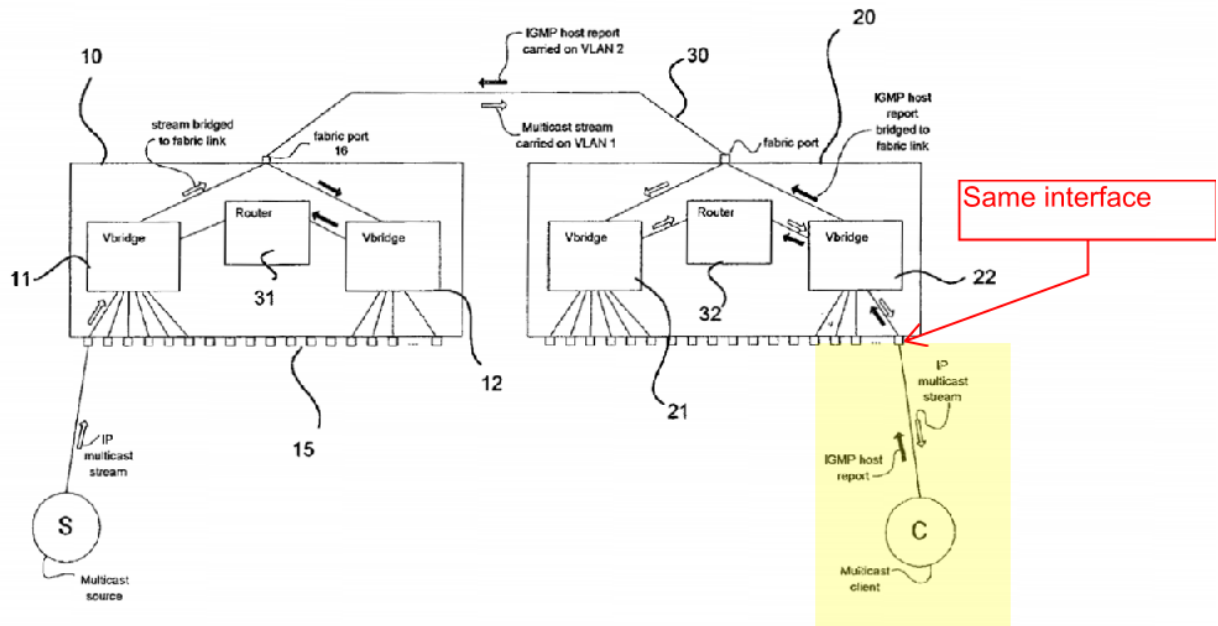
46. Dr. Lavian opines that a POSITA would have been motivated to combine Blease with Weyman and Hu as he describes. See EX.1003 ¶¶ 87-95i I disagree for a number of reasons.

47. First, Hu describes a centralized system while Weyman describes a distributed system. Ex. 1007 at 2:56-3:6; Ex. 1006 at [0021]. Though Dr. Lavian claims Blease describes both a centralized and distributed system I disagree. It is clear that Blease only describes centralized control for the router, stating a single control unit 44, “The network device also comprises **a control unit** that receives the membership request on the first interface and sends to the multicast stream on the second interface.” EX1005 Col 2:61-64 (emphasis added). As such, a POSITA would not have been motivated to configure the control functionality teachings of Blease in view of Weyman because their control structures are so different.

48. Moreover, the combination of Blease with Weyman is not compatible. Blease is describing a multicast technique which is **unlike** conventional multicast techniques. In this approach, the network device sends multicast streams on a different Outgoing Interface, OIF, than the one which received the request. “**Unlike conventional multicast transmission techniques network device 24 sends a multicast stream to the requesting subscriber device on an OIF different than the interface on which network device 24 received the membership request.** In fact, mapping **interface 25 carries only IGMP proxy packets and does not carry actual multicast traffic.**” EX1005 Col. 6:24-29 emphasis added. This approach is fundamentally different than Weyman and the ‘394 patent. Fig. 11 of Weyman

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makes this clear, where the IGMP report message is received on and the IP multicast stream is sent on the same interface.



49. Because of this difference, a POSITA would not have been motivated to look to Weyman’s teachings to modify Blease.

F. Dr. Lavian’s understanding of the teachings of Blease is flawed

50. Dr. Lavian admits that Blease ‘appears’ to show only a centralized control unit. EX.1003, ¶62. He goes on to opine that this is only an exemplary embodiment and that other embodiments ‘**may be**’ configured in a variety of ways. *Id.* But he does not cite to any teachings of Blease which describe these other embodiments. Dr. Lavian’s opinion that Blease describes both a centralized and decentralized architecture is based on a single quote from Blease: “In one embodiment, for example, control unit 44 and its corresponding functionality may be distributed

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within IFCs 54.” Nowhere in Blease is it described how this functionality may be distributed or what is meant by “distributed.”

51. From this single statement, Dr. Lavian reaches a number of opinions about the teachings of Blease. Dr. Lavian states that “it would have been obvious to implement Blease’s distributed control by configuring **each of Blease’s IFCs with control unit functionality**, to connect the IFCs through a fabric and to synchronize their multicast distribution information in response to requests.” EX1003 ¶ 90.

52. Dr. Lavian also states that “Blease, alone or in view of Weyman, discloses that **control unit 44 and its functionality is included in each IFC 54.**” EX1003 ¶113.

53. But Dr. Lavian’s understanding of the teachings of Blease is flawed. The phrase “In one embodiment, for example, control unit 44 and its corresponding *functionality may be distributed* within IFCs 54” does not disclose configuring each of Blease’s IFCs with control unit functionality. The term *distribute* does not mean *replicate* as Dr. Lavian seems to be saying. Dr. Lavian is not using the ordinary meaning of ‘distribute.’ Dictionaries, including Merrian Webster, define ‘distribute’

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as “to divide among several or many.”¹ As such, when Blease is teaching that there may be other embodiments where the control unit 44 and its corresponding functionality is distributed within IFCs, Blease is not teaching that the functionality is replicated. Instead, Blease is teaching that the functionality may be divided among the IFCs. Because Dr. Lavian is not using the ordinary meaning of ‘distribute’, in my opinion, his analysis of the teachings of Blease is flawed.

