

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,
Petitioner,

v.

LIONRA TECHNOLOGIES LIMITED,
Patent Owner.

IPR2024-00734
Patent 7,623,518 B2

**PETITIONER'S REPLY
TO PATENT OWNER'S RESPONSE**

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PETITIONER'S EXHIBIT LIST

Ex.1001	U.S. 7,623,518
Ex.1002	Prosecution History of U.S. 7,623,518
Ex.1003	Declaration of Mark E. Crovella, Ph.D. under 37 C.F.R. § 1.68
Ex.1004	<i>Curriculum Vitae</i> of Mark E. Crovella, Ph.D.
Ex.1005	Complaint filed on May 9, 2024
Ex.1006	U.S. Patent No. 6,651,096 to Gai et al. ("Gai")
Ex.1007	U.S. Patent No. 7,523,485 to Kwan ("Kwan")
Ex.1008	U.S. Patent No. 7,003,597 to Georgiou et al. ("Georgiou")
Ex.1009	U.S. Patent No. 6,105,086
Ex.1010	U.S. Patent Publication No. 2001/0012294A1
Ex.1011	U.S. Patent No. 5,720,032
Ex.1012	U.S. Patent No. 5,797,033
Ex.1013	U.S. Patent No. 8,751,647
Ex.1014	U.S. Patent No. 7,343,485
Ex.1015	Median time-to-trial in the Eastern District of Texas
Ex.1016	U.S. Patent Publication No. 2005/0055570A1
Ex.1017	Intellinet User Manual
Ex.1018	Netgear WG602 Users Guide
Ex.1019	Email from Seth Hasenour to Emily Whitcher, "Re: Lionra vs. Cisco (Lionra II) – Letter," December 4, 2023.
Ex.1020	Docket Control Order, <i>Lionra Techs. Ltd. v. Cisco Systems, Inc.</i> , No. 2:23-cv-00206, Dkt. 30 (E.D. Tex. Aug. 9, 2023).

Ex.1021 (NEW)	Deposition Transcript of Dr. Eric Cole
Ex.1022 (NEW)	Architectures With Bus Based Switch Fabrics Case Study Cisco Catalyst 6000 Series Switches
Ex.1023 (NEW)	Second Declaration of Dr. Crovella under 37 C.F.R. § 1.68

I. Introduction

Patent Owner in its Response (“Resp.,” Paper 9) presents numerous flawed and meritless arguments. Regarding Ground 1, Patent Owner ignores prior art express teachings and argues that there is no motivation to combine. Additionally, for Ground 2, Patent Owner argues that the limitation of “*a memory circuit*” requires a “single” circuit, ignoring that the ’518 patent specification has no such embodiment and that it is well established that “the use of ‘a’ or ‘an’ in an open-ended ‘comprising’ claim connotes ‘one or more.’” *Celgene Corp. v. Peter*, 931 F.3d 1342, 1350 (Fed. Cir. 2019); *see also Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008).

Accordingly, for the detailed reasons discussed below, the Board should find all Challenged Claims unpatentable.

II. Ground 1: Claims 1 and 3 are Obvious over Gai, Yip, and Kwan

The Petition explained how the combination of Gai, Yip, and Kwan teaches the limitations in claims 1 and 3 and that it would have been obvious to combine the relevant teachings. Pet. 14-42. Patent Owner does not dispute that Gai, Yip, and Kwan disclose all limitations of claims 1 and 3. The only dispute is whether a POSITA would have been motivated to combine the references.

A. A POSITA would have been motivated to combine Yip and Gai.

Patent Owner argues that “a POSITA would not have been motivated to combine Gai, Yip and Kwan to achieve the claimed invention.” Resp. 7. In support, Patent Owner asserts that the prior art is not combinable because (1) Gai is directed to a Layer 3 device, (2) Yip is directed to a Layer 3 device, and (3) Kwan is directed to a Layer 2 device. Resp. 7-20. Patent Owner's assertions fail as discussed below.

1. Gai is not limited to Layer 3 devices.

Patent Owner incorrectly argues “that Gai is directed to and discloses a Layer 3 intermediate device.” Resp. 8. Although Gai discloses a Layer 3 intermediate device, it also plainly states that its invention may be used in a Layer 2 intermediate device:

Nonetheless, it should be understood that **the present invention may also be utilized in whole or in part with other intermediate network devices, such as switches and/or layer 2 intermediate devices**, which are also intended to broadly cover any intermediate device operating primarily at the data link layer.

Ex.1006, 5:35-55. As Petitioner's expert, Dr. Crovella, explains, “a POSITA would have understood that Gai's teachings are not limited to Layer 3 and equally apply to Layer 2 intermediate devices such as switches.” Ex.1023, ¶7. Also, after reading the above passage during deposition (Ex.1021, 108:20-109:9), Patent

Owner's expert, Dr. Cole, conceded that Gai's teachings apply to Layer 2 intermediate devices:

10 Q. So in that first part that you had just
11 read, Gai states that the invention may be utilized
12 in layer 2 intermediate devices. Correct?
13 A. It says that.

