

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,
Petitioner

v.

ORCKIT CORPORATION,
Patent Owner

IPR2023-00401
U.S. Patent No. 7,545,740

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

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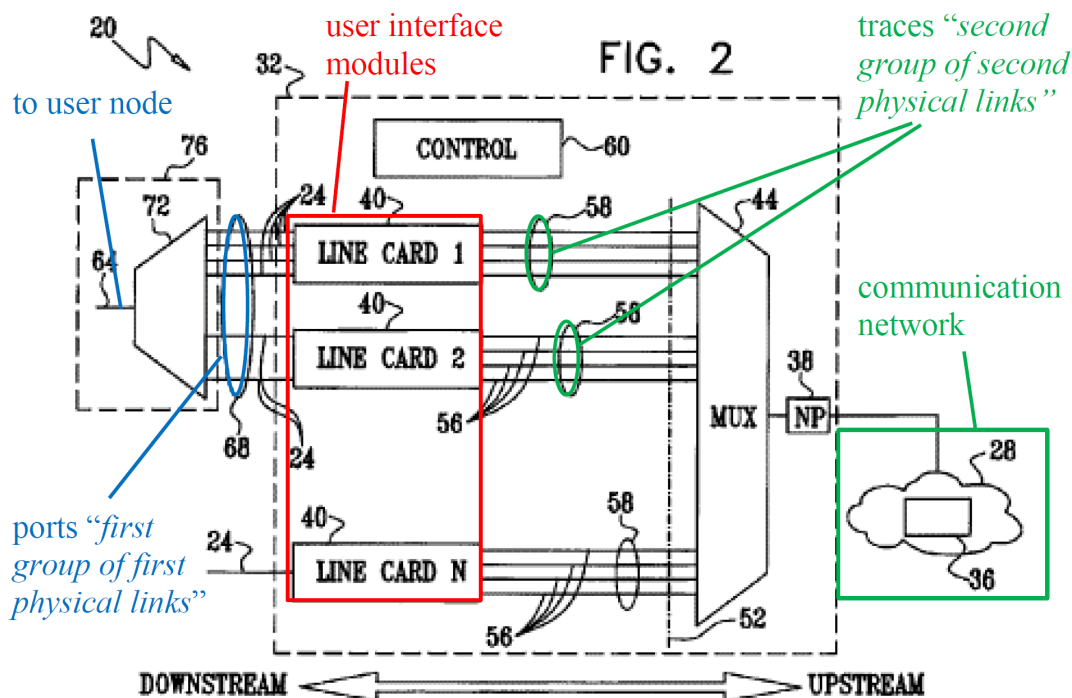
PETITIONER'S EXHIBIT LIST

Ex.1001	U.S. Patent No. 7,545,740 to Zelig et al.
Ex.1002	Prosecution History of U.S. 7,545,740
Ex.1003	Declaration of Dr. Henry Houh under 37 C.F.R. § 1.68
Ex.1004	<i>Curriculum Vitae</i> of Dr. Houh
Ex.1005	U.S. Patent Publication No. 2004/0228278 to Bruckman et al.
Ex.1006	U.S. Patent Publication No. 2003/0210688 to Basso et al.
Ex.1007	Digital Logic Design, by Holdsworth ("Holdsworth") (2002)
Ex.1008	U.S. Patent No. 6,943,580 to Lewis et al. ("Lewis")
Ex.1009	IEEE Standard Dictionary of Electrical and Electronics Terms, (1984)
Ex.1010	RFC 1042, A Standard for the Transmission of IP Datagrams over IEEE 802 Networks
Ex.1011	C++ Inside & Out, by Bruce Eckel ("Eckel") (1993)
Ex.1012	Complaint, <i>Orckit Corporation v. Cisco Systems, Inc.</i> , Civil Action No. 2:22-cv-276-JRG-RSP (E.D. Tex, Jul. 22, 2022)
Ex.1013	Federal Court Statistics
Ex.1014	Proposed Docket Control Order, <i>Orckit Corporation v. Cisco Systems, Inc.</i> , Civil Action No. 2:22-cv-276-JRG-RSP (E.D. Tex, Dec. 2, 2022)
Ex.1015	Infringement Contentions, <i>Orckit Corporation v. Cisco Systems, Inc.</i> , Civil Action No. 2:22-cv-276-JRG-RSP (E.D. Tex, Nov. 3, 2022)
Ex.1016	Affidavit from the Internet Archive

Ex.1017	U.S. Patent No. 7,271,993 to Plojhar ("Plojhar")
Ex.1018	RFC 793, Transmission Control Protocol
Ex.1019	RFC 2026, The Internet Standards Process – Revision 3
Ex.1020	U.S. Patent No. 5,960,428 to Lindsay et al. ("Lindsay")
Ex.1021	U.S. Patent No. 5,999,538 to Haddock et al. ("Haddock")
Ex.1022	Course Catalog for Electrical Engineering
Ex.1023	Copyright Record for Eckel (Ex.1011)
Ex.1024	U.S. Patent No. 6,473,424 to DeJager ("DeJager")
Ex.1025 (New)	Supplemental Declaration of Dr. Henry Houh
Ex.1026 (New)	Deposition Transcript of Miguel Gomez