54. Moreover, it is clear that in Blease the multicast forwarding information does not keep track of all of the multicast packet streams because if a new stream is requested and that stream is already being forwarded to other subscribers, the **multicast forwarding information does not change**. “If the multicast stream is already forwarded to the network switch, the entry in **multicast forwarding information 48 remains unchanged**.” EX1005 Col. 10:67 – Col. 11:2. “If the multicast stream is already forwarded to the network switch (yes branch of 76), **the**

¹ EX.2006 (definition 1) (emphasis added). Though Merriam does ascribe other definitions to “distribute,” these do not make sense given the context of the sentence. *See also* Ex. 2003 (Wiley Electric) (“divided or spread throughout a single entity, or among many”); Ex. 2004 (Telecommunications) (“to apportion, spread out, scatter, dole, deal out, or dispense . . .”).

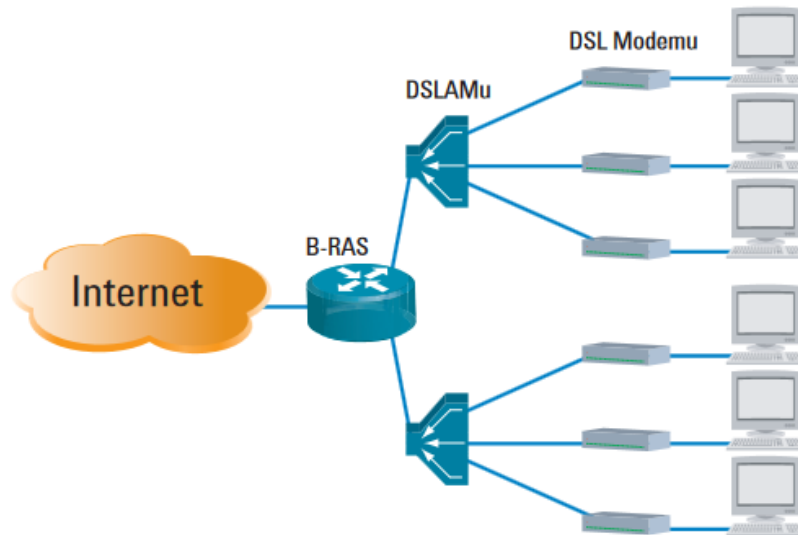
entry in multicast forwarding information 48 remains unchanged.” EX1003-913 14:52-54.

55. Therefore, Dr. Lavian is incorrect when he states that “Blease discloses storing in each processing unit a respective list, each list indicating all of one or more multicast packet streams that are permitted for forwarding by the network element “. EX1003-913 ¶115.

56. Dr. Lavian’s analysis of Blease is also flawed in that he opines that Blease describes an aggregated link. Dr. Lavian states that “Blease discloses that outputs from a network switch 6 to network device 4 (such as router 42) are aggregated to form a high-speed link, citing Blease, 4:18-27, 8:41-43.” EX1003-913 ¶92. Analysis of these citations shows that this is not the case. Blease 4:18-27 states “Network switches 6A and 6B (“network switches 6”) may comprise digital subscriber line access multiplexers (DSLAMs), Ethernet switches, or other devices. Each of network switches 6 may communicate with network device 4 over a shared access network supporting a data link layer protocol 14, e.g. the Asynchronous Transfer Mode (ATM) protocol or the Ethernet protocol. **A Broadband Remote Access Server (BRAS) application may aggregate output from switches 6 into a higher-speed uplink to network device 4.**” Nowhere in this description is there an aggregated link to form a high-speed link. Dr. Lavian clearly misunderstands the difference between aggregation outputs and aggregated links. In a DSL network,

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DSLAMs outputs are typically aggregated as they feed into a B-RAS, as shown below².



57. This figure shows the B-RAS aggregating the outputs of the DSLAM, but does not depict an aggregated link. Dr. Lavian clearly misunderstands his citation of Blease. Blease 8:41-43 states, “Router 42 may operate substantially similar to network device 4 in FIG. 1, network device 24 in FIG. 2, or network device 38 in FIG. 3” Importantly, none of these figures show an aggregated link. Again, Dr. Lavian clearly misunderstands the citation.

² EX. 2007 White Paper Understanding DSLAM and BRAS Access Devices, page

4 Agilent Technologies, 2006

58. Moreover, Dr. Lavian ignores the express teachings of Blease that network switch is connected to the network device such as a DSLAM over **a single physical connection**, which cannot be a high-speed port as described in the ‘394 patent. “In the illustrated embodiment, network switch 22 may comprises a DSLAM. **Network device 24 is connected to network switch 22 via a single physical connection,**” EX1005 Col. 5:24-25 or ‘**Network device 38 is connected to network switch 36 via a single physical connection.**” EX1005 8:24-25. In my opinion, Dr. Lavian’s flawed analysis of the teachings of Blease leads to defects in his opinions.

G. Dr. Lavian’s understanding of the teachings of Weyman is flawed

59. Dr. Lavian claims that Weyman does not describe “an exact method that must be used to update a new unit.” Ex. 1103 at ¶ 93. This is a misleading statement. Weyman describes a method of updating a unit with a default configuration when it joins the fabric. Weyman states “For the routers to operate as a single distributed router every defined router configuration should be identical on all units in the fabric. Preferably the configuration is stored in non-volatile storage in all the units. If the system can accommodate the addition or removal of units, then when a unit with a default configuration joins the fabric, it needs to update its configuration to that of the distributed router.” EX1006 [0069] (emphasis added). Dr. Lavian is aware of this teaching as he cites to Weyman [0069] ,[00156]. EX1003-989 ¶ 93.

60. Weyman goes on to teach that the way to update the newly added routers configuration is to select a unit and use its configuration. “If a unit with a ~~non~~-default³ configuration joins the fabric then there should be a selection mechanism which determines the distributed router’s configuration. This may be as simple as selecting the lowest numbered unit to provide the configuration. Alternatively, the fabric could be configurable through a priority system.” Weyman [0069]. Thus, Weyman teaches a number of ways to add a default processing unit to the fabric.