Ex.1021, 109:10-13. Notwithstanding, Dr. Cole ignored the specification's disclosure because, according to him, the prior art teachings are limited to the claims:

14 Q. And you believe Gai is lying about that?
15 ATTORNEY AUCHTER: Objection to form.
16 A. No. But I believe if you look at the
17 claims of Gai, it's referring to layer 3.
18 Q. So you're limiting your understanding of
19 Gai to what it claims. Is that correct?
20 ATTORNEY AUCHTER: Objection to form.
21 A. I mean, to me, the claims are the
22 invention. So the specification could talk about
23 sort of hypotheticals and things like that. But to
24 me, the invention is what's in the claims.

Ex.1021, 109:14-24. This is error because “a reference constitutes prior art for all that it teaches as of its earliest accorded filing date.” *In re Riggs*, Case No. 2022-1945 (Fed. Cir. Mar. 24, 2025). This principle holds true even if Patent Owner's Dr. Cole believed that Gai's Layer 2 embodiments were inoperable or non-enabling—which has neither been argued nor established. *See e.g., Beckman*

Instruments v. LKB Produkter AB, 892 F.2d 1547, 1551 (Fed. Cir. 1989) (“Even if a reference discloses an inoperative device, it is prior art for all that it teaches.”); *Symbol Techs. Inc. v. Opticon Inc.*, 935 F.2d 1569, 1578 (Fed. Cir. 1991) (“[A] non-enabling reference may qualify as prior art for the purpose of determining obviousness under [35 U.S.C.] 103.”).

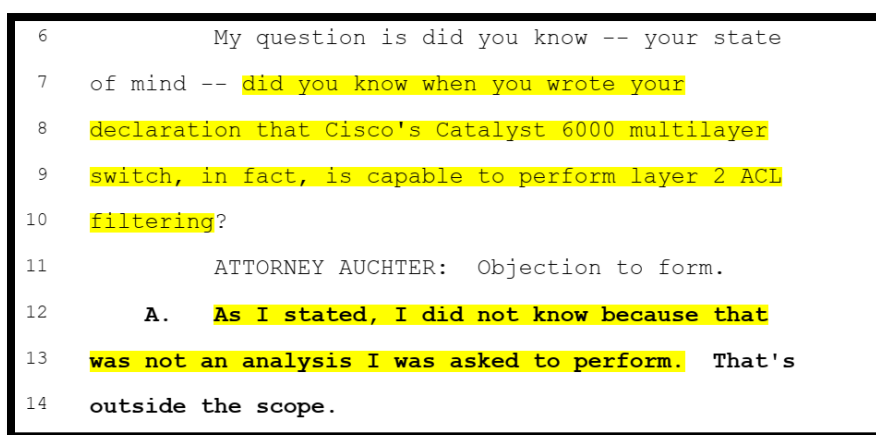
Further, in support of its argument that Gai only performs ACL filtering at Layer 3, Patent Owner cites Gai's example of “the Catalyst® 6000 family of multi layer switches...from Cisco Systems, Inc.” Resp. 10-11; Ex.1006, 6:62-65. Patent Owner's Dr. Cole reiterated the assertion that Gai's exemplary Cisco's Catalyst devices are Layer 3 devices:

6 Q. Okay. So why do you reference the
7 Catalyst 8500 series switch routers and/or the
8 Catalyst 6000 multilayer switches?
9 A. Because those are examples of intermediate
10 devices that run at layer 3.

Ex.1021, 111:6-10. Dr. Cole, however, failed to provide any support for this assertion and confirmed that he did not do any research to inform his opinion:

17 Q. Did you do any research regarding Cisco
18 Systems' Catalyst 6000 multilayer switch to inform
19 you in rendering your opinion?
20 A. That was not something I was asked to
21 opine on. I was opining on the four prior art

Ex.1021, 112:17-21. And when pressed, Dr. Cole conceded that he in fact did not know whether Cisco's Catalyst 6000 multilayer switch operated at Layer 2 to perform ACL filtering.



6 My question is did you know -- your state
7 of mind -- did you know when you wrote your
8 declaration that Cisco's Catalyst 6000 multilayer
9 switch, in fact, is capable to perform layer 2 ACL
10 filtering?
11 ATTORNEY AUCHTER: Objection to form.
12 A. As I stated, I did not know because that
13 was not an analysis I was asked to perform. That's
14 outside the scope.