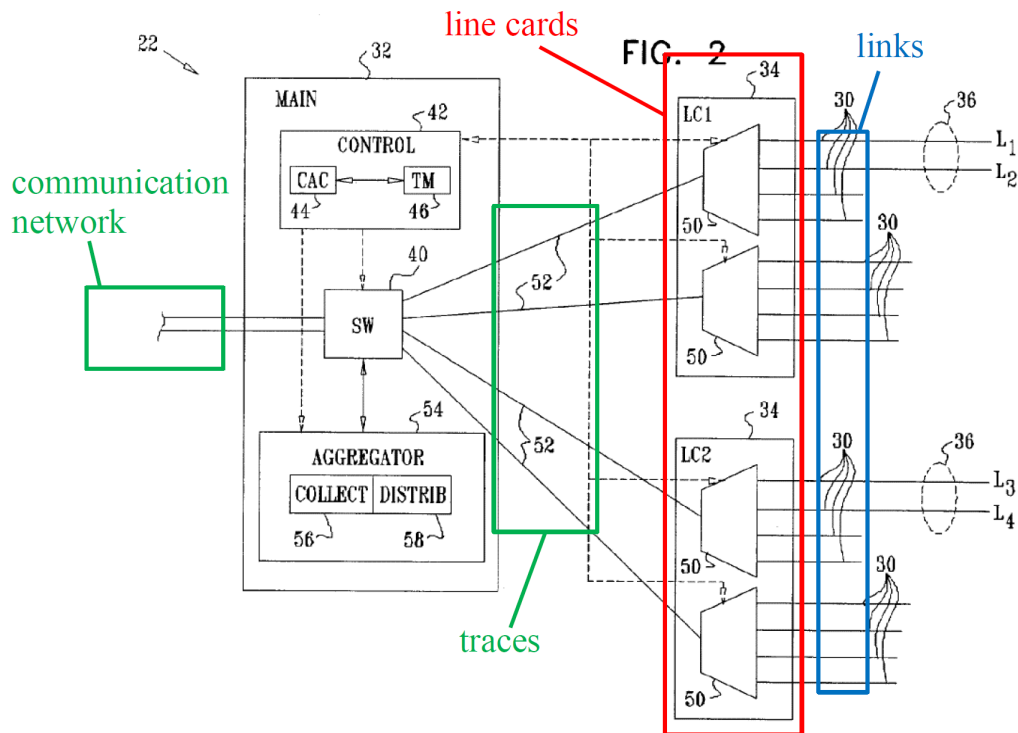
I. Introduction

Patent Owner's Response ("Response" Paper 21) fails to refute the Petition's showing that Bruckman, either alone or with Basso, renders obvious the challenged claims. The challenged claims relate to link aggregation of communication pathways between a communication network and a user node. The claims recite using a "*single computation*" to make two selections—one from a "*first group of first physical links arranged in parallel*" and another from a "*second group of second physical links arranged in parallel.*" The two groups are shown in Fig. 2 below.



Ex.1001, Fig. 2 (annotated); Ex.1003, ¶25.

Bruckman renders the claims obvious because Bruckman describes using a single hash value to similarly make two selections—one from among a plurality of links 30 (shown below in blue) and another from among a plurality of traces 52 (shown below in green).¹



Ex.1005, Fig. 2 (annotated); Ex.1003, ¶41.

¹ Bruckman's Fig. 2 is flipped with respect to Fig. 2 of the '740 patent. In the '740 patent, upstream traffic from the user node to the communication network flows from left to right. In Bruckman, upstream traffic flows from right to left.

Patent Owner's primary Response argument seeks to distinguish Bruckman by relying on unclaimed structural features. For example, Patent Owner proposes a claim construction of the "*selecting*" clause that adds the following negative limitation to the claim: "wherein the first physical link is not fixedly assigned to the second physical link." But Patent Owner's proposal improperly attempts to read features from the specification into the claims.

For the reasons explained below, Patent Owner's arguments fail to refute the Petition's obviousness analysis and should be rejected. Petitioner respectfully requests that the Board find all challenged claims unpatentable.

II. Claim Construction

Patent Owner proposes a formal claim construction of the "*selecting*" clause. In addition, many of Patent Owner's arguments implicitly interpret the claim language contrary to the plain and ordinary meaning and the specification of the '740 patent. Patent Owner's claim constructions—both formal and implicit—should be rejected. Petitioner maintains that no term requires specific construction (Pet., 18) but offers appropriate constructions if the Board determines that construction is required.

- A. *“selecting, in a single computation based on at least one of the frame attributes, a first physical link out of the first group and a second physical link out of the second group” ([1.6])***

Patent Owner argues that the "*selecting*" clause requires formal construction.

Resp., 21-32. But rather than interpret this phrase, Patent Owner seeks to add an entirely new structural feature (recited as a negative limitation) to the claims:

“wherein the first physical link is not fixedly assigned to the second physical link.”

The Federal Circuit has cautioned against “one of the cardinal sins of patent law—reading a limitation from the written description into the claims.” *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1340 (Fed. Cir. 2001). The Board should reject Patent Owner's invitation to make such an error. Neither the claim language nor the specification justify reading a new negative limitation into the “*selecting*” claim step.

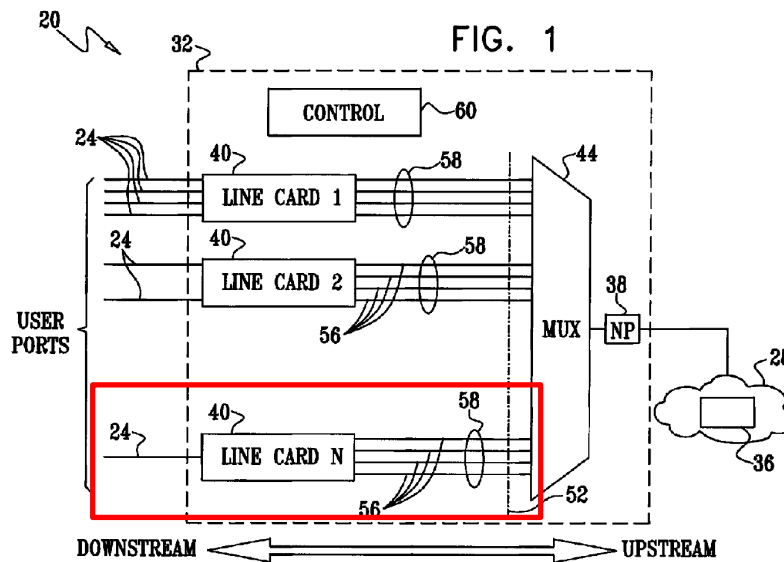
1. The claim language itself does not justify Patent Owner's construction.