61. For some reason, Dr Lavian ignores these teachings and opines that because Weyman teaches updating a multicast distribution tree based on responses, that somehow “Weyman thus teaches updating distribution and routing information across all units equally because changes “must be kept synchronized.” EX1003-989 ¶ 93. Dr. Lavian cites to another reference, Yu to support his opinion, but this again ignores the clear teachings of Weyman. Weyman teaches updating a newly added unit’s configuration by using a selection mechanism to determine the configuration to be used for the newly added unit’s configuration. Dr. Lavian never explains why the synchronization described in Weyman for units added to the fabric is not “an

³ A POSITA would understand that the term ‘non-default’ was a typo and should have been ‘default’ given the prior teaching of Weyman [0069].

exact method that must be used to update a new unit”, as clearly one of ordinary skill could implement the updating procedure described in Weyman.

62. Therefore, Dr. Lavian’s understanding of the teachings of Weyman is flawed.

H. Blease in view of Weyman

63. Weyman teaches one way in which that functionality may be distributed or divided among units. In Weyman each unit only learns about its local user ports, all other ports in the network element are associated with a fabric port. “Within each unit’s forwarding database, the port against which a MAC address is learned **may be either a user port or a fabric port**. If it be a fabric port, at least one other unit in the fabric would have to further forward any traffic destined to that MAC address towards **an ultimate user port**. In this way, traffic destined for a particular MAC address may be forwarded by several Vbridges within several units, **all but the last of the Vbridges in the path being directed by the forwarding database to forward the traffic to a fabric port**. Ultimately, the last unit in the path must forward the traffic to a user port and so its forwarding database would have the appropriate user port learned against the MAC address.” EX1006 at [0041].

64. Since each unit is only concerned about its local ports, the functionality is divided among the units. It clear that Weyman is not teaching that each unit each store in each FDB a list of all the MAC addresses, so similarly, Weyman is not

teaching **a list containing all of the learned MAC addresses in the network element** but in fact is teaching away from such approach by its description of a divided approach. As such, Blease is teaching that the functionality is divided among the IFCs and Weymen is teaching how this functionality could be divided, both teach that the IFCs would only contain a portion of multicast pairings for the network element.

65. The same is true of the multicast routing in Weyman. The Vbridges and the routers each contain independent nonidentical tables. “A multicast stream source S is connected to Vbridge 11 and is forwarded by Vbridge 11 to a user port to which a client C1 for the stream is attached. The stream is also forwarded to the unit’s internal router 31. The control of forwarding within an VLAN using a forwarding table derived by the IGMP snooper prevents Vbridge 11 from forwarding the stream to any other user ports. The router has forwarding tables populated by its control plane. In this example it may be presumed that the forwarding tables indicate that the stream must be forwarded on to router interface 2, which is connected to Vbridge 12. This Vbridge then forwards the stream to the connected multicast router R and another client C2 for the stream. Owing to the control information provided by IGMP snooping, Vbridge 12 does not forward the stream to any other user ports.” EX1006 [0105] (emphasis added).

66. Therefore, in my opinion, Blease does not teach or disclose, alone or in view of Weyman, that control unit 44 and its **functionality are included in each IFC** or the IFCs tables contained are identical in each Line Card.

67. Also, it is clear from the file history that the claimed ‘list’ in each processing unit must contain all of the multicast pairings in the network element. See Section X. In my opinion, Blease’s teaching of dividing the functionality of control unit 44 in view of Weyman teaches that each IFC would only contain a ‘subdivided’ list of multicast pairings. This understanding of a POSITA is confirmed by the file history. “In contrast, the distributing step of claim 1 updates the respective list in each processing unit. **But Naik has no reason to update traffic maps not related to the request** because Naik is not concerned with reducing latency in subsequent requests.” EX1002 page 174.

68. Moreover. Dr. Lavian opines that “As a person of ordinary skill in the art implementing Blease’s system would have been motivated to look for implementations like Weyman’s, it would have been obvious to implement Blease’s distributed control by configuring each of Blease’s IFCs with control unit functionality, to connect the IFCs through a fabric, to synchronize their multicast distribution information in response to requests, and to accommodate the addition of an IFC by disabling the IFC, updating its multicast forwarding table to a current state

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by sending a multicast membership query, and then activating the IFC.” Ex. 1003 at ¶ 90.

69. Dr. Lavian appears to be using hindsight in his analysis. As neither Blease nor Weyman teach synchronizing multicast distribution information in response to requests, and to accommodate the addition of an IFC by disabling the IFC, updating its multicast forwarding table to a current state by sending a multicast membership query, and then activating the IFC. As I described above in section G, Weyman teaches several methods of accommodating the addition of a unit to the fabric and in none of these teachings does it describe disabling the IFC, updating its multicast forwarding table to a current state by sending a multicast membership query, and then activating the IFC.

70. Therefore, a POSITA would not be motivated to combine Blease and Weyman as Dr. Lavian has described.

I. Blease in view of Weyman and Hu

71. Dr. Lavian opines that a POSITA would have been motivated to modify Blease to include LAGs in or among the inbound links 55 and outbound links 56 disclosed by Blease, and further to place threshold limits on the use of those LAGs, as taught by Hu. EX1003-913 ¶94. A link aggregation group or LAG, is a collection of physical links bundled together to form a single logical link. This is in contradiction to Blease’s express teachings that the network switch is connected to

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the network device over a **single physical connection**. Ex. 1005 at 7:24-25. Moreover, most of the benefits Dr. Lavian ascribes to adding LAGs, more available bandwidth, more streams, and higher bitrate content could much more easily obtained by simply adding a higher speed link instead of adding the complexity of a LAG group. Thus, a POSITA would not have been motivated to look to Hu's disclosures. In addition, Dr. Lavian's conjecture that Blease discloses LAGs is incorrect. A POSITA would clearly understand that aggregating outputs is totally different than an aggregated link, as I described in section F above.