Ex.1021, 112:17-21. As such, Dr. Cole's uninformed declaration testimony should be given little to no weight because it fails to provide a sufficient underlying basis for his opinion. *See* 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight."); *see also Nobel Biocare Services AG v. Intradent USA, Inc.*, 903 F.3d 1365, 1382 (Fed. Cir. 2018) (explaining that the Board can reject arguments based on expert testimony that lacks specificity or detail); *CUB Elecparts Inc. v. Orange Electronic Co., Ltd.*, IPR2024-00744, Paper 14 (PTAB Nov. 12, 2024) (same).

Upon review, it is apparent that Dr. Cole's reasoning is flawed in that it mischaracterizes Cisco's Catalyst® 6000 multilayer switch. Petitioner's Dr. Crovella, who reviewed related documentation, "disagree[s] with Dr. Cole's

suggestion in his declaration that Cisco's Catalyst® 6000 multilayer switch is not a Layer 2 device." Ex.1023, ¶8. According to Dr. Crovella, "[a] POSITA would have understood that Cisco's Catalyst® 6000 multilayer switch is configurable to operate at multiple layers, including operating at Layer 2 to perform ACL filtering, as illustrated below at Figure 7.5." Ex.1023, ¶9.

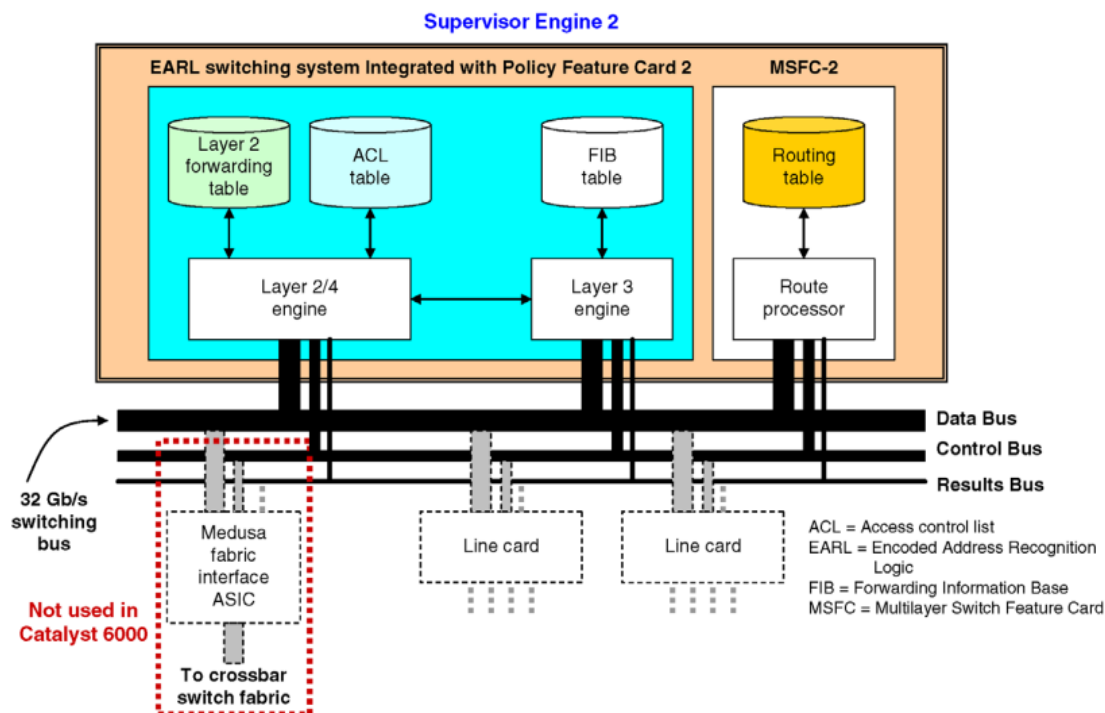


FIGURE 7.5 Catalyst 6000 with Supervisor Engine 2 with Policy Feature Card 2 (PFC2) and Multilayer Switch Feature Card 2 (MSFC2).

Ex.1022, FIG. 7.5

Dr. Crovella further explains that "in Figure 7.5 the Catalyst® 6000 multilayer switch is illustrated as having an ACL at Layer 2, such that it is capable to perform Layer 2 ACL filtering." Ex.1023, ¶10; *see also* Ex.1022, 142 ("As shown in Figure 7.5, the EARL switching system is actually integrated into the

PFC2. The **Layer 2 and ACL engine** are combined to obtain a single Layer 2/ Layer 4 engine. The capabilities of the **Layer 2 forwarding engine are enhanced to include...ACL filtering.**"). As such, according to Dr. Crovella, "[a] POSITA would have understood that Gai's intermediate network device 316, which may be implemented with a Catalyst® 6000 multilayer switch (Ex.1006, 6:62-65), is a Layer 2 switch that performs ACL filtering." Ex.1023, ¶10. Patent Owner's Dr. Cole ultimately conceded this point during deposition. Ex.1021, 111:18-19 ("So when you're saying multilayer switches, it means it's operating on layers 2 and 3."). Therefore, both experts agree that Gai's is not limited to Layer 3 intermediate devices and teaches Layer 2 intermediate devices.

