

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,
Petitioner,

v.

PORTSMOUTH NETWORK CORP.,
Patent Owner.

Case IPR2024-00506

Patent 8,014,394

PATENT OWNER'S PRELIMINARY RESPONSE

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Pursuant to 37 C.F.R. § 42.120, Patent Owner Portsmouth Network Corp. (“Patent Owner”) respectfully submits this Preliminary Response to the Petition filed by Petitioner Cisco Systems, Inc. (“Petitioner”) regarding U.S. Patent No. 8,014,394 (EX1001, “’394 patent”).

I. Introduction

The ’394 patent claims a novel and non-obvious system to forward multicast packets in a network. Response time is important for many multicast content applications, like television. For example, when a user switches from one television channel to another, the user’s set-top box must stop receiving one multicast packet stream and start receiving another multicast stream immediately, otherwise the user will notice a considerable delay. This issue becomes even more noticeable if the multicast content application must respond to multiple requests in quick succession.

The ’394 patent discloses techniques and methods to rapidly adapt to such requests to change multicast forwarding configurations. For example, the ’394 patent discloses storing lists in each processing unit indicating which multicast packet streams are allowed to be forwarded over the ports, distributing a multicast content request among multiple processing units, updating the lists for each processing unit, and selectively forwarding multicast packets based on the updated lists in each processing unit. The ’394 patent also discloses ways to adjust to other changes in the network, such as when a new line card is inserted. For example, the

claimed system may disable local ports of the newly-added line card and transmit a multicast status update request, which allows the newly-added processing unit to stay up-to-date.

Petitioner asserts seven different obviousness grounds to challenge Claims 1-2, 4-12, and 14-18 of the '394 patent, which includes four independent claims. Six out of seven of Petitioner's grounds rely on at least three references for the obviousness combinations. In fact, two of Petitioner's grounds rely on a four-reference obviousness combination. A summary of Petitioner's grounds is provided below.

Petitioner challenges claims 1, 4, 6-7, 11, 14, 16-17, including independent claims 1 and 11, under Ground 1 based on an obviousness combination of *Weyman* and *Li*. Petitioner challenges claims 5 and 15 under Ground 2 based on an obviousness combination of *Weyman*, *Li*, and *Rooholamini*. Petitioner challenges claim 16 under Ground 3 based on an obviousness combination of *Weyman*, *Li*, and *Pitcher*. Petitioner challenges independent claims 8 and 18 under Ground 4 based on an obviousness combination of *Weyman*, *Jain*, and *LeMaire*. Petitioner challenges claim 9 under Ground 5 based on an obviousness combination of *Weyman*, *Jain*, *LeMaire*, and *Li*. Petitioner challenges claim 10 under Ground 6 based on an obviousness combination of *Weyman*, *Jain*, *LeMaire*, and *Pitcher*. Petitioner challenges claims 2 and 12 under Ground 7 based on an obviousness

combination of *Weyman*, *Li*, and *Ding*. There are multiple independent reasons why the various reference combinations fail to disclose all of the '394 patent's independent claim limitations.

First, *Weyman* in view of *Li* does not disclose setting an upper limit on multicast packet streams that are permitted for forwarding over a high-capacity port as required by claim limitations [1k] and [11j]. This deficiency applies to independent claims 1 and 11 and also the claims which depend therefrom.

Second, *Weyman*, *Jain*, and *LeMaire* do not disclose deactivating ports of a newly-added processing unit as required by claim limitations [8k] and [18j]. This deficiency applies to independent claims 8 and 18 and also the claims which depend therefrom.

Because of these deficiencies, the Petition fails to establish a reasonable likelihood that Petitioner would prevail in showing the unpatentability of at least one claim. Accordingly, Patent Owner respectfully requests that the Board exercise its discretion and deny institution.