72. A larger problem is the combination of Blease with Hu. Hu is a highly complex system which analyzes in real time the load on ports to determine if each join request's traffic load can be accommodated. "Further, the request module 118 can be executable by the processing logic 104 to retrieve from the **traffic load module 116 data related to each join request**." Thus, Hu works on a request by request basis and allows or rejects each join request based on traffic load. See EX1007 Col. 3:66 – 4:49.

73. Blease uses an entirely different approach to manage traffic congestion.. It operates on a unique stream by stream approach. If the Control Unit receives a join request, a new traffic flow **is not established** unless this is the first request for that particular stream.

74. “If the requested multicast stream is not currently forwarded, OIF mapper 50 adds the mapped OIF to multicast forwarding information 48 ... **If the multicast stream is already forwarded to the network switch, the entry in multicast forwarding information 48 remains unchanged.**” EX1005 Col. 10:62 – Col. 11:2.

75. Dr. Lavian states that “A person of ordinary skill in the art would have had a reasonable expectation of success implementing LAGs and utilizing pre-defined thresholds to limit streams on LAGs, as taught by Hu.” EX1003-913 ¶95. But, Hu’s pre-defined limits are for all of the multicast streams in the system, while the OIFs of Blease only transmit traffic for every unique multicast stream. Because of this Blease does not suffer from congestion that a typical multicast system would. Blease has already describes a solution to the problem of congestion. “**The multicast transmission techniques described herein may significantly reduce the amount of multicast traffic** between the network device and the network switch. In this way, the shared access network can deliver multicast streams associated with a pre-determined number of multicast groups to the network switch.” EX1005 2:39-45. “The multicast transmission techniques described herein may **significantly reduce the amount of multicast traffic between network device 4 and network switches 6.** For example, regardless of the number of subscriber devices 8 connected to the same network switch that request the same multicast stream, network device 4 only

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sends one copy of the multicast stream to the network switch. In this way, network device 4 can deliver multicast streams associated with a predetermined number of multicast groups to each of network switches 6B.” EX1005 4:50-59. Moreover, Blease already teaches limiting the number of unique multicast groups that can be delivered by the network device. Moreover, Weyman already teaches how LAGs are implemented, so there is no reason for a POSITA to look to the teachings of Hu to add LAGs to Blease.

76. Thus, Blease already describes limiting congestion and limiting the number of multicast streams to a predetermined number and would see no benefit in adding the teachings of Hu. 74. Therefore, a POSITA would not be motivated to combine Blease with Weyman and Hu as Dr. Lavian has described.

XIV. Independent Claims of the ‘394 Patent.

77. Representative Independent claims

’394 Patent Claim	’394 Patent Claim language
1[pre]	A method for communication, comprising:
1[a.i]	operating a network element, wherein the network element further comprises multiple interconnected processing units and multiple ports,

1[a.ii]	wherein each processing unit is assigned to a different subset of the multiple ports of the network element, and wherein each processing unit contains a processor for processing packets communicated over the different subset of the multiple ports to which the processing unit is assigned;
1[b]	storing in each processing unit a respective list, each list indicating all of one or more multicast packet streams that are permitted for forwarding by the network element, and further indicating which of the one or more ports each multicast packet stream is permitted to be forwarded to;
1[c]	receiving from a client a request relating to reception of a given multicast packet stream;
1[d]	distributing the request among the multiple processing units within the network element, and updating the respective list in each processing unit responsively to the request; and
1[e]	selectively forwarding multicast packets associated with the given multicast packet stream by the processing units in accordance with the respective updated lists,
1[f]	wherein operating the network element comprises aggregating two or more of the ports to form a high capacity port, and
1[g.i]	wherein aggregating the ports comprises setting an upper limit on a number of the multicast packet streams that are permitted for forwarding over the high-capacity port,
1[g.ii]	wherein the request indicates that the given multicast packet stream is to be forwarded over the high-capacity port, and

1[g.iii]	wherein updating the list comprises modifying the list to indicate that the given multicast packet stream is permitted for forwarding over the high-capacity port only when the number of the multicast packet streams that are permitted for forwarding over the high-capacity port, including the given multicast packet stream, does not exceed the upper limit.
8[pre]	A method for communication, comprising
8[a.i]	operating a network element, wherein the network element further comprises multiple interconnected processing units and multiple ports
8[a.ii]	wherein each processing unit is assigned to a different subset of the multiple ports of the network element, and wherein each processing unit contains a processor for processing packets communicated over the different subset of the multiple ports to which the processing unit is assigned;
8[b]	storing in each processing unit a respective list, each list indicating all of one or more multicast packet streams that are permitted for forwarding by the network element, and further indicating which of the one or more ports each multicast packet stream is permitted to be forwarded to

8[c]	receiving from a client a request relating to reception of a given multicast packet stream
8[d]	distributing the request among the multiple processing units within the network element, and updating the respective list in each processing unit responsively to the request
8[e]	selectively forwarding multicast packets associated with the given multicast packet stream by the processing units in accordance with the respective updated lists
8[f]	wherein operating the network element comprises initializing a new processing unit added to the network element by
8[f.ii]	deactivating the ports to which the new processing unit is assigned; while the ports to which the new processing unit is assigned are deactivated, sending a multicast status request, receiving multicast membership reports sent by multicast clients in response to the multicast status request, constructing the list by the new processing unit based on the received multicast membership reports; and after constructing the list, activating the ports to which the new processing unit is assigned.