Because all of Patent Owner's motivation to combine arguments for Ground 1 are centered on the erroneous premise that Gai is directed to Layer 3 intermediate devices and not applicable to Layer 2, the arguments must fail. Nevertheless, for completeness, Petitioner addresses all of Patent Owner's remaining arguments below.

2. Yip is not limited to Layer 3 devices.

Patent Owner next incorrectly argues that "Yip is directed to a Layer 3 device." Resp. 12-14. Although Yip discusses Layer 3, it also generally discloses that "access lists were developed to combat cyberattacks on the LAN Switch by providing an administrator-controlled list of Internet Protocol (IP) addresses or

media access control (MAC) addresses that were authorized to access the network.” Ex.1013, 2:43-47; Pet. 26; *see also* Ex.1013, 6:23-27 (“In an alternate embodiment, a static layer-2 address, such as the user’s end station MAC address may be adequate for purposes of obtaining access.”). As Dr. Crovella explains, “Yip’s disclosure of an ACL including a MAC address means that the ACL is utilized at Layer 2.” Patent Owner’s argument that Yip’s Layer 2 disclosure is “an alternate embodiment” is beside the point because “a reference constitutes prior art for all that it teaches as of its earliest accorded filing date.” *In re Riggs*, No. 22-1945, slip op. at 14 (Fed. Cir. Mar. 24, 2025). Dr. Crovella confirms that “[a] POSITA would readily appreciate that the ‘alternate embodiment’ is within the scope of Yip’s invention.” Ex.1023, ¶11.

3. There is motivation to combine Yip and Gai.

The Petition provided numerous reasons to combine the teachings of Yip and Gai, which Patent Owner does not address and therefore concedes. Pet. 16; Resp. 14-15. Additionally, the Petition articulated non-benefit-based rationales, including that the “proposed combination merely represents a combination of prior art elements (MAC addresses, per Yip, with Gai’s ACL) according to known methods to yield predictable results (facilitate filtering of packets based on MAC addresses).” Pet. 16. Patent Owner also does not address, and therefore concedes, this reason to combine. Resp. 14-15; *Intel Corp. v. Pact XPP Schweiz AG*, 61

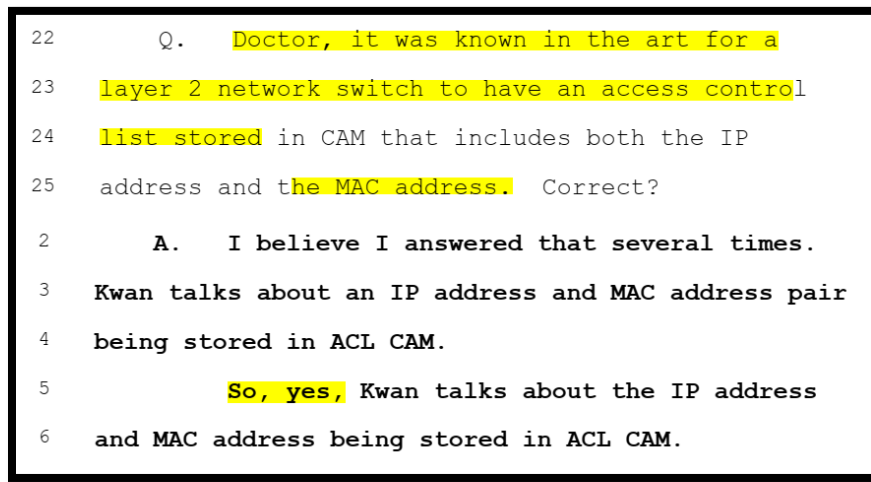
F.4th 1373, 1381 (Fed. Cir. 2023) (no requirement to show a benefit in combining prior art references in a “categorical sense” in order to show a motivation to combine).

Rather than addressing the proposed combination of ACL filtering using MAC addresses, Patent Owner argues that “[a] POSITA would not look to Yip’s teaching of blocking a port until a lengthy authentication process had been completed in connection with Gai’s teaching of high-speed network switching.” Resp. 14. This argument is a red herring because the Petition only cited Yip for its ACL MAC address teachings and did **not** rely on Yip’s authentication process.

Patent Owner further argues that a POSITA would not have been motivated to use “Access Control Lists that included MAC addresses” because, allegedly, as of “April 2004, network systems were often viewed as and divided into multiple layers throughout the industry” and “[c]rossing these layers would lead to inefficiencies and increase network complexity.” Resp. 14-15. Patent Owner further asserts that the combination would “not have been viewed as feasible...[and] would have been avoided as a potential performance killer and costly endeavor.” Resp. 15. Notably, Patent Owner and its expert Dr. Cole fail to provide any evidentiary support for these assertions.