Patent Owner argues that “[t]he plain language of this limitation requires two selections (i.e., ‘selecting ... a first physical link out of the first group and a second physical link out of the second group’).” Resp., 23. Patent Owner further argues that “there must be two selections because two links are ‘selected’ from two different ‘groups’: a first group of links and a second group of links.” Resp., 24.

But Patent Owner fails to explain its non sequitur leap from the claim requiring two selections to the claim requiring a negative limitation against the first physical link being “fixedly assigned” to the second physical link. The claim language itself makes clear that the first and second physical link selections are

interrelated, not wholly distinct, because they occur “*in a single computation.*”

Patent Owner cites to testimony of its declarant, Mr. Gomez, who stated in deposition that the negative limitation against fixed link assignments is an “inherent component” of the claim language. Ex.1026, 43. But Patent Owner failed to show any such inherency, and in any event, such a position would be untenable and incorrect. The claims recite “*bi-directional*” communication and the ’740 patent provides examples where in the downstream direction multiple links are indeed “fixedly assigned” to one link. For example, Fig. 1 of the ’740 patent (below) shows Line Card N with just one user port 24. Thus, backplane traces 56 are “fixedly assigned” to Line Card N’s single user port 24. *See also* Ex.1001, Fig. 3 (every line card having only one user port). For downstream communications to pass through Line Card N, however, the single user port 24 on Line Card N would still be “selected” to carry the communications since selecting any other user port would result in a broken (incomplete) communication path.



Ex.1001, Fig. 1 (annotated).

To be clear, Petitioner does not dispute that the claims require two selections—one from a first group of links and another from a second group of links. However, it does not follow—inherently or otherwise—that “the first physical link is not fixedly assigned to the second physical link.” For at least this reason, Patent Owner’s proposed claim construction should be rejected.

2. Patent Owner’s proposed claim language is not supported by the specification.

The specification does not support Patent Owner’s proposed claim addition. Patent Owner cites to *Thorner* and notes that a claim term may be redefined “by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.” See *Thorner v. Sony Computer Entertainment America LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012); Resp., 25. But

Patent Owner fails to identify any such specification disavowal.

First, Patent Owner quotes the specification's statement that a "load balancing operation **in embodiments** of the present invention enables statistical multiplexing of the frames." Ex.1001, 1:66-2:4 (emphasis added); Resp., 25. There is no "expression[] of manifest exclusion" here. The statement's reference to only some "embodiments" suggests that statistical multiplexing is not required—a view reinforced by the absence of any statistical multiplexing limitations in the claims.²

Patent Owner also points to an example in the specification where "there is no pre-assigned relationship or connection between any given user port 24 and a specific backplane trace 56, as in some conventional network elements." Resp., 25-26, Ex.1001, 5:17-19. Patent Owner alleges that "each of the figures in the '740 patent depicts line cards in which the ports (24) correspond to several traces (56)." Resp., 30. But Patent Owner fails to explain itself relative to Fig. 3, which in the downstream direction shows that each line card 40 (and its corresponding backplane traces 56) corresponds to only a single port 24. Thus, each backplane trace 56 in Fig. 3 has a "pre-assigned relationship or connection" to a single port 24. *Cf.* Resp., 26. Patent Owner's construction would thus exclude the Fig. 3

² Some dependent claims recite "multiplexing" or "demultiplexing" limitations, albeit without any reference to statistics. *See* claims 6 & 21.

embodiment in its entirety.

There is no clear statement showing “unmistakable [and] unambiguous evidence of disclaimer.” *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1325 (Fed. Cir. 2003). Nowhere does the specification clearly limit the scope of the claims to implementations where there is more than one backplane trace associated with a particular link. At most, the specification explains that the claimed invention is beneficial in such implementations, because it “**enables statistical multiplexing** of the frames, in which there is no direct relationship or connection between user ports and backplane traces.” Ex.1001, 1:66-2:4. But enabling statistical multiplexing in some embodiments does not justify requiring such a feature where the claims do not recite it.

In short, Patent Owner seeks to read an optional feature from the specification into the claims—a change in claim scope that Patent Owner could have pursued via a Motion to Amend but chose not to. Because Patent Owner’s construction is erroneous and contrary to case law, the Board should reject it.

Petitioner maintains that the plain and ordinary meaning is appropriate here and that the claim language itself provides sufficient clarity. The claims merely require a first selection from a first group of links and a second selection from a second group of links. As explained in Section III below, Bruckman teaches what is claimed.

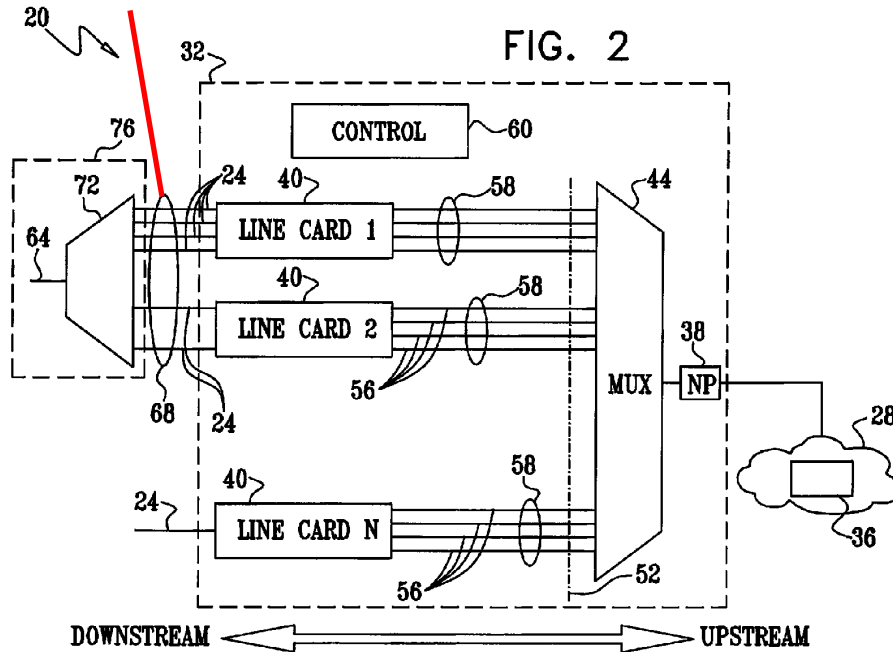
B. “*arranged in parallel*” ([1.3])

Patent Owner provides no formal construction of the term “*parallel*,” but its arguments implicitly construe this term to require that links “*arranged in parallel*” end at the same “relevant endpoints.” Resp., 37. Patent Owner then defines “relevant endpoints” as “those which would enable a principal innovation in the network element architecture disclosed in the ’740 patent, in particular, the lack of a pre-assigned relationship between (i) the second links that connect the network to the interface module and (ii) the first links that connect the interface module to a user.” Resp., 37-38.