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11[pre]	A network element, comprising
11[a]	multiple ports; and
11[b.i]	multiple interconnected processing units
11[b.ii]	wherein each processing unit is assigned to a different subset of the multiple ports of the network element
11[b.iii]	wherein each processing unit contains a processor for processing packets communicated over the different subset of the multiple ports to which the processing unit is assigned

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11[b.iv]	wherein the processing units are configured to process packets that are communicated over respective subsets of one or more of the ports
11[b.v]	to store respective lists, each of which indicates all of one or more multicast packet streams that are permitted for forwarding by the network element and further indicates which of the one or more ports multicast packet stream is permitted to be forwarded to
11[b.vi]	to receive from a client a request relating to reception of a given multicast packet stream
11[b.vi.α]	to distribute the request among the processing units within the network element so as to update the lists responsively to the distributed request and
11[b.vi.β]	to selectively forward multicast packets associated with the given multicast packet stream in accordance with the updated lists

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11[c.i]	wherein two or more of the ports are aggregated to form a high-capacity port
11[c.ii]	wherein an upper limit is set on a number of the multicast packet streams that are permitted for forwarding over the high-capacity port
11[c.iii]	wherein the request indicates that the given multicast packet stream is to be forwarded over the high-capacity port
11[c.iv]	wherein the processing units are configured to update the lists to indicate that the given multicast packet stream is permitted for forwarding over the high-capacity port only when the number of the multicast packet streams that are permitted for forwarding over the high-capacity port, including the given multicast packet stream, does not exceed the upper limit
18 [pre]	A network element, comprising

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18[a]	multiple ports; and
18[b.i]	multiple interconnected processing units
18[b.ii]	wherein each processing unit is assigned to a different subset of the multiple ports of the network element
18[b.iii]	wherein each processing unit contains a processor for processing packets communicated over the different subset of the multiple ports to which the processing unit is assigned
18[b.iv]	wherein the processing units are configured to process packets that are communicated over respective subsets of one or more of the ports

18[b.v]	to store respective lists, each of which indicates all of one or more multicast packet streams that are permitted for forwarding by the network element and further indicates which of the one or more ports multicast packet stream is permitted to be forwarded to
18[b.vi]	to receive from a client a request relating to reception of a given multicast packet stream, and
18[c.i]	to distribute the request among the processing units within the network element so as to update the lists responsively to the distributed request
18[c.ii]	and to selectively forward multicast packets associated with the given multicast packet stream in accordance with the updated lists, wherein a new processing unit added to the network element is configured to initialize by
18[d.i]	deactivating the ports to which the new processing unit is assigned; while the ports to which the new processing unit is assigned are deactivated, sending a multicast status request, receiving multicast membership reports sent by multicast clients in response to the multicast status request, constructing the list by the new processing unit based on the received multicast membership reports; and after constructing the list, activating the ports to which the new processing unit is assigned.

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XV. DR. LAVIAN’S GROUNDS FOR INVALIDITY OF THE ’394 PATENT.

A. DR. LAVIAN’S OPINION THAT INDEPENDENT CLAIMS 1, 8, 11, 18 ARE OBVIOUS.

78. In my opinion, Dr. Lavian fails to show that Blease in view of Weyman and Hu renders obvious each limitation of claims 1, 8, 11 and 18. For the limitations below, Dr. Lavian makes the same or similar arguments.

1. “operating a network element, wherein the network element further comprises multiple interconnected processing units and multiple ports” and similar claim limitations.

Claim Element 1[a.i]	Claim Elements 11[a] and 11[b.i]
operating a network element, wherein the network element further comprises multiple interconnected processing units and multiple ports	multiple ports; and multiple interconnected processing units,

Claim Element 8[a.i]	Claim Elements 18[a] and 18[b.i]
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operating a network element, wherein the network element further comprises multiple interconnected processing units and multiple ports	multiple ports; and multiple interconnected processing units,
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79. Dr. Lavian states that in his opinion Blease discloses that control unit 44 and its functionality is distributed within IFCs. Blease, relying of 11:54-57 “In one embodiment, for example, control unit 44 and its corresponding functionality may be distributed within IFCs 54.” EX.1003, ¶ 107. For the reasons I discussed in section F, in my opinion Blease does not teach this. To the extent that Dr. Lavian relies on this analysis to disclose these limitations, I disagree.

2. **“storing in each processing unit a respective list, each list indicating all of one or more multicast packet streams that are permitted for forwarding by the network element, and further indicating which of the one or more ports each multicast packet stream is permitted to be forwarded to” and similar claim limitations.**

Claim Element 1[b]	Claim Element 11[b.v]
storing in each processing unit a respective list, each list indicating all of one or more multicast packet streams that are permitted for forwarding by the network element, and further indicating which of the one or more ports each multicast packet stream is permitted to be forwarded to	to store respective lists, each of which indicates all of one or more multicast packet streams that are permitted for forwarding by the network element and further indicates which of the one or more ports multicast packet stream is permitted to be forwarded to

Claim Element 8[b]	Claim Element 18[b.v]
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storing in each processing unit a respective list, each list indicating all of one or more multicast packet streams that are permitted for forwarding by the network element, and further indicating which of the one or more ports each multicast packet stream is permitted to be forwarded to	to store respective lists, each of which indicates all of one or more multicast packet streams that are permitted for forwarding by the network element and further indicates which of the one or more ports multicast packet stream is permitted to be forwarded to
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80. In my opinion, the combination of Blease in view of Weyman and Hu does not disclose or render obvious these claim limitations for a number of reasons.

81. First, Dr. Lavian states that “Blease, alone or in view of Weyman, discloses that control unit 44 and its functionality is included in each IFC 54.” For the reasons I discussed in sections F and H, in my opinion Blease alone or in view of Weyman does not teach this. Blease in view of Weyman teaches ‘dividing’ the functionality among the IFCs, not replicating as Dr. Lavian has opined. Blease’s teaching of dividing the functionality of control unit 44 in view of Weyman teaches that each IFC would only contain a ‘subdivided’ list of multicast pairings.

82. Moreover, Blease does not disclose the use of a list indicating all of one or more multicast packet streams that are permitted for forwarding by the network element. Dr. Lavian seems to agree, he states that “While Blease does not illustrate an example of multicast forwarding information 48, a person of ordinary skill in the art would have recognized that multicast forwarding information 48 is a “list” because it includes a structure in which entries are added, removed, and processed

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as individual items, as discussed above.” EX1003-913 ¶ 114. I disagree that a POSITA would find that any data structure which has entries which can be added, removed or processed is inherently a list. Weyman describes one such data structure, a tree, e.g. forwarding tree. Ex. 1006 at [0110]. Data in tree data structures can be added to, removed and processed, yet a POSITA would not consider a tree data structure to be a list, similarly for hash data structures, or stack data structures, a POSITAT would not have considered them to be a list either.

83. For the reasons above, Blease does not disclose, or Blease in view of Weyman does not render obvious, these claim elements.