In contrast, the Petition cited numerous evidentiary references demonstrating that it was known in the to utilize ACLs with MAC addresses for filtering. Pet. 17

(citing Ex.1014, 6:30-32, 8:27-47, 11:57-62; Ex.1017, 55; Ex.1018, 13). Patent Owner and Dr. Cole do not address Petitioner's evidence. And, during deposition, Patent Owner's Dr. Cole reluctantly conceded that it was known in the art for a Layer 2 network switch to use an ACL with MAC addresses:



22 Q. Doctor, it was known in the art for a
23 layer 2 network switch to have an access control
24 list stored in CAM that includes both the IP
25 address and the MAC address. Correct?
2 A. I believe I answered that several times.
3 Kwan talks about an IP address and MAC address pair
4 being stored in ACL CAM.
5 So, yes, Kwan talks about the IP address
6 and MAC address being stored in ACL CAM.

Ex.1021, 50:22-51:6. Accordingly, it is undisputed that it was known in the art to implement ACLs with MAC addresses.

Moreover, Patent Owner's argument fails because it is based on the unsupported premise that Gai and Yip are limited to Layer 3 devices—which they are not. As already explained above, Gai expressly discloses a Layer 2 intermediate device (Ex.1006, 5:35-55) such as a Cisco Systems Catalyst® 6000 multilayer switch (Ex. 1006, 6:62-65) and Yip teaches Layer 2 MAC address ACL (Ex.1013, 2:43-47).

The fact that the Cisco Systems Catalyst® 6000 multilayer switch operated

at Layer 2 to perform ACL filtering demonstrates that Patent Owner's incompatibility, complexity, and feasibility arguments are meritless. Resp. 15. As Dr. Crovella explains, "[a] POSITA would have recognized that there is no incompatibility, complexity, or difficulty in implementing the combination of Yip and Gai since a suitable platform for implementing Gai's teachings is a Layer 2 intermediate device (Ex.1006, 5:35-55), such as a Cisco Systems Catalyst 6000 multilayer switch (Ex. 1006, 6:62-65) which is configurable to operate at Layer 2." Ex.1023, ¶12.

Therefore, contrary to Patent Owner's assertion, "a POSITA would have been motivated to combine the teachings of Yip and Gai and would have done so with relative ease." Ex.1023, ¶12.

B. A POSITA would have been motivated to combine Kwan and Gai.

The Petition provided numerous reasons to combine Kwan and Gai (as modified per Yip). As explained in the Petition, for example, "[b]y including a MAC address and seed IP address properties in the text-based ACLs, Gai's network device 316 would be able to process packets from a host that has a known MAC address but has been assigned a new IP address (e.g., using DHCP), as was often done at the time....[to] obviate the need for Gai's administrator to manually update text-based ACLs when a host's IP address changes or the network changes." Pet. 20. Patent Owner does not address, and therefore concedes, this

reason to combine Kwan and Gai. *See* Resp. 14-15. And, during deposition, Patent Owner's Dr. Cole agreed that supporting DHCP would be beneficial in contrast to the administrator manually updating the IP addresses:

11 Q. Why would DHCP be used instead of static
12 IP addresses?
...
22 So it's much more scalable and easier just
23 to turn on DHCP, so this way every computer can get
24 the same exact image. There's no -- there's no
25 manual configuration there. When you connect to
1 the network, you automatically get assigned a
2 unique IP address.

Ex.1021, 36:11-37:2. Additionally, the Petition articulated non-benefit-based rationale for the proposed combination, which Patent Owner does not address and therefore concedes. *See* Pet. 21; Resp. 14-15. *See Intel Corp. v. Pact XPP Schweiz AG*, 61 F.4th 1373, 1381 (Fed. Cir. 2023) (no requirement to show a benefit in combining prior art references in a “categorical sense” in order to show a motivation to combine).

Ignoring the Petition's rationale, Patent Owner argues that there is no motivation to combine Kwan with Gai, “because...what works for Layer 2 switching [of Kwan] generally does not apply to Layer 3 switching [of Gai].” Resp. 17-18. Patent Owner also repeats its earlier arguments; namely, that “it

would not have been obvious to a POSITA nor viewed as feasible to combine the functionality of ACLs and MAC addresses.” Resp. 16-18. These arguments fail for the same reasons discussed above. As already explained, Gai’s disclosure contemplates a Layer 2 intermediate device (Ex.1006, 5:35-55), such as a Cisco Systems Catalyst® 6000 multilayer switch (Ex. 1006, 6:62-65) that may be configured to operate at Layer 2, thus rendering Patent Owner’s feasibility argument moot. Further, contrary to Patent Owner’s assertion, combining the functionality of ACLs and MAC addresses would have been routine, as evidenced by the prior art cited in the Petition and conceded by its own expert, Dr. Cole. *See* Pet. 17 (citing Ex.1014, 6:30-32, 8:27-47, 11:57-62; Ex.1017, 55; Ex.1018, 13); Ex.1021, 50:22-51:6.