II. Claim Construction

A court “‘look[s] to the words of the claims themselves ... to define the scope of the patented invention.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). A claim term is generally given its “ordinary and customary

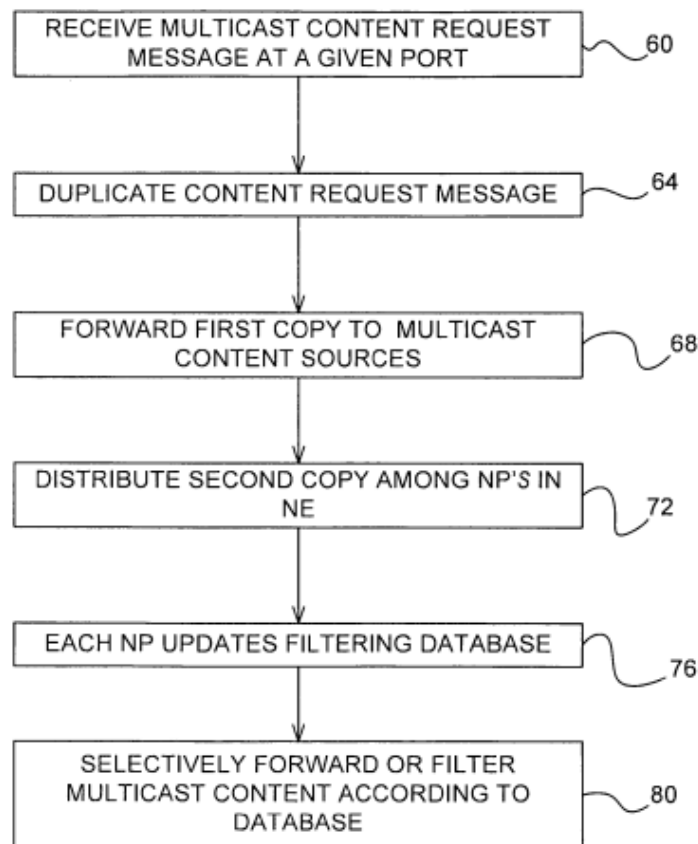
meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1312–13. While courts may deviate from the plain and ordinary meaning in some circumstances, there is a “heavy presumption that a claim term carries its ordinary and customary meaning.” *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (internal quotations omitted). Under this “exacting” standard, any departure from a claim’s ordinary meaning must be based on language that is “so unmistakable as to be unambiguous.” *Dealertrack Inc. v. Huber*, 674 F.3d 1315, 1322 (Fed. Cir. 2012) (citations omitted).

Here, at this stage in the proceeding, Patent Owner will apply the ordinary and customary meaning to the ’394 patent’s claim terms.

III. Overview of the ’394 Patent

The ’394 patent discloses “methods and systems for delivering multicast traffic over communication networks.” EX1001, 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, Figure 2.

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 respective databases

accordingly. The network element may then selectively forward multicast content based on the updated databases. *Id.* at 7:27–8:35.

IV. Arguments

Petitioner challenges claims 1, 2, 4-12, and 14-18. Petitioner challenges independent claims 1 and 11 with Ground 1 and independent claims 8 and 18 with Ground 4. Independent claims 1 and 8 are reproduced below. For purposes of this Patent Owner Preliminary Response, independent claims 1 and 8 are representative of system claims 11 and 18, respectively.

[1pre] A method for communication, comprising:

[1a] operating a network element,

[1b] wherein the network element further comprises multiple interconnected processing units and multiple ports,

[1c] wherein each processing unit is assigned to a different subset of the multiple ports of the network element, and

[1d] 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;

[1e] 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;

[1f] receiving from a client a request relating to reception of a given multicast packet stream;

[1g] distributing the request among the multiple processing units within the network element, and

[1h] updating the respective list in each processing unit responsively to the request; and

[1i] selectively forwarding multicast packets associated with the given multicast packet stream by the processing units in accordance with the respective updated lists,

[1j] wherein operating the network element comprises aggregating two or more of the ports to form a high-capacity port, and

[1k] 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,

[1l] wherein the request indicates that the given multicast packet stream is to be forwarded over the high-capacity port, and

[1m] 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.

[8pre] A method for communication, comprising:

[8a] operating a network element,

[8b] wherein the network element further comprises multiple interconnected processing units and multiple ports,

[8c] wherein each processing unit is assigned to a different subset of the multiple ports of the network element, and

[8d] 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;

[8e] 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;

[8f] receiving from a client a request relating to reception of a given multicast packet stream;

[8g] distributing the request among the multiple processing units within the network element, and

[8h] updating the respective list in each processing unit responsively to the request; and

[8i] selectively forwarding multicast packets associated with the given multicast packet stream by the processing units in accordance with the respective updated lists,

[8j] wherein operating the network element comprises initializing a new processing unit added to the network element by:

[8k] deactivating the ports to which the new processing unit is assigned;

[8l] 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

[8m] after constructing the list, activating the ports to which the new processing unit is assigned.