Patent Owner’s implicit construction is not supported by the intrinsic or extrinsic evidence of record.

Patent Owner argues that its “understanding of ‘arranged in parallel’ ... is consistent with every embodiment depicted in the figures of the ’740 patent.” But this is not correct. The ’740 patent describes “parallel” links that terminate at different line cards (different endpoints). For example, as shown below in Fig. 2 of the ’740 patent, the links of LAG 68 go to different endpoints (line cards 40) and yet are still referred to as being in “parallel.” Ex.1001, 1:10-14 (describing a LAG as “a group of **parallel** physical links”), 6:27-28 (“External LAG group 68 may comprise any number of user ports 24, belonging to **any number of line cards 40.**”).

LAG 68 with “parallel” links that terminate at two different line cards



Ex.1001, Fig. 2 (annotated); Ex.1025, ¶14.

Accordingly, Patent Owner's interpretation of the term “parallel” contradicts the '740 patent specification.

Petitioner maintains that no construction of “parallel” is required. If the Board determines otherwise, however, then “parallel” should be construed to include what is described in the '740 patent: lines that transfer data between a user node and a communication network are in “parallel.” The '740 patent explains that “[t]he network element comprises one or more user interface modules (UIMs), each serving one or more user ports. In some embodiments, each UIM is connected to the communication network using two or more physical links arranged in parallel, in order to provide sufficient bandwidth at a given quality-

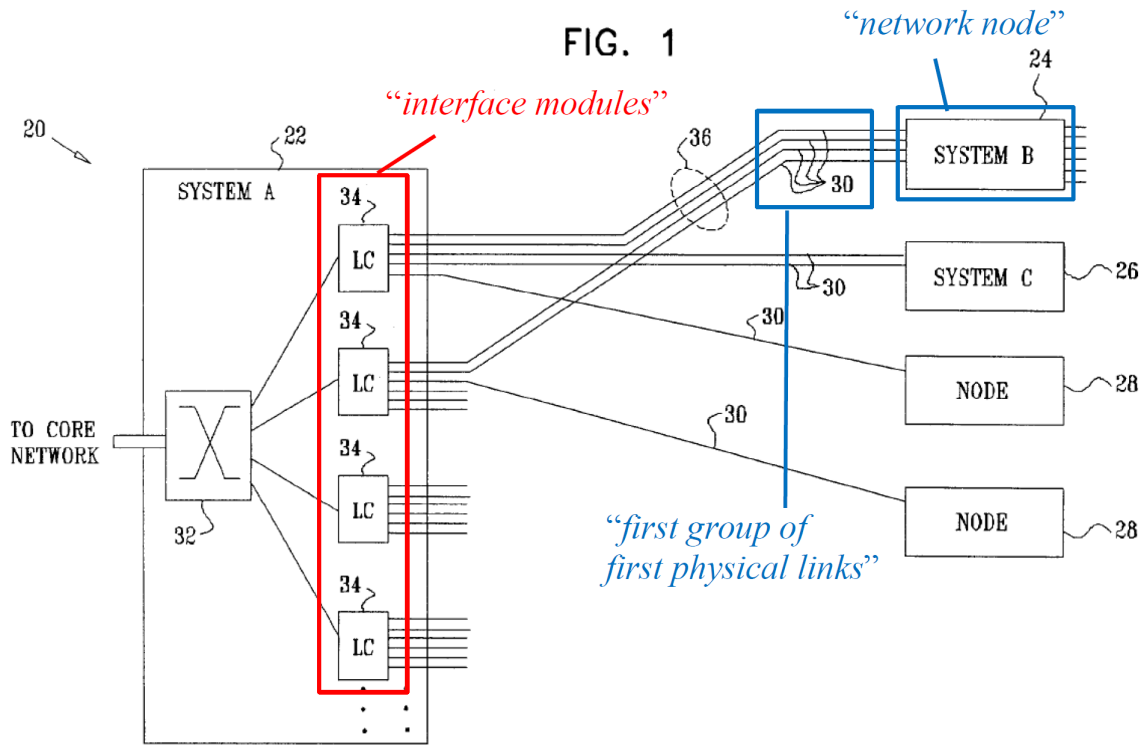
of-service (QoS) level.” Ex.1001, 1:41-47. In other words, two lines that transfer data between a user interface module and a communication network are *parallel* lines. Ex.1025, ¶¶14-15. This understanding is consistent with the ’740 patent because the parallel lines in LAG 68 transfer data between the user interface module and the communication network. *See* Ex.1001, Fig. 2. The fact that different lines pass through different line cards does not mean the lines are not in parallel. As will be explained below in Section IV, Bruckman’s system includes traces that are “*arranged in parallel*” consistent with the disclosure in the ’740 patent specification.

III. Bruckman teaches “*selecting ... a first physical link out of the first group and a second physical link out of the second group.*”

Bruckman teaches what is claimed—“*selecting ... a first physical link out of the first group and a second physical link out of the second group.*” Patent Owner argues that the claims require “two discrete selections of physical links.” Resp., 24. But because Bruckman teaches two separate selections, Patent Owner’s argument fails to distinguish the prior art.