Patent Owner next presents two arguments, which lack any evidentiary support, and should be given little to no weight. *See* 37 C.F.R. § 42.65(a); *Nobel Biocare Services AG v. Intradent USA, Inc.*, 903 F.3d 1365, 1382 (Fed. Cir. 2018) (explaining that the Board can reject arguments based on expert testimony that lacks specificity or detail); *CUB Elecparts Inc. v. Orange Electronic Co., Ltd.*, IPR2024-00744, Paper 14 (PTAB Nov. 12, 2024) (same).

First, Patent Owner, citing to Dr. Cole’s bare assertions, argues that “[a] POSITA would also recognize that limiting the number of hosts that can connect to a single port or requiring a lengthy process for learning the correct IP address as

taught by Kwan would be contrary to Gai's stated goal of achieving higher switching speeds." Resp. 18. This statement lacks substantiating evidence or reasoning to support the assertion that the number of hosts that can connect to a port diminishes switching speeds. As Dr. Crovella explains, "[a] POSITA would have understood that the switching speeds are not diminished if the number of hosts are limited per port—there is no logical relationship. Gai obtains high switching speeds by utilizing ACL TCAM." Ex.1023, ¶14; Ex.1006, 17:53-54. Indeed, Patent Owner's Dr. Cole agrees that it is Gai's technique of evaluating ACLs in CAM that facilitates fast switching speeds. Ex.1021, 53:5-54:9.

Furthermore, Patent Owner fails to provide any evidence or rationale explaining how learning a new IP address impacts the switching speeds for already learned IP addresses—because it does not. As Dr. Crovella explains, "[a] POSITA would have recognized that Kwan's technique to learn a new IP address (e.g., one that was assigned with DHCP) does not impact switching speeds of an already learned IP addresses. In fact, Kwan's technique would benefit Gai because a new IP address would be learned quickly without manual administrator intervention, which is time intensive." Ex.1023, ¶14. And Patent Owner's Dr. Cole confirms that "it's much more scalable and easier just to turn on DHCP...[because] there's no manual configuration there." Ex.1021, 36:11-37:2.

Second, Patent Owner, citing to Dr. Cole's bare assertions, further argues that "adding dynamic IP learning functionality to ACLs including MAC addresses would introduce new vulnerabilities into the network, such as IP spoofing the MAC address." Resp. 18. This assertion also lacks any evidentiary support or reasoning and is meritless. As Dr. Crovella explains, "a POSITA would have understood that in the combination vulnerabilities are reduced and IP spoofing the MAC address would not be an issue." Ex.1023, ¶15; Pet. 15-16; Ex.1003, ¶57. "In the proposed combination of Kwan with Gai (as modified per Yip), the MAC addresses are provided by the administrator as text inputs in the ACL and Kwan teaches that a seed IP address is provided by the administrator (*see* Ex.1007, 6:14-18). This means that spoofing in the combined system is reduced because an IP address attempting to spoof the MAC address would have to both spoof the IP (to match the seed) and the MAC address (to match a paired MAC address *see* Ex.1007, 3:1-4; 6:14-18), which would be very difficult." Ex.1023, ¶15.

Furthermore, Patent Owner's arguments fail because a combination need not result in the best option to render the claims obvious. *See Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 797 (Fed. Cir. 2021); *see also Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1379-81 (Fed. Cir. 2023).

III. Ground 2: Claims 15, 17, 19-21 are Obvious over Gai, Kwan, and Georgiou

The Petition explained how the combination of Gai, Kwan, and Georgiou teaches the limitations in claims 15, 17, 19-21 and that it would have been obvious to combine the relevant teachings. Pet. 43-85. Patent Owner argues that a person of ordinary skill would not have combined the references and that the “*memory circuit*” limitation is not satisfied. Patent Owner is wrong.

A. A POSITA would have been motivated to combine Gai, Kwan, and Georgiou.

For the “*dynamic access control list*” limitation, Patent Owner incorrectly argues that “[f]or the reasons stated above with respect to challenged claim 1” there is no motivation to combine. Resp. 21-23. Therefore, for the same reasons discussed above, there is motivation to combine the prior art teachings to satisfy this limitation.

Additionally, for the “*memory circuit*” limitation, Patent Owner incorrectly argues that “[a] POSITA would not have been motivated to combine Gai and Georgiou’s teachings” because, allegedly, the combination is “contrary to Gai’s goal of faster processing, as well as adding increased complexity.” Resp. 27-28. According to Patent Owner, “stor[ing] packets would bottleneck [Gai’s] system greatly within a relatively fast time frame as packets fill up the dynamic memory and slow down the stream of data to a crawl during filtering processes.” Resp. 25.