- 3. “distributing the request among the multiple processing units within the network element, and updating the respective list in each processing unit responsively to the request or to distribute the request among the processing units within the network element so as to update the lists responsively to the distributed request” and similar claim limitations.**

Claim Element 1[d]	Claim Element 11[b.vii.α]
distributing the request among the multiple processing units within the network element, and updating the respective list in each processing unit responsively to the request; and	to distribute the request among the processing units within the network element so as to update the lists responsively to the distributed request and

Claim Element 8[d]	Claim Element 18[c.i]
distributing the request among the multiple processing units within the network element, and updating the	to distribute the request among the processing units within the network element so as to update the lists

respective list in each processing unit responsively to the request; and	responsively to the distributed request and
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84. Dr. Lavian admits that Blease only discloses requests going to the centralized control unit 44 and I agree. EX1003-913 ¶120.

85. As I described above my analysis of claim limitations 1[b] and 11[b.v], Blease in view of Weyman does not disclose or render obvious each list indicating all of one or more multicast packet streams that are permitted for forwarding by the network element. Since, as I described above in sections F and H, the lists in each processing unit do not contain all of the streams that are permitted forwarding by the network element, all of these lists are not updated responsive to the requests.

86. Dr. Lavian seems to equate keeping a multicast distribution tree synchronized with updating the respective list in each processing unit. EX1003-913 ¶120, yet these are two different operations. As I stated above, a tree data structure is not a list, and synchronizing does not require updating the list in “each processing unit.” In particular, as I described above in section H, Weyman teaches synchronizing the FDB in a way which does not require that each FDB in the system contain the same information.

87. Also, I disagree with Dr. Lavian’s opinion that if a request is processed by one control unit and the results are distributed to the other IFCs, this would meet this claim limitation. EX1003-913 ¶125.

88. The claim term recites distributing *the request* among the multiple processing units within the network element, not distributing the results of processing the request among the multiple processing units. The use of the term ‘the request’ refers to the claim limitation ‘receiving from a client **a request**’. The distributed request must be the request received, not any processed results based on that received request, which are then distributed.

89. For the reasons above, Blease does not disclose, or Blease in view of Weyman does not render obvious, these claim elements.

- 4. “selectively forwarding multicast packets associated with the given multicast packet stream by the processing units in accordance with the respective updated lists and to selectively forward multicast packets associated with the given multicast packet stream in accordance with the updated lists” and similar claim limitations.**

Claim Element 1[e]	Claim Element 11[b.vii.β]
selectively forwarding multicast packets associated with the given multicast packet stream by the processing units in accordance with the respective updated lists	to selectively forward multicast packets associated with the given multicast packet stream in accordance with the updated lists,

Claim Element 8[e]	Claim Element 18[c.ii]
selectively forwarding multicast packets associated with the given multicast packet stream by the processing units in accordance with the respective updated lists	to selectively forward multicast packets associated with the given multicast packet stream in accordance with the updated lists,

90. Dr. Lavian states that “Blease discloses that multicast packets of requested multicast packet streams are forwarded through particular interfaces of IFCs 54 by first identifying them in multicast forwarding information 48.” This is incorrect as Blease never discloses this and Dr. Lavian can provide no support in Blease for this alleged disclosure. Dr. Lavian the states “For example, Blease states that “control unit 44 forwards the packet on a set of outbound links 56 in accordance with multicast forwarding information 48” and cites to Blease 8:64-67; see also Blease, 10:49-52, 14:50-57. None of these disclosures are related to the IFC and none of them relate to ‘lists’ plural. As I described in section F, Dr. Lavian’s understanding of Blease is flawed. Moreover, as I also described in same section, the alleged list, i.e. the “multicast forwarding information” remains unchanged unless the requested multicast packet stream requested is unique. So, when a request is received for a non-unique multicast flow, e.g., a second request to watch the SuperBowl, the **multicast forwarding information remains unchanged**. In this case, Blease does not selectively forward multicast packets associated with the given

multicast packet stream in accordance with the respective updated lists, since there is no change to the forwarded multicast streams and the lists are not updated.

B. ADDITIONAL OPINIONS ON DR. LAVAIAAN’S OPINION THAT INDEPENDENT CLAIMS 1 AND 11 ARE OBVIOUS.

86. In addition to the limitations of claims 1 and 11 that I addressed above, Dr. Lavian fails to show that Blease in view of Weyman and Hu renders obvious these claims for the limitations below. For these limitations Dr. Lavian makes the same arguments.

1. “wherein operating the network element comprises aggregating two or more of the ports to form a high-capacity port, and wherein two or more of the ports are aggregated to form a high-capacity port” and similar claim limitations

Claim Element 1[f]	Claim Element 11[c.i]
wherein operating the network element comprises aggregating two or more of the ports to form a high-capacity port, and	wherein two or more of the ports are aggregated to form a high-capacity port, and

91. Dr. Lavian opines that at POSITA would be motivated to modify Blease’s links to the network switches to include LAGs, as taught by Hu. As I described above in section I, a POSITA would not be motivated to make this modification as Blease already describes a novel way of significantly reducing traffic between the network device and the network router “multicast transmission techniques described herein may significantly reduce the amount of multicast

traffic.” EX1005 2:39-45. Because Blease describes a novel way of reducing traffic a POSITA would not be motivated to modify its system to include LAGs, as taught by Hu.

2. **“wherein aggregating the ports comprises setting an upper limit on a number of the multicast packet streams that are permitted for forwarding over the high-capacity port and wherein an upper limit is set on a number of the multicast packet streams that are permitted for forwarding over the high-capacity port” and similar claim limitations**

Claim Element 1[g.i]	Claim Element 11[c.ii]
wherein aggregating the ports comprises setting an upper limit on a number of the multicast packet streams that are permitted for forwarding over the high-capacity port	wherein an upper limit is set on a number of the multicast packet streams that are permitted for forwarding over the high-capacity port,

92. Dr. Lavian opines that at POSITA would be motivated to modify Blease’s links to the network switches to include LAGs, as taught by Hu. As I described above in section I, a POSITA would not be motivated to make this modification as Weyman describes how to apply a LAG to a network switch and Blease already describes a novel way of setting a predetermined number of multicast groups that can be sent to the network switch. “In this way, the shared access network can deliver multicast streams associated with a predetermined number of multicast groups to the network switch.” EX1005 2:39-45.