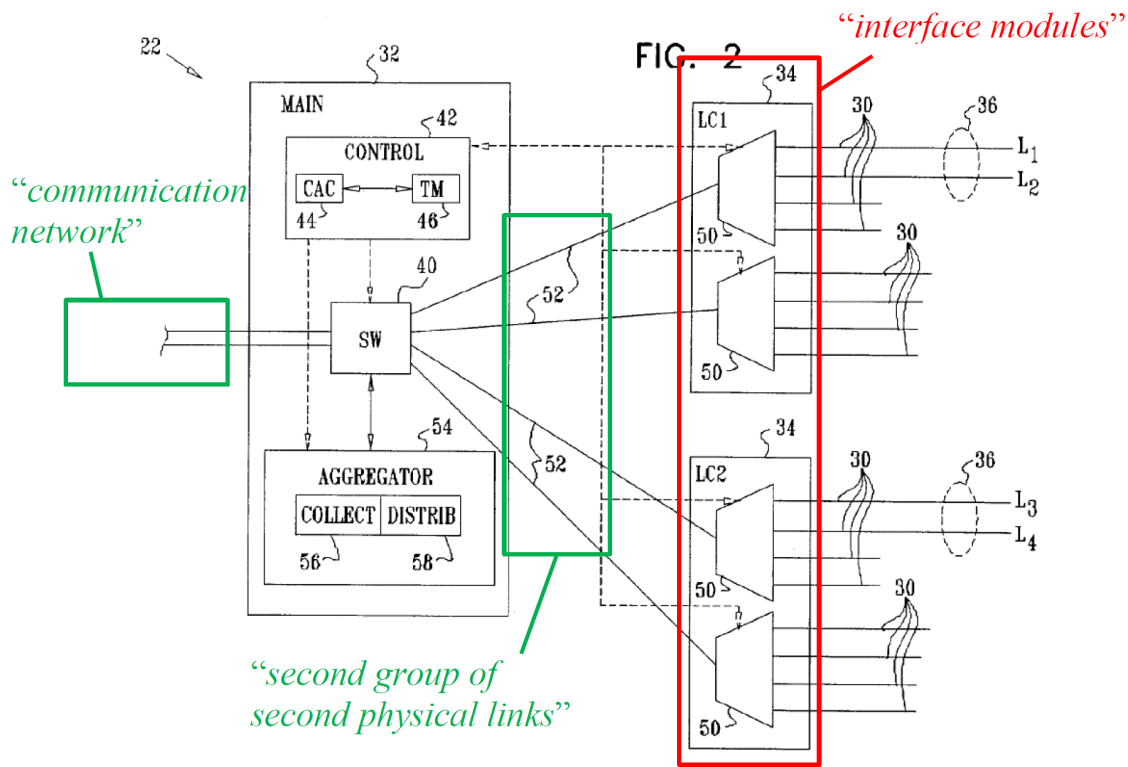
A. Bruckman teaches two distinct selections.

The Petition identifies two separate groups of links in Bruckman. First, Bruckman’s system includes parallel physical links 30 (“*a first group of physical links arranged in parallel*”), as shown in Fig. 1 below. *See* Pet., 34-35.



Ex.1005, Fig. 1 (annotated); Ex.1003, ¶60.

Second, Bruckman's system includes several backplane traces 52 (*"a second group of second physical links arranged in parallel"*), shown as unnumbered lines in Fig. 1 above and fully labeled in Fig. 2 below.



Ex.1005, Fig. 2 (annotated); Ex.1003, ¶67.

To traverse the system between the communication network and a user node, a packet will pass through one of the backplane traces 52. Thus, there is a “selecting” of one of the backplane traces. In Bruckman’s Fig. 2 example, a trace is selected from one of four backplane traces (“selecting ... a second physical link out of the second group”). See Ex.1005, [0058]; Pet., 41-44. A packet will also pass through one of the links 30. Thus, there is also a “selecting” of one of the links 30 (“selecting ... a first physical link out of the first group”). Ex.1005, [0058]. There are thus two distinct selections. The analysis for dependent claim 11 provides further details on how those links are separately selected through two separate sets

of bits. Pet., 58-63.

Patent Owner fails to refute the Petition's analysis "that Bruckman's selection of a link 30 also determines which trace 52 will transmit the data frame." Pet., 43. Patent Owner argues that "determining the Bruckman trace 52 based on the selection of Bruckman's link 30 cannot amount to an actual selection of the trace" because "there is only one path available for the data to travel." Resp., 51.

But Bruckman's system still makes a selection from one of several traces 52. In order to pass a packet from the communication network to the user node, the system selects one trace 52 out of the group, and one link 30 out of the group. Even when a particular link 30 is selected as the link to transmit a packet, Bruckman's system still selects the trace 52 that will transmit the packet to the appropriate line card 34 and concentrator to that selected link 30. In other words, there is still a selection of the trace 52 regardless of whether the selection of link 30 informs that selection of a trace. It is thus irrelevant that once you select a link, "you don't really have a choice" to select a particular trace 52 as Dr. Houh explained. Ex.2026, 73; *see also* Ex.1001, 6:57-58 ("Determining the user port implicitly determines through which line card 40 the frame will pass."). The portions of Dr. Houh's testimony cited by Patent Owner (Resp., 51-52) do not refute Petitioner's position. Ex.1025, ¶¶5-11.

While Patent Owner repeatedly argues that the claims require two "distinct

selections” or “two discrete selections,” Patent Owner does not explain *how* they must be discrete. Response, 22-24. It does not appear that Patent Owner means that the selections must be done in two separate and discrete steps at different points in time. Indeed, Patent Owner “agrees there is no temporal requirement.” Resp., 22-23. Patent Owner further acknowledges that “since both selections are performed by a ‘single computation,’ the claims clearly allow for both selections to be performed at the same time.” Resp., 23.