Patent Owner further asserts that “implementing this process would be extremely costly and inefficient, as well as conceptually incompatible with the typical methods of switch hardware to forward packets at the highest sustainable rate.”

Resp. 25. Patent Owner's assertions mischaracterize the Petition and are wrong.

The Petition explained that “Gai discloses a memory circuit (e.g., NVRAM 408, dynamic memory 409, and TCAM 410)” which corresponds to “a memory circuit.” Pet. 65-67.

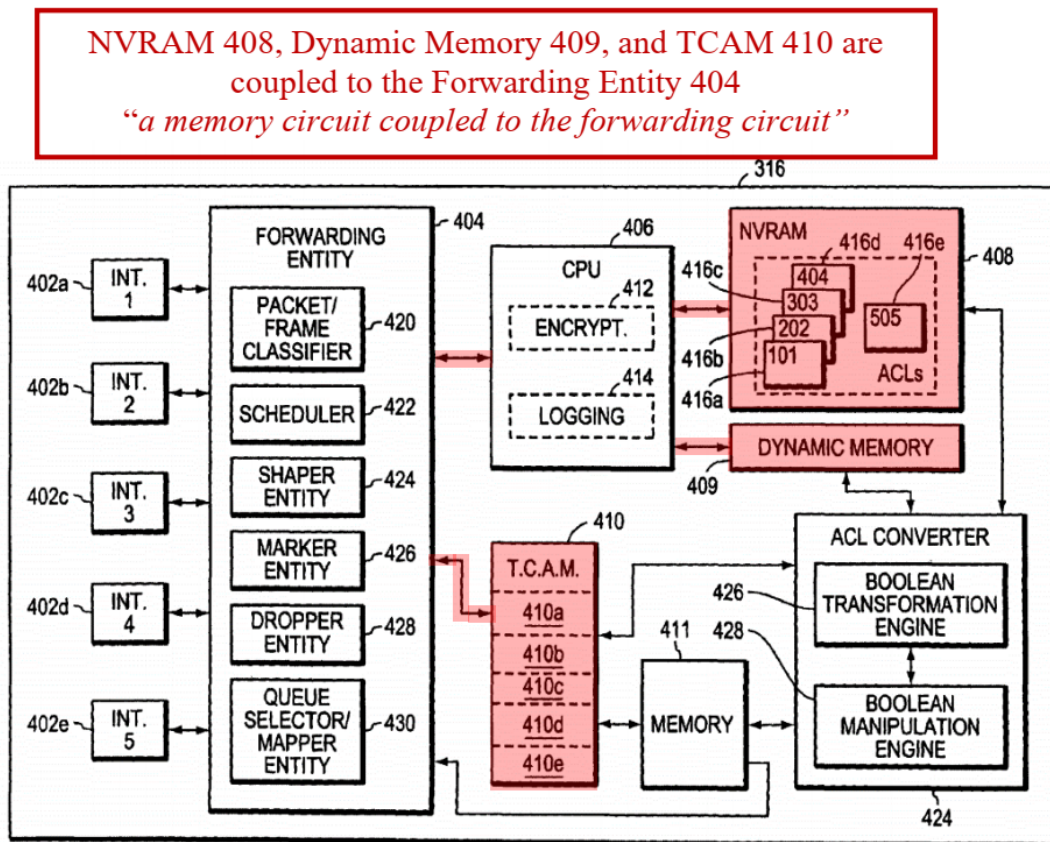


FIG. 4

Ex.1006, Fig. 4 (annotated).

As Dr. Crovella explains, “Georgiou’s teachings would not have slowed Gai’s processing of incoming packets because in Gai, most packets are forwarded by Gai’s forwarding entity 404 to their destination and only packets that Gai does not forward, e.g., because they need additional processing (e.g., encrypt, learn new IP addresses...) would be stored in dynamic memory 409, as Georgiou teaches.” Ex.1023, ¶17; Pet. 67-68; Ex.1006, 1:22-27, 5:51-67; 17:44-48. “As such, in the proposed combination only a small number of packets (e.g., packets that need additional processing by CPU 406) are stored in the dynamic memory 409 and the majority of packets are forwarded by the forwarding entity 404 to the various interfaces 402a-e of device 316.” Ex.1023, ¶17.

Dr. Crovella further explains that “the proposed combination would not be ‘extremely costly and inefficient’ because using a DMA circuit and dynamic memory, as Georgiou teaches, was well known in the art and such well known devices would add minimal complexity to Gai’s system that already has dynamic memory 409.” Ex.1023, ¶17.

Furthermore, Patent Owner’s arguments fail because a combination need not result in the best option to render the claims obvious. *See Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 797 (Fed. Cir. 2021); *see also Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1379-81 (Fed. Cir. 2023).