**C. ADDITIONAL OPINIONS ON DR. LAVIAN’S OPINION THAT
THAT INDEPENDENT CLAIMS 8 AND 18 ARE OBVIOUS.**

93. In addition to the limitations of claims 8 and 18 that I addressed above, Dr. Lavian fails to show that Blease in view of Weyman renders obvious claims 8 and 18 for the limitations below. For these limitations Dr. Lavian makes the same arguments

1. “wherein operating the network element comprises initializing a new processing unit added to the network element by” and similar claim limitations

Claim Element 8[f.i]	Claim Element 18[d.i]
wherein operating the network element comprises initializing a new processing unit added to the network element by:	wherein a new processing unit added to the network element is configured to initialize by:

94. For these limitations Dr. Lavian relies on his analysis in Section VIII.A which I have addressed in sections F, G, and H above. For those reasons, Blease in view of Weyman does not render obvious operating the network element comprises initializing a new processing unit added to the network element in the manner Dr. Lavian describes.

2. “deactivating the ports to which the new processing unit is assigned; while the ports to which the new processing unit is assigned are deactivated, sending a multicast status request, receiving multicast membership reports sent by multicast clients in response to the multicast status request, constructing the list by the new processing unit based on the received multicast membership reports; and after constructing the list,

activating the ports to which the new processing unit is assigned

Claim Element 8[f.ii]	Claim Element 18[d.ii]
deactivating the ports to which the new processing unit is assigned; while the ports to which the new processing unit is assigned are deactivated, sending a multicast status request, receiving multicast membership reports sent by multicast clients in response to the multicast status request, constructing the list by the new processing unit based on the received multicast membership reports; and after constructing the list, activating the ports to which the new processing unit is assigned.	deactivating the ports to which the new processing unit is assigned; while the ports to which the new processing unit is assigned are deactivated, sending a multicast status request, receiving multicast membership reports sent by multicast clients in response to the multicast status request, constructing the list by the new processing unit based on the received multicast membership reports; and after constructing the list, activating the ports to which the new processing unit is assigned.

95. For these limitations Dr. Lavian relies on his analysis in Section VIII.A, which I have addressed in sections F, G, and H above. For those reasons, Blease in view of Weyman does not render obvious these limitations.

D. DR. LAVAIAAN’S OPINION THAT DEPENDENT CLAIMS 2 AND 12 ARE OBVIOUS

96. Claims 2 and 12 depend from claims 1 and 11, and for the reasons above that claims 1 and 11 are not obvious, claims 2 and 12 are not obvious in my opinion.

E. DR. LAVAIAN’S OPINION THAT DEPENDENT CLAIMS 4 AND 14 ARE OBVIOUS.

97. Claims 4 and 14 state “The method according to claim 1, wherein distributing the request comprises distributing among the multiple processing units an identity of an ingress port over which the request was received at the network element, and wherein updating the list comprises causing the list to indicate that the given multicast packet stream is permitted for forwarding over the ingress port” and “The network element according to claim 11, wherein a processing unit receiving the request is configured to distribute among the multiple processing units an identity of an ingress port over which the request was received, and wherein the processing units are configured to cause the respective lists to indicate that the given multicast packet stream is permitted for forwarding over the ingress port. Claims 4 and 14 depend from claims 1 and 11, and for the reasons above that claims 1 and 11 are not obvious, claims 4 and 14 are not obvious in my opinion. In addition, Dr. Lavian provides no evidence that either Blease or Weyman distribute requests comprising the ‘identity of the ingress port’ on which the request was received. As such Dr. Lavain’s opinion is supported and conclusionary.

F. DR. LAVIAN'S OPINION THAT CLAIM 9 IS OBVIOUS

1. Motivation to combine Blease, Weyman, and Hu

98. A POSITA would not combine Blease Weyman and Hu in the manner Dr. Lavian has described for a number of reasons, as I described above in ¶¶ 71-76 above.

99. Moreover, as I described above in section F, Blease does not keep track of individual multicast streams and therefore would not implement the teachings of Hu or Deng which apply to individual multicast streams.

100. For the reasons above, in my opinion, a POSITA would not combine Blease, Weyman, Hu as Dr. Lavian has described.

2. Claim 9 “ The network element according to claim 11, wherein the processing units are configured to track a use of a permission to forward a certain multicast packet stream over a certain port by monitoring requests relating to the certain multicast packet stream that are received at the network element, and to remove the permission from the respective lists responsively to determining that the permission is aged.

101. In my opinion, Dr. Lavian fails to show how Blease in view of Weyman and Hu renders obvious claim 9. As I described above in sections G, H, and I, a POSITA would not combine these references as Dr. Lavian describes.

G. DR. LAVIAN'S OPINION THAT CLAIMS 10 and 16 DR. ARE OBVIOUS OF BLEASE IN COMBINATION WITH WEYMAN, HU AND DENG

3. Motivation to combine Blease, Weyman, Hu, and Deng

102. A POSITA would not combine Blease, Weyman, Hu, and Deng as Dr. Lavian has described for a number of reasons. Hu already drops streams if the video traffic is below a threshold. “In an illustrative, non-limiting embodiment, the request module 118 can determine, before rejecting the request, whether an existing stream can be dropped at one of the first plurality of physical ports 122, such that the video traffic load at the port does not exceed the threshold after the new video stream is added at the port.” EX1007 Col.5:44-48.

103. This is superior to Deng's teaching of using a timer to track the age of multicast stream permissions and remove those permissions by updating a multicast table upon expiration of the timer as active streams will not be removed which will dramatically affect user's experience for long running videos such as the Super Bowl. Thus, a POSITA would not be motivated to modify Hu in view of Deng.

104. Moreover, as I described above in section F, Blease does not keep track of individual multicast streams and therefore a POSITA would not be motivated to implement the teachings of Deng, which apply to individual multicast streams, in Blease's system as they would not have a reasonable expectation of success.