Despite acknowledging that there is no temporal requirement, Patent Owner’s declarant would not agree that the claim allows for both selections to be performed simultaneously. Ex.1026, 49-52. Confusingly, the declarant nevertheless maintained “that there is a single computation that performs the two mapping operations.” Ex.1026, 53. This is precisely what Bruckman describes—a single hash value that is used to select one of several traces 52 and one of several links 30 (“*selecting ... a first physical link out of the first group and a second physical link out of the second group*”). Pet., 42-44.

B. Bruckman teaches “*selecting ... from two or more backplane traces.*”

For claims 14, 15, 29, and 30, the petition cites to the analysis of [1.6] for the claimed “*selecting ... from two or more backplane traces.*” Pet., 68. Patent Owner disputes the Petition’s obviousness analysis by asserting that these claims

require an unrecited structural feature. Resp., 63-67. Patent Owner argues that “once a port is selected, the trace 52 connected to that port must be used. Thus, Bruckman cannot select from ‘two or more backplane traces’ as required by the claims.” Resp., 65.

But again, regardless of whether or how selection of port/link 30 informs the selection of a trace, one trace is still selected from among four different backplane traces. *See* Ex.1005, Fig. 2; Pet., 43. The claims do not require identifying the claimed “*second group of second physical links*” only after a *first physical link* is selected. Indeed, the parties agree that there is no such temporal or sequential limitation. Resp., 22. Thus, by selecting one trace 52 from the four available backplane traces, Bruckman teaches selecting a trace “*from two or more backplane traces.*”

In short, Patent Owner attempts to distinguish Bruckman based on an unclaimed “structural feature (no fixed relationship between ports and backplane traces).” Resp. 38. The claims do not recite a “no fixed relationship” limitation, and it would be inappropriate to construe the claims to add this structural feature. *See supra*, II. Accordingly, Patent Owner’s arguments that rely on this structural feature do not refute the Petition’s obviousness analysis.

IV. Bruckman teaches “*physical links arranged in parallel*” as claimed.

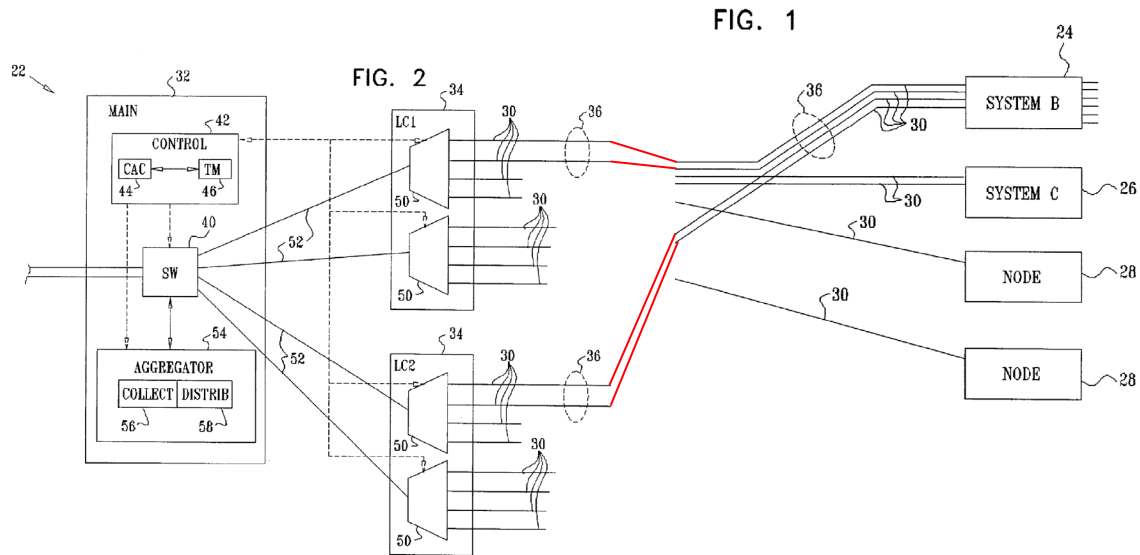
The Petition explains why Bruckman's traces 52 are “*arranged in parallel*.” Pet., 36-39. The Petition cites to Bruckman's explanation of a LAG: “Link aggregation is a technique by which a group of **parallel** physical links between two endpoints in a data network can be joined together into a single logical link.” Ex.1005, [0002]; Pet., 38. “Traces 52 are part of a link aggregation group because Bruckman describes how ‘aggregation group extends over a number of concentrators 50,’ and the traces 52 couple the concentrators to the switching core 40. Ex.1005, [0066].” Pet., 38. “Since the traces 52 are part of a link aggregation group, Bruckman further renders obvious that the traces are ‘a group of **parallel** physical links.’ Ex.1005, [0002].” Pet., 38.

A. Bruckman teaches links “*arranged in parallel*” according to the plain and ordinary meaning.

Consistent with the plain and ordinary meaning described above at Section II.B, Bruckman's traces 52 are “*arranged in parallel*” because they transfer data between a customer node and a core network. Bruckman, [0047]; Pet., 24. And as explained in the Petition, “[s]ince the traces 52 are part of a link aggregation group, Bruckman further renders obvious that the traces are ‘a group of parallel physical links.’ Ex.1005, [0002].” Pet., 38; *see also* Ex.1001, 1:11-14. As confirmed by the combination of Bruckman's Fig. 1 and Fig. 2 (shown below), multiple traces 52

