

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ARISTA NETWORKS, INC.,
Petitioner,

v.

CISCO SYSTEMS, INC.,
Patent Owner.

Case IPR2015-01050
Patent 7,023,853 B1

Before BRYAN F. MOORE, MATTHEW R. CLEMENTS, and
PETER P. CHEN, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge*.

DECISION

Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Petitioner, Arista Networks, Inc., filed a Petition for *inter partes* review of claims 46–52, 54, 56, and 59–63 of U.S. Patent No. 7,023,853 B1 (Ex. 1001, “the ’853 patent”). Paper 2 (“Pet.”). Patent Owner, Cisco Systems, Inc., filed a Preliminary Response. Paper 7 (“Prelim. Resp.”).

Institution of an *inter partes* review is authorized by statute when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a); *see* 37 C.F.R. § 42.108. Upon consideration of the Petition and the Preliminary Response, we conclude the information presented does not show a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of any of the challenged claims of the ’853 patent.

A. Related Matters

The parties state that the ’853 patent is the subject of *Cisco Systems, Inc. v. Arista Networks, Inc.*, No. 4:14-cv-05343-JSW (N.D. Cal.), filed December 5, 2014, and ITC Inv. No. 337-TA-945 (Network Devices, Related Software and Components Thereof (II)), filed December 19, 2014). Pet. 1; Paper 4 (Patent Owner’s Mandatory Notice). The ’853 patent is also the subject of IPR2015-976. Petitioner has also filed petitions requesting *inter partes* review of other patents owned by Patent Owner: IPR2015-00973 (U.S. Patent No. 6,377,577), IPR2015-00974 (U.S. 7,224,668), IPR2015-00975 (U.S. Patent No. 8,051,211), IPR2015-00976 (U.S. Patent No. 7,023,853), IPR2015-00978 (U.S. Patent No. 7,340,597), and IPR2015-01049 (U.S. Patent No. 6,377,577).

B. The ’853 Patent

The ’853 patent is titled, “Access Control List Processing in Hardware,” and relates generally to a method for performing access control list processing in hardware using an associative memory. Ex. 1001, 1:5–8. Data packets transmitted between network devices can be restricted using a technique known as “access control.” *Id.* at 1:14–20. One access control

technique is to use access control lists or “ACLs” to determine whether to permit or deny transmission of a packet to a particular destination. *Id.* at 1:23–25 (“[T]he ACL describes which selected source devices are permitted (and which denied) to send packets to which selected destination devices.”).

The Specification provides an example of a known ACL format, where each ACL includes “access control specifiers.” *Id.* at 1: 26–27. These specifiers contain information to match with incoming packets, and then based on a match, specify a particular access result (e.g., whether transmission of a packet is “specifically permitted or specifically denied). *Id.* at 1:27–34. Figure 1 of the ’853 patent is reproduced below.

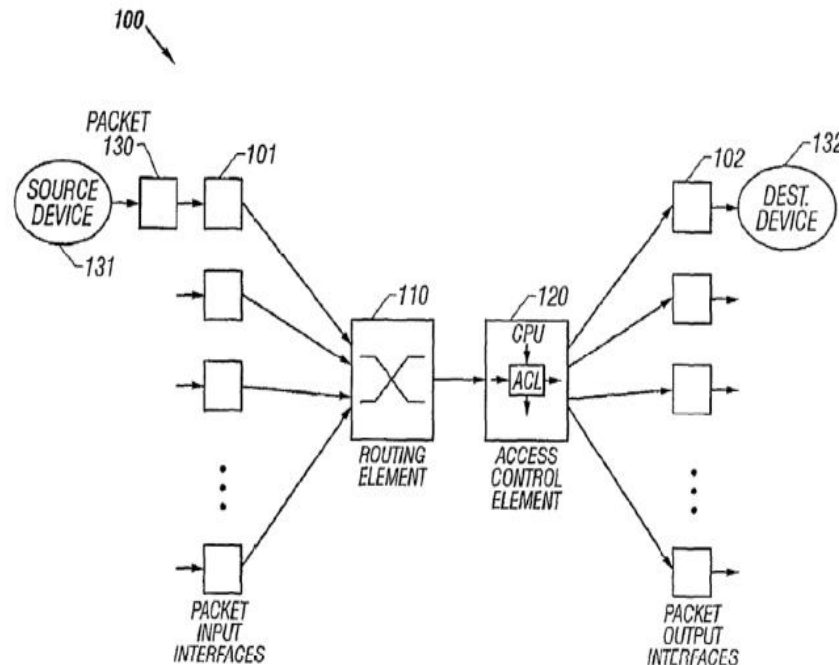


FIG. 1

Figure 1 is a block diagram of a system for performing access control in accordance with the ’853 patent. Ex. 1001, 3:22–23, 43–44. As shown in

Figure 1, packet 130 arrives at one of the system's packet interfaces 101. *Id.* at 3:47–48. A routing element 110 then selects one or more of the output interfaces to which the packet should be forwarded. *Id.* at 3:50–53. Prior to forwarding, access control element 120 determines whether to allow transmission of the packet. *Id.* at 3:53–57.