105. For the reasons above, in my opinion, a POSITA would not combine Blease, Weyman, Hu, and Deng as Dr. Lavian has described.

- 4. Claim 10 “The method according to claim 8, wherein updating the list comprises tracking a use of a permission to forward a certain multicast packet stream over a certain port by monitoring requests relating to the certain multicast packet stream that are received at the network element, and removing the permission from the list responsively to determining that the permission is aged.”**

106. In my opinion, Dr. Lavian fails to show how Blease in view of Weyman, Hu, and Deng renders obvious claim 16. As I described above, a POSITA would not combine these references as Dr. Lavian has described. See Sections H, I, and “Motivation to combine Blease, Weyman, Hu, and Deng” above. Moreover, as I described above in section F, Blease does not keep track of individual multicast streams and therefore a POSITA would not be motivated to implement the teachings of Deng, which apply to individual multicast streams, as they would not have a reasonable expectation of success.

- 5. Claim 16 “ The network element according to claim 11, wherein the processing units are configured to track a use of a permission to forward a certain multicast packet stream over a certain port by monitoring requests relating to the certain multicast packet stream that are received at the network element, and to remove the permission from the respective lists responsively to determining that the permission is aged.**

107. In my opinion, Dr. Lavian fails to show how Blease in view of Weyman, Hu, and Deng renders obvious claim 16. As I described above, a POSITA

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would not apply the teachings of Weyman, Hu, or Deng to Blease's system. See Sections H, I, and above. Moreover, as I described above in section F, Blease does not keep track of individual multicast streams and therefore a POSITA would not be motivated to implement the teachings of Deng which apply to individual multicast streams, as they would not have a reasonable expectation of success..

H. DR. LAVIAN'S OPINION THAT CLAIMS 8 AND 18 ARE OBVIOUS OF BLEASE IN COMBINATION WITH WEYMAN AND RAO

108. Dr Lavain admits that Weyman "does not explicitly spell out certain steps for configuring a new processing unit that" referring to the steps of claims 8 and 18. EX1003-989 ¶166. So, he adds Rao to the combination.

6. Motivation to Combine the Teachings of Blease, Weyman, and Rao

109. Dr. Lavian opines that Rao is in the same field of endeavor and contains overlapping disclosures citing to Rao 1:6-7 and 6:10-22. EX1003 ¶167.

110. I see no evidence of 'overlapping disclosures' and cannot find the cited sections of Rao in either Blease or Weyman. I am not sure Dr. Lavian is using the ordinary meaning of 'overlapping disclosures. Moreover, Rao describes a system in which the control is in a master slave set of centralized processors. See Section E above. Like Weyman, Rao teaches away from 'the list' being "a list containing all of the multicast pairings in the network element" as required by claims of the '394

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Patent. See Section X above. Instead, Rao teaches that only portions of the multicast routing information is distributed to the line cards. See Section E above.

111. Dr. Lavian next opines that “To the extent that Blease and Weyman do not explicitly instruct a person of ordinary skill in the art with steps to initialize a processing unit, as recited in claims 8 and 18 of the ’394 Patent, a person of ordinary skill in the art would have been thus motivated to look to known implementations, as in Rao, for details. But as I described above in Section G, Weyman does describe how to initialize an added unit by choosing another active unit to synchronize its configuration with. Therefore, a POSITA would have no motivation to go to Rao. Because Weyman already teaches how to initialize a default unit, a POSITA would not be motivated to combine Weyman with Rao, as Rao teaches an entirely different method, that of a master / slave approach which is incompatible with Weyman initialization of a default unit, as I described in section G.

7. **“deactivating the ports to which the new processing unit is assigned; while the ports to which the new processing unit is assigned are deactivated, sending a multicast status request, receiving multicast membership reports sent by multicast clients in response to the multicast status request, constructing the list by the new processing unit based on the received multicast membership reports; and after constructing the list, activating the ports to which the new processing unit is assigned**

Claim Element 8[f.ii]	Claim Element 18[d.ii]
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deactivating the ports to which the new processing unit is assigned; while the ports to which the new processing unit is assigned are deactivated, sending a multicast status request, receiving multicast membership reports sent by multicast clients in response to the multicast status request, constructing the list by the new processing unit based on the received multicast membership reports; and after constructing the list, activating the ports to which the new processing unit is assigned.	deactivating the ports to which the new processing unit is assigned; while the ports to which the new processing unit is assigned are deactivated, sending a multicast status request, receiving multicast membership reports sent by multicast clients in response to the multicast status request, constructing the list by the new processing unit based on the received multicast membership reports; and after constructing the list, activating the ports to which the new processing unit is assigned.
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112. Dr. Lavian admits that even with the addition of Rao, the combination still does not deactivating its data path forwarding prior to updating. EX1003-989 ¶175.

113. Moreover, a POSITA would understand that the standby RPM is never initialized, instead it is kept alive and receives updates from the master. In fact, initializing the RPM would cause it to lose all of its current information. This is taught away from in Rao as the standby processor's database is synchronized with the masters' database so it is never in an initialization state. EX1024 8:59-9:2. In addition, Rao never teaches that the links are set to inactive, nor could they as doing so may prevent the line card from sending the sending of PIM hellos or Host

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membership queries as taught by Rao. Rao also does not teach that the links would be re-activated after the timer has expired. Dr. Lavian appears to be using hindsight when he states that a POSITA would be motivated to add the changes to Rao.

114. The LC processors links are never set to inactive in Rao, and a POSITA would not expect them to be as doing so may prevent the line card from sending the sending of PIM hellos or Host membership queries. Dr. Lavian seems to agree. See EX1003-989 ¶94.

115. For the reasons above, in my opinion, a POSITA would not combine Blease, Weyman, and Rao as Dr. Lavian has described and therefore Dr Lavian has not shown that claim 8 and 18 are obvious of Blease in view of Weyman and Rao.

I. CONCLUSION

116. This declaration reflects my opinions as currently held. However, my analysis may continue such that I may consider additional information that may result in additional observations.

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

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May 9th, 2025

Date

James Olivier, Ph.D.