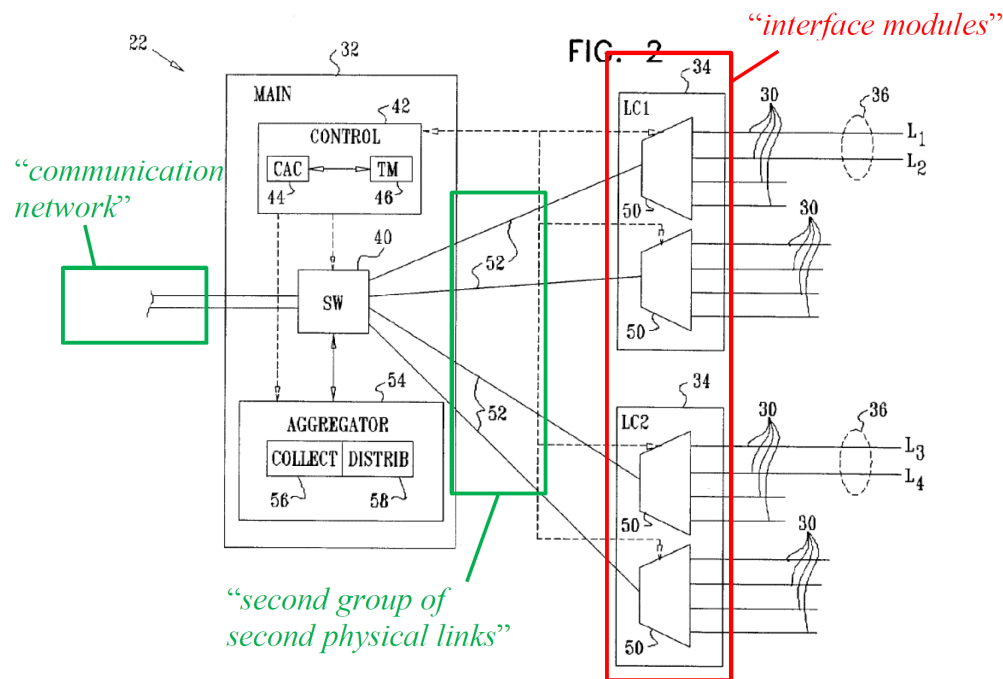
transfer data between the core network and a single user node (System B).

Ex.1025, ¶¶12-13.



Ex.1001, Figs. 1 & 2 (annotated); Ex.1025, ¶13.

Patent Owner's inconsistent and unworkable interpretation of the word “parallel” does not refute the Petition's analysis with respect to this term. Patent Owner relies on its interpretation of “parallel” in an attempt to distinguish Bruckman. Patent Owner argues that Bruckman's traces are not in parallel because they go to different concentrators 50, as shown below.



Ex.1005, Fig. 2 (annotated); Ex.1003, ¶67.

But despite going through different concentrators, Bruckman's traces 52 provide parallel data transfer between a communication network and a user node (e.g., System B). This is no different than the parallelism of links in LAG 68 in the '740 patent, which transfer data between a communication network and user node, despite going through different line cards. Ex.1001, 6:27-28.

B. Dr. Houh's Testimony is Consistent with the Specification and Supports Petitioner's Position.

Patent Owner mischaracterizes Dr. Houh's deposition testimony. Resp., 41-44. During Deposition, Dr. Houh was directed to the figures in the '740 patent and asked if "the fact that these four backplane traces all start at the same line card and end at the same multiplexer also suggest that these are parallel backplane traces?"

Ex.2026, 62. Dr. Houh then replied that “it's certainly consistent with things that are described in the -- in the specification as well.” Ex.2026, 62. Dr. Houh was not asked to provide an explicit definition of “*parallel*.” His testimony merely shows the unremarkable fact that he agreed that features described as “parallel” in the '740 specification are, indeed, “parallel.” Ex.1025, ¶19; Ex.1001, 6:13 (“LAG group 58”), 1:11-14.

Dr. Houh was also asked: “If these backplane traces had different starting and ending points, would that suggest to you that they are parallel traces?” Ex.2026, 62. Referring to this hypothetical, Dr. Houh stated that “if the communications are going to different places ... I don't think that's what is thought of as parallel links or traces.” Ex.2026, 62-63; Ex.1025, ¶20.

But Dr. Houh's comments on this hypothetical situation are not relevant to the obviousness analysis of Bruckman. Bruckman's links and traces are not going to “different places.” Rather, Bruckman's links and traces pass packets between a user node and a core network. Thus, Bruckman's links and traces are “*arranged in parallel*” consistent with the plain and ordinary meaning of the term. Dr. Houh's statements in deposition do not indicate that Bruckman's traces are not in parallel solely because they pass through different concentrators. Dr. Houh provided further clarification during his deposition. *See* Ex.2026, 110-11 (“Well, at that level, it's a different termination. But at the level of the line card, you have parallel

links. And at the level of the cluster of line cards ... there's parallelism between that, that level of looking at it.”). Ex.1025, ¶21.

C. Patent Owner's expert should be given little weight.

Patent Owner's expert relies on descriptions of the term “*parallel*” that are outside the context of networking and are thus not pertinent to the '740 patent. Patent Owner's expert cites to extrinsic evidence that uses the term “*parallel*” in the context of electrical circuits rather than networking. *See* Ex.2024, 46 (“Ex2028 [All About Circuits], 2 (‘In a parallel circuit, all components share the same electrical nodes.’); Ex2032 [Basic Electricity], 1 (‘A parallel circuit is constructed by connecting the terminals of all the individual load devices’).”). Patent Owner's expert provides a diagram of such electrical circuits.