As demonstrated below, Grounds 1 and 4 of the Petition fail to teach claim limitations [1k], [11j], [8k] and [18j]. The Petition’s failures with respect to independent claims 1, 8, 11, and 18 are repeated for Grounds 2, 3, and 5–7. Thus, Grounds 1–7 do not support institution because they fail to establish a reasonable likelihood that Petitioner would prevail in showing the unpatentability of the ’394 patent’s independent claims, and therefore also the claims which depend therefrom. Accordingly, the Board should deny institution.

A. Ground 1 should be denied because *Weyman* in view of *Li* fails to teach “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” (claim limitations [1k], [11j])

Petitioner argues that *Weyman* in view of *Li* discloses and/or renders obvious claim limitations [1k] and [11j]. Petition at 45–46, 55. With respect to this limitation, Petitioner recognizes that *Weyman* does not disclose setting an upper limit on a number of multicast packet streams that are permitted for forwarding over the high-capacity port and thus relies entirely on *Li* for this element. *See* Petition at 45–46. Specifically, Petitioner argues that *Li*’s “maximum number of accessed multicast channels allowable” is equivalent to an upper limit on the number of multicast packet streams that are permitted for forwarding. *Id.* at 45–46.

The Petition, however, does not establish that *Li* discloses “setting an upper limit on a number of the multicast packet streams that are permitted for forwarding

over the high-capacity port” as required by the claims. That is because Petitioner improperly equates Li’s “channels” to the claimed “multicast packet stream.”¹ But the two are different.

The ’394 patent is clear that the multicast packet or content stream refers to the actual content coming from a multicast source, such as a TV channel or movie, and not a multicast group itself. EX1001, 5:66–6:3 (“Source 24 may transmit multicast packet streams that carry, for example, live IP Television (IPTV) channels, video movies, audio content, stock quotes and/or any other suitable type of multicast content”).

In contrast, *Li* clearly defines “channel” as a multicast group. EX1007, 73:14–16 (“While joining *a multicast group, which is often referred to as a channel*, the terminal device 21 sends an IGMP report message to the access device 22 via the modem 20.”) (emphasis added). But, a channel, or multicast group, is different from

¹ Petitioner argues that a multicast router in *Weyman*’s system in view of *Li* “determines whether the number of channels being forwarded at the port or aggregated link is below the maximum number of accessed channels allowable, and if not, the channel joining processing unit rejects the multicast join request.” Petition at 45. As a result, Petitioner appears to equate *Li*’s “channel” with the ’394 patent’s “multicast packet streams.”

a multicast packet stream. As *Li* repeatedly explains, the actual flow or stream of content is different than the channel itself, further highlighting that *Li*'s channel is not equivalent to the '394 patent's multicast streams. EX1007 ("For example, if a user fast scans multiple channels 1 to 10 sequentially, ***video flows of those ten channels*** are sent concurrently to a multicast service port of the multicast access device for a period of time") (emphasis added); *id.* at 75:22-26 ("If no joining message of the channel sent from another multicast user is received in a defined fast quitting response time, it is considered that no other user is watching the channel and ***multicast flow of the channel*** is cut immediately. If a joining message of the channel sent from another multicast user is received in the defined fast quitting response time, the ***multicast flow of the channel*** continues to be forwarded instead of being cut.") (emphasis added).

Therefore, Petitioner has failed to establish that *Weyman* in view of *Li* discloses "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."

Accordingly, the Petition fails to establish a reasonable likelihood that Petitioner would prevail in showing the unpatentability of independent claims 1 and 11.

B. Ground 4 should be denied because *Weyman* in view of *Jain* and *LeMaire* fails to teach “deactivating the ports to which the new processing unit is assigned” (claim limitations [8k], [18j])

Petitioner argues that *Weyman* in view of *Jain* and *LeMaire* discloses deactivating ports to which the new processing unit is assigned. Petition at 78. Specifically, Petitioner argues that *Jain* discloses a controlled boot-up process that issues a “Link Down” command to disable ports on a newly-added node in a network. *See* Petition at 69 (citing EX1010, [0019], [0020]). As a result, Petitioner appears to equate the “Link Down” command to actually deactivating ports on a processing unit. But that is not what the claims require. As discussed in the specification, the claims require “deactivating the ports to which the new processing unit is assigned.”