Figure 2 of the '853 patent is reproduced below.

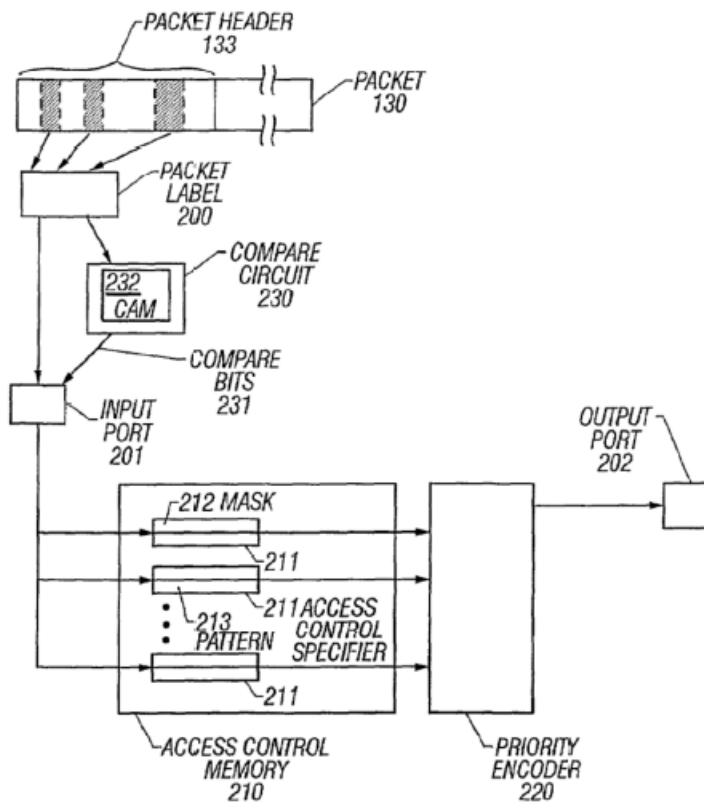


FIG. 2

Figure 2 is a block diagram of an access control element which contains access control patterns. *Id.* at 4:17–18. When packet 130 arrives at access control element 120, packet label 200 is created based on information derived from packet header 133 of packet 130. *Id.* at 4:19–22. The packet

label goes to access control memory 210, which attempts to match information from the packet label to access control specifiers in memory 211. *Id.* at 4:54–60.

To perform this matching process, packet label 200 is compared to label match mask 212 and label match pattern 213 of each access control specifier 211. *Id.* at 4:56–58. If a match is found with a particular access control pattern, priority encoder 200 selects the corresponding access control specifier 211 with the highest priority and provides an indicator of that access control specifier 211 to output port 202. *Id.* at 4:5–56, 5:10–14. The indicator specifies an access control result, which specifies if the packet should be transmitted. *Id.* at 5:1–9.

C. Illustrative Claim

Claims 46 and 63 of the challenged claims of the '853 patent are independent. Claims 46 and 63, reproduced below, are illustrative of the claimed subject matter:

46. A system comprising:
- means for maintaining a set of access control patterns in at least one associative memory;
 - means for receiving a packet label responsive to a packet, said packet label being sufficient to perform access control processing for said packet;
 - means for matching matchable information, said matchable information being responsive to said packet label, with said set of access control patterns in parallel;
 - means for generating a set of matches in response thereto, each said match having priority information associated therewith;
 - means for selecting at least one of said matches in response to said priority information, and generating an access result in response to said at least one selected match; and
 - means for making a routing decision in response to said access result.

63. A method of processing a packet comprising:
- selecting an output interface to which to forward the packet;
 - determining forwarding permission for the packet, wherein the determining comprises
 - matching one or more characteristics of said packet with one or more access specifiers in at least one access control element;
 - processing said packet based on said forwarding permission;
- wherein, the selecting step is performed in parallel with the determining step.