B. The combination of Gai, Kwan, and Georgiou discloses the “*memory circuit*” limitation.

As noted above, the Petition explained that NVRAM 408, dynamic memory 409, and TCAM 410 correspond to “*a memory circuit*.” Pet. 67. The Petition further explained how, in the proposed combination, the dynamic memory 409 stores packets that need additional processing, NVRAM 408 stores administrator generated text-based ACLs, and TCAM 410 stores a dynamically generated optimized ACL, which discloses that “*the memory circuit is operable to store packets and operable to store an enhanced access control list and a dynamic access control list*.” Pet. 67-69.

Patent Owner argues that the claims require “a **single** memory circuit.” Resp. 30. Similarly, Patent Owner’s Dr. Cole interprets the claims’ use of the word “*a*” before “*memory circuit*” to require a single memory circuit:

24 Q. And is it your position that Claim 15
25 recites a single memory circuit?
1 A. And in 15, 2.1 says "a memory circuit."
2 It doesn't say "memory circuits" or "multiple
3 circuits." So, to me, that would be referring to a
4 single memory circuit.
5 Q. So your reading of the claim is because it
6 says "a" -- quote/unquote -- "memory circuit," you
7 read that as a single memory circuit. Is that
8 correct?
9 A. That's how I'm reading it, yes.

Ex.1021, 95:24-96:9. Based on this (mis)understanding, Patent Owner contends that the prior art is deficient because “the different types of memory in Gai – non-volatile RAM, dynamic memory, and content addressable memory – could not be combined into a **single** memory circuit operable to store packets, enhanced control lists, and dynamic control lists.” Resp. 30; *see also* Resp. 30-32. This is error.

Contrary to Patent Owner's assertions, it is well established that “the use of ‘a’ or ‘an’ in an open-ended ‘comprising’ claim connotes ‘one or more.’” *Celgene Corp. v. Peter*, 931 F.3d 1342, 1350 (Fed. Cir. 2019); *see also Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008). Here, the claims' recitation of “*comprising*” is open ended and recites “*a memory circuit*” without specifying that it is a single circuit. The '518 specification also does not require that the memory circuit that stores packets, enhanced control lists, and dynamic control lists be implemented as a single memory circuit. In fact, the '518 specification has no such embodiment but rather envisions that there may be multiple, distinct memory circuits to store these items. *See* Ex.1001, 9:31-36 (“The selected packets are stored in the packet memory 306.... in the processor 302 is the enhanced access control list 108...”). Patent Owner's Dr. Cole conceded this point during deposition:

24 Q. But you cannot identify a single
25 embodiment where it discloses a single memory
1 circuit that stores received packets, an enhanced
2 access control list, and a dynamic access control
3 list. Correct?
4 ATTORNEY AUCHTER: Objection to form.
5 A. As I said, the claim covers it. And to
6 me, the claim is the invention.
7 So, no, I can't find a specific reference
8 in the specification that has the exact claim, but
9 that's not to be my understanding. The claim is
10 the invention. The specification provides details.
11 So, no, the specification doesn't have the
12 specifics of the claim, but in my understanding,
13 that's not required. The claim speaks for itself.

Ex.1021, 97:24-98:13. As Dr. Crovella testifies, “in view of the specification, a POSITA would not understand the claims of the ’518 patent to require a ‘single’ ‘memory circuit’.” Ex.1023, ¶18.

As such, neither the claims themselves nor the specification support Patent Owner's interpretation. The Board should reject Patent Owner's improper attempt to add limitations and redraft the claims. *See Rembrandt*, 641 F.3d at 1339; *Superguide*, 358 F.3d at 875; *Chef America, Inc.* 358 F.3d at 1374. The Board should also reject Patent Owner's attempt to exclude the ’518 patent's embodiments. *MBO Labs., Inc. v. Becton, Dickinson Co.*, 474 F.3d 1323, 1333

(Fed. Cir. 2007); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583-84 (Fed. Cir. 1996).

Lastly, Patent Owner's argument that "Gai does not disclose or teach a memory circuit operable to store packets" improperly attacks the references individually when the Petition relied on a combination of Gai with Georgiou. Resp. 32; Pet. 67-68; *see In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (*citing In re Keller*, 642 F.2d 413, 425 (CCPA 1981)).

IV. Conclusion

For the foregoing reasons, Patent Owner's arguments in its Response should be rejected, and the Challenged Claims should be found unpatentable.

Respectfully submitted,

Dated: April 30, 2025
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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner hereby certifies, in accordance with and reliance on the word count provided by the word-processing system used to prepare this Reply, that the number of words in this paper is 3,909.

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CERTIFICATE OF SERVICE

The undersigned certifies that, in accordance with 37 C.F.R. § 42.6(e),
service was made on Patent Owner as detailed below.

Date of service April 30, 2025

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Documents served **Petitioner's Reply to Patent Owner's Response; and
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