Again, Petitioner recognizes that *Weyman* does not disclose this feature and instead points to secondary reference *Jain*. But the cited examples in *Jain* do not disclose “deactivating the ports to which the new processing unit is assigned” as required by the claim limitations. *Jain* is clear that the controlled boot-up process is in response to a reset condition due to a catastrophic failure or similar reason. EX1010, [0019] (“When network node 102A is down for some reason, e.g., a catastrophic switch software and/or hardware failure, reset, power down, rebooting, etc., its link port interfaces are deactivated or de-energized, including the device-side and network-side interfaces.”); *id.*, [0020] (“Upon detecting the reset condition

and in response thereto, a ‘Link Down’ condition is effectuated on at least a portion of the link ports of the network node.”). Contrary to Petitioner’s assertions, Jain does not issue a Link Down command when a new processing unit is added to a network. Rather, Jain’s boot-up process focuses on a node that already exists and is active in the network but was reset or powered down. *See* EX1010, [0019] (“When network node 102A is down for some reason ... its link port interfaces are deactivated or de-energized, including the device-side and network-side interfaces. ... ***When network node 102A is powered up again*** (i.e., power-on or system reset condition), it engages in a controlled boot-up process thereafter.”) (emphasis added); *id.* at [0017] (“By way of illustration, network node A 102A may be designated as a primary or active node operable to serve remote device 104A via a link 110-1 (i.e. active interface).” As a result, *Jain* does not disclose “deactivating the ports to which the new processing unit is assigned.”

Not only does Petitioner’s reliance on *Jain* fail, so does its argument that a POSITA would have been motivated to combine *Weyman*’s router with Jain’s controlled boot-up process to deactivate ports on a newly-added router. *See* Petition at 70–71. In support of this argument, Petitioner argues that a POSITA would have understood that commencing communications without proper initialization could cause risks of “various deleterious effects with respect to the integrity of the traffic received at the network node” as described in *Jain*. *Id.* at 71 (citing EX1010,

[0019]). However, *Weyman* already discloses specific mechanisms by which to add a new unit to *Weyman*'s router configuration. See EX1005, [0069] ("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***. If a unit with a non-default 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***."). For example, *Weyman* discloses protocols to add a unit to the network, such as by updating its configuration to that of an existing unit in the system. Therefore, a POSITA would not be motivated to incorporate *Jain*'s method to *Weyman*'s system because *Weyman* already provides a solution.

Petitioner also cites to Dr. Houh's declaration in support of its arguments. However, the cited portions of the expert declaration merely parrot Petitioner's flawed logic. See EX1002, ¶¶ 227–228. Nothing in the cited portions of *Walker*, *Jain*, or *LeMaire* actually support Petitioner's statements or provide any additional motivation to combine that establishes why a POSITA would be motivated to incorporate *Jain*'s method in *Weyman*'s system when *Weyman* already specific mechanisms by which to add a new unit to *Weyman*'s router configuration.

Accordingly, the Petition fails to establish a reasonable likelihood that Petitioner would prevail in showing the unpatentability of independent claims 8 and 18.

C. Grounds 2, 3, 5, 6, and 7 do not address any independent claims

Grounds 2, 3, 5, 6, and 7 each only address dependent claims 2, 5, 9, 10, 12, 15, and 16. Accordingly, they do not remedy the deficiencies in Petitioner's arguments, as described above with respect to Grounds 1 and 4.

V. Conclusion

As discussed above, Petitioner has failed to establish a reasonable likelihood it will prevail in showing the unpatentability of the challenged claims. Accordingly, the Board should deny institution.

Date: July 10, 2024

Respectfully submitted,

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CERTIFICATION UNDER 37 C.F.R. § 42.24

Under the provisions of 37 C.F.R. § 42.24, the undersigned hereby certifies that the foregoing document contains 3,143 words, and thus complies with the word-count limits of 37 C.F.R. § 42.24.

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing PATENT OWNER'S PRELIMINARY RESPONSE was served on July 10, 2024 by filing this document through the P-TACTS platform as well as by delivering a copy via the delivery method indicated to the attorneys of record for the Petitioner as follows:

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