D. Asserted Grounds of Unpatentability

Petitioner contends that claims 46–52, 54, 56, and 59–63 of the '853 patent are unpatentable based on the following specific grounds (Pet. 9–60):

References	Basis	Challenged Claim(s)
Feldmeier ¹	35 U.S.C. § 102	46–50, 59, 60, and 63 ²
Feldmeier and Hendel ³	35 U.S.C. § 103	51, 54, and 56
Feldmeier and Muller ⁴	35 U.S.C. § 103	54, and 60–62

¹ U.S. Patent No. 5,920,886, filed March 14, 1997, issued July 6, 1999 (Ex. 1005, “Feldmeier”).

² Although claim 52 is listed in the table of grounds (Pet. 3) and heading (*id.* at 33), the Petition includes no analysis of claim 52 (*id.* at 33–49).

³ U.S. Patent No. 6,081,522, filed June 30, 1997, issued June 27, 2000 (Ex. 1007, “Hendel”).

⁴ U.S. Patent No. 5,938,736, filed June 30, 1997, issued Aug. 17, 1999 (Ex. 1008, “Muller”).

References	Basis	Challenged Claim(s)
Feldmeier, Muller, and Elliot ⁵	35 U.S.C. § 103	56

II. DISCUSSION

A. Claim Construction

In an *inter partes* review, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278–79 (Fed. Cir. 2015). Consistent with the broadest reasonable construction, claim terms are presumed to have their ordinary and customary meaning as understood by a person of ordinary skill in the art in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc)). An inventor may provide a meaning for a term that is different from its ordinary meaning by defining the term in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

1. Construction of Means plus Function Limitations

Several terms of the claims for which *inter partes* review is sought recite claim terms in means-plus-function format, and thus 35 U.S.C. § 112, sixth paragraph of the pre-AIA Patent Act applies.⁶ Petitioner recognizes

⁵ U.S. Patent No. 5,867,495, filed Nov. 18, 1996, issued Feb. 2, 1999 (Ex. 1019, “Elliot”).

⁶ The ’853 Patent’s filing date is before the effective date set for the AIA’s changes to § 112. *America Invents Act*, sec. 4(e), 125 Stat. 284, 297 (2011).

that issues relating to the sufficiency of a claim under Section 112 are outside the scope of an *inter partes* review. Pet. 10. Nonetheless, Petitioner asserts, without citation, that “it is appropriate for the [Patent Trial and Appeal Board (PTAB)] to analyze the prior art for the presence of structures corresponding to the best available disclosure of the ’853 Patent, notwithstanding that such disclosure may be insufficient to support the claims.” *Id.* This is an incorrect statement of the standard the Board uses. As explained in *BlackBerry Corp. v. MobileMedia Ideas, LLC*, Case IPR2013-00036, slip op. at 19–20 (PTAB Mar. 7, 2014) (Paper 65), the specification must provide the necessary structure under § 112, sixth paragraph. When the specification of the challenged patent lacks sufficient disclosure of structure under 35 U.S.C. § 112, sixth paragraph, the scope of the claims cannot be determined without speculation and, consequently, the differences between the claimed invention and the prior art cannot be ascertained. *Id.*

Thus, the disclosure we rely on from the specification, and not the “best available” disclosure, must be sufficient to determine the scope of the claim.

Therefore, if one employs means-plus-function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language. If an applicant fails to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112.

In re Donaldson Co., 16 F.3d 1189, 1195 (Fed. Cir. 1994) (en banc). “The specification must be read as a whole to determine the structure capable of performing the claimed function.” *Budde v. Harley–Davidson, Inc.*, 250

F.3d 1369, 1379 (Fed. Cir. 2001) (citations omitted). A structure disclosed in the specification qualifies as “‘corresponding’ structure only if the specification or prosecution history *clearly links or associates* that structure to the function recited in the claim.” *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997) (emphasis added). This duty to link or associate structure to function is the *quid pro quo* for the convenience of employing 35 U.S.C. § 112, sixth paragraph. See *O.I. Corp. v. Tekmar Co.*, 115 F.3d 1576, 1583 (Fed. Cir. 1997). While “corresponding structure need not include all things necessary to enable the claimed invention to work,” it “must include all structure that actually performs the recited function.” *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1119 (Fed. Cir. 2002) (citation omitted).

2. “*means for maintaining a set of access control patterns in at least one associative memory*”

Claim 46 recites the function of “means for maintaining a set of access control patterns in at least one associative memory.” Petitioner states that the “best available” (yet not sufficient) corresponding structure is access control memory 210 in access control element 120. Pet. 10 (citing Ex. 1001, Figs. 1& 2, 4:54–56.) Patent Owner states the corresponding structure of ’853 patent includes “one or more content-addressable memory units and a general-purpose processor, program and data memory, and mass storage, executing operating system software.” Prelim Resp. 17 (citing Ex. 1001, Fig. 1 “CPU,” 5:21–25, 1:33–37.) Patent Owner suggests that the algorithm running on the general purpose computer is “performing [at least] the steps of recording and keeping up a set of access control patterns in at least one

associative memory, and its equivalents.” *Id.* (citing Ex. 1001, Fig. 2, 4:54–63, 5:33–46, 5:55– 6:20.)

Petitioner argues that “[t]he general purpose processor identified by [Patent Owner] does not, in the ’853 Patent, perform the function of ‘maintaining a set of access control patterns.’” Pet. 11. Petitioner further argues that “in the ’853 Patent, the CPU is a higher-level processor element that performs secondary software access control processing, ancillary to the access control of the invention, as directed by the access control result.” *Id.* (citing Ex. 1001, 5:17–18, 5:21–30.)

The Specification states at col. 1, lines 33 to 37, as cited by Patent Owner (Prelim. Resp. 17), that the invention is implemented on a router, implementing operating system software, such as the IOS operating system. However, the Specification also suggests that an object of the invention is to avoid “the drawback that comparing at least some incoming packets against the ACL must be performed using software.” Ex. 1001, 2:11–14. The Specification further states that “embodiments of the invention can be implemented using circuits adapted to particular process steps and data structures described herein.” *Id.* at 3:36–39.

The Specification discloses a “higher level processor” that includes a general-purpose processor. *Id.* at 5:21–30. According to the Specification, after access control is performed “the packet **130** [may be] forwarded to a ‘higher-level’ processor for further treatment.” *Id.* at 5:16–17. “The higher-level processor includes a general-purpose processor, program and data memory, and mass storage, executing operating system and application software for software (*rather than hardware*) examination of the packet **130**.” *Id.* at 5:21–25 (emphasis added). Therefore, the Specification

suggests, if a packet is *not* forwarded to the “higher-level” processor, “examination of the packet” is done in hardware, not in software.

The corresponding structure need not be explicitly identified but must disclose to a person of ordinary skill in the art what structure is identified in the specification. See *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1380 (Fed. Cir. 1999). It is unclear from the Specification whether the CPU, shown in Figure 2 as part of access control element 120, is the “higher-level processor” (Ex. 1001, 5:21–25), or some other processor running IOS (Ex. 1001, 1:33–37). It is also unclear which part of the access control element 120 is composed of “circuits adapted to particular process steps and data structures” (*id.* at 3:36–39). Here, the patent is at best unclear whether the claimed function is implemented in software executed on a general purpose CPU or in hardware as a collection of circuits. See *Blackboard, Inc. v. Desire2Learn Inc.*, 574 F.3d 1371, 1385 (Fed. Cir. 2009) (“That ordinarily skilled artisans could carry out the recited function in a variety of ways is precisely why claims written in ‘means-plus-function’ form must disclose the particular structure that is used to perform the recited function.”).

We also find that it is equally unclear whether the following means-plus-function limitations in claim 46, which appear to involve access control element 120, are implemented in hardware or in software structure (or some combination of both): “means for matching matchable information, said matchable information being responsive to said packet label, with said set of access control patterns in parallel”; “means for making a routing decision in response to said access result”; and “means for receiving a packet label

responsible to a packet, said packet label being sufficient to perform access control processing for said packet.”

Because the Specification of the challenged patent lacks sufficient disclosure of structure under 35 U.S.C. § 112, sixth paragraph, the scope of independent claim 46, and claims 47–52, 54, 56, and 59–62 that depend therefrom cannot be determined without speculation and, consequently, the differences between the claimed invention and the prior art cannot be ascertained. Thus, we decline to institute an *inter partes* review as to any ground challenging claims 46–52, 54, 56, and 59–62.

B. Asserted Anticipation by Feldmeier

Petitioner contends that claim 63 is unpatentable under 35 U.S.C. § 102 as anticipated by Feldmeier. Pet. 47–49. Petitioner relies on the testimony of Dr. H. Johnathan Chao. *Id.* at 47, 48 (citing Ex. 1003).

1. Feldmeier (Ex. 1005)

Feldmeier describes techniques for a networking device to perform hierarchical address translation and filtering. Ex. 1005, 1:7–10. Feldmeier specifically describes using a content addressable memory (“CAM”) to aid in hierarchical address translation (i.e., routing packets to the correct network based on the hierarchical organization of network addresses). *Id.* at 5:32–35, 13:19–21. When a packet is received, Feldmeier describes reviewing the packet header information and performing a lookup against the information stored in the CAM. *Id.* at 13:24–27, Fig.14. Based on performing a lookup, a decision is made about whether to pass the packet forward, or to discard it. *Id.* Feldmeier also describes how to choose between multiple matches using the relative priority of the various matched entries in the CAM. *Id.* at 11:10–12.

2. Analysis

Petitioner contends that Feldmeier discloses all the limitations of independent claim 63. Pet. 47–49. Petitioner asserts Feldmeier discloses processing a packet by selecting an output interface to which to forward the packet, determining forwarding permission for the packet wherein the determining comprises matching one or more characteristics of a packet with one or more access control specifiers in at least one access control element, and processing the packet based on the forwarding permission where the selecting step is performed in parallel with the determining step. *Id.* at 47–49 (citing Ex. 1003 ¶¶ 115–119).

Claim 63 recites determining forwarding permission for the packet, “wherein the determining comprises matching one or more characteristics of said packet with one or more access control specifiers in at least one access control element” and “processing said packet based on said forwarding permission” Ex. 1001, 12:20–30. Petitioner asserts Feldmeier discloses this limitation because “Feldmeier [discloses] searching the CAM for the address that was extracted from the packet . . . and Feldmeier states that the ‘comparand’ in the search is ‘the address that is being searched for in the CAM.’” Pet. 36 (citing Ex. 1005, 10:64–66.), 47. In other words, Petitioner asserts the address matching is the claimed “matching.” Petitioner further asserts Feldmeier discloses that a packet will either be discarded or routed on to a destination depending on the information received following the CAM lookup. *Id.* at 40 (citing Ex. 1005, 13:24–27 (“Demultiplexer 1430 routes the packet received from input packet queue 1410 to either output packet queue 1450 or to discard line 1460 depending on the signal received from network address lookup 1440.”); *see also id.* at Fig.14.

Patent Owner argues, “Feldmeier’s packet forwarding is not the same as determining forwarding permissions (e.g., whether a packet is restricted from being transmitted from a selected source device to a selected destination device.)” Prelim. Resp. 31–32. Patent Owner further argues Feldmeier does not process a packet based on a forwarding permission. *Id.* We agree. Petitioner purports to show that “matching one or more characteristics of said packet with one or more access control specifiers,” recited in claim 63, results in “permission” to forward a packet. Petitioner states that “the information obtained from the CAM lookup governs the decision of whether to route or discard the packet.” Pet. 40 citing (Ex. 1003 ¶ 106).

We note that Feldmeier discloses that “[a]ddress filtering is a process similar to address translation, except that rather than retrieving the data associated with an address, the process simply determines whether the address exists in a table of addresses.” Ex. 1005, 1:19–22. Feldmeier further discloses that “[t]he term address translation, as used herein, includes both address translation and address filtering operations.” *Id.* at 1:22–24. Also, as cited by Petitioner (Pet. 40), “Demultiplexer 1430 routes the packet . . . to either output packet queue 1450 or to discard line 1460 depending on the signal received from network address lookup 1440.” Ex. 1005, 13:24–27. Finally, “[n]etwork address lookup 1440 is an apparatus for performing hierarchical address translations according to an embodiment of the invention.” *Id.* at 13:19–22. These passages suggest that a translation that yields no match (filtering) results in the packet being sent to the discard line.

In contrast, the Specification supports that a successful match leading to a forwarding permission is contemplated by the claims. Ex. 1001, 7:1–12,

27–39 (determining an input or output permission by, among other things, “determining all of the successful matches”). Based on the above passages, Petitioner has not shown evidence that an affirmative match in Feldmeier results in a permission of packet forwarding, as required by claim 63.

For the reasons stated above, we determine Petitioner has not shown sufficiently that Feldmeier discloses all of the limitations of independent claim 63. Accordingly, the information presented does not show a reasonable likelihood that Petitioner would prevail in showing that claim 63 is anticipated by Feldmeier.

III. CONCLUSION

For the foregoing reasons, we determine that the information presented does not show that there is a reasonable likelihood that Petitioner would prevail at trial with respect to at least one claim of the ’853 patent, based on any grounds presented in the Petition. On this record, we deny the petition for *inter partes* review of claims 46–52, 54, 56, and 59–63.

ORDER

Accordingly, it is

ORDERED that that the petition is DENIED as to all challenged claims, and no trial is instituted.

IPR2015-01050
Patent 7,023,853 B1

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