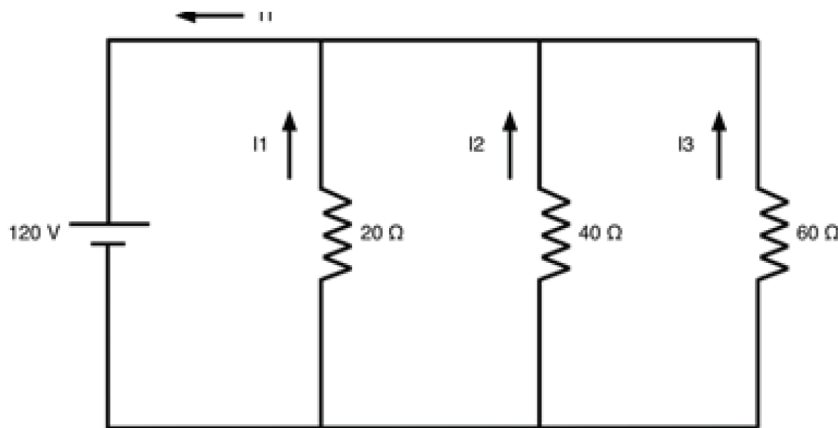


Figure 20. Parallel circuit current flow

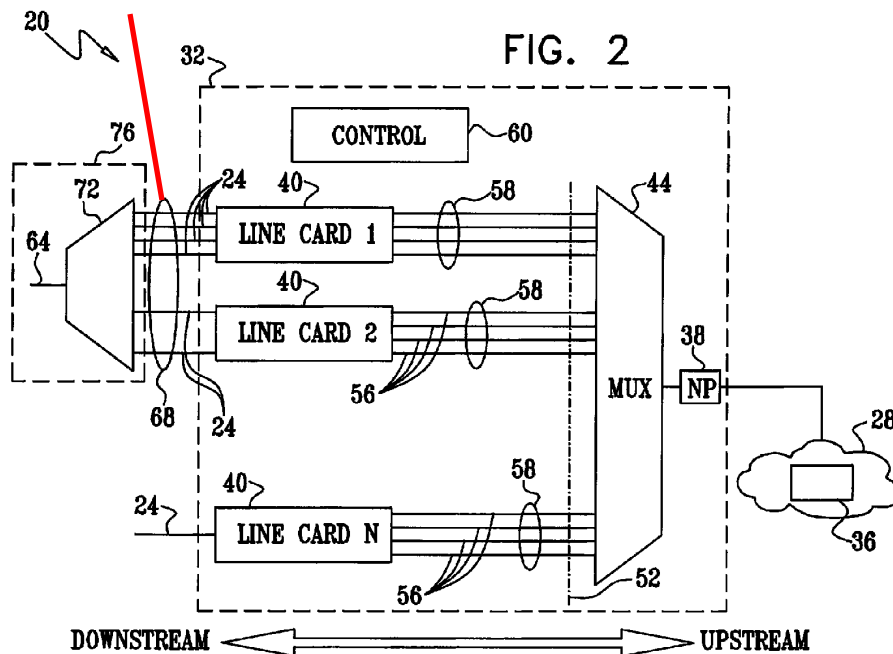
Ex.2032, 3; Ex.2024, 42.

But the '740 patent does not use the term “*parallel*” in the context of

electrical circuit diagrams. Rather, the '740 patent describes the term "*parallel*" in the context of networking. Thus, Patent Owner's extrinsic evidence regarding electrical circuits should not be given weight.

Patent Owner's expert should also be afforded less weight because he relies on a definition of "*parallel*" that contradicts the '740 patent specification. Patent Owner's expert asserts that parallel links must terminate at the "same *relevant* endpoints." Ex.2024, ¶84. He further asserts that "the '740 patent uses the word 'parallel' in a consistent manner." Ex.1026, 32. But contrary to this, there are indeed parallel links that terminate at different endpoints in the '740 patent. Fig. 2 shows that LAG 68 includes some links to Line Card 1 and some to Line Card 2:

LAG 68 with "parallel" links that terminate at two different line cards



Ex.1001, Fig. 2 (annotated); Ex.1025, ¶14.

The '740 patent explains that “Link aggregation (LAG) is a technique by which a group of **parallel** physical links between two endpoints in a data network can be joined together into a single logical link.” Ex.1001, 1:10-14. When asked if his definition of “*parallel*” applies to the description of LAGs in the '740 patent, Mr. Gomez replied “[i]n this sentence it certainly does, yes.” Ex.1026, 35-36. When asked if the description of LAGs applies to LAG, 68, he responded “[i]t’s applicable to it for sure.” Ex.1026, 38.

Because Mr. Gomez relies on a definition of the term “*parallel*” that contradicts the '740 patent specification, but yet claims it is applied consistently, his testimony should not be credited. Patent Owner’s interpretation of the term “*parallel*” as requiring the lines to terminate at the same “relevant endpoint”—along with its explanation of relevant endpoints—should be rejected.

V. Bruckman teaches “*selecting ... in a single computation...*” as claimed.

Patent Owner does not dispute Petitioner’s interpretation of this term. The Petition provided two possible interpretations of “*single computation*” and explained how the prior art teaches the concept of a “*single computation*” either way. Patent Owner does not dispute either interpretation and thus acknowledges that at least one of the proposed interpretations is appropriate.

The specification of the '740 patent describes the “*single computation*” selecting process as a “multi-step process [that] includes determining a hash size

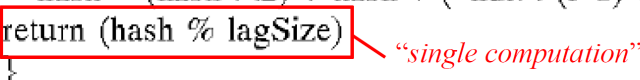
(step 80), calculating a hash key (step 84), and determining a mapping (step 86).”

Pet., 19-20. The dependent claims further describe the “*single computation*” process as including (1) “determining a hashing size responsively to a number of at least some of the first and second physical links,” (2) “applying the hashing function to the at least one of the frame attributes to produce a hashing key,” and (3) “calculating a modulo of a division operation of the hashing key by the hashing size.” Pet., 19.

The Petition thus explains that “[i]t is apparent that the ‘single computation’ does not refer to performing the selecting process in a single step, but rather to a single computational result of a hashing function (e.g., single value) that selects the outcome.” Pet., 20. “Thus, the single value, or the final processing step that produces that single value, are examples of a ‘single computation.’” Pet., 20. Patent Owner does not dispute this interpretation. Petitioner’s position appears consistent with Patent Owner’s own expert’s understanding as well. *See* Ex.2026, 24-25.

Patent Owner nevertheless asserts that “neither Bruckman nor Basso disclose or otherwise render obvious first and second links that are selected in two selections, let alone in two selections performed in a single computation.” Resp., 48. But this argument ignores the Petition’s analysis of “*single computation*.”

```
unsigned short hash(unsigned char *hdr, short lagSize)
{
    short i;
    unsigned short hash=178; // initialization value
    for (i=0; i<4; i++)      // hdr is 4 bytes length
        hash = (hash<<2) + hash + (*hdr>>(i*8) & 0xFF);
    return (hash % lagSize);
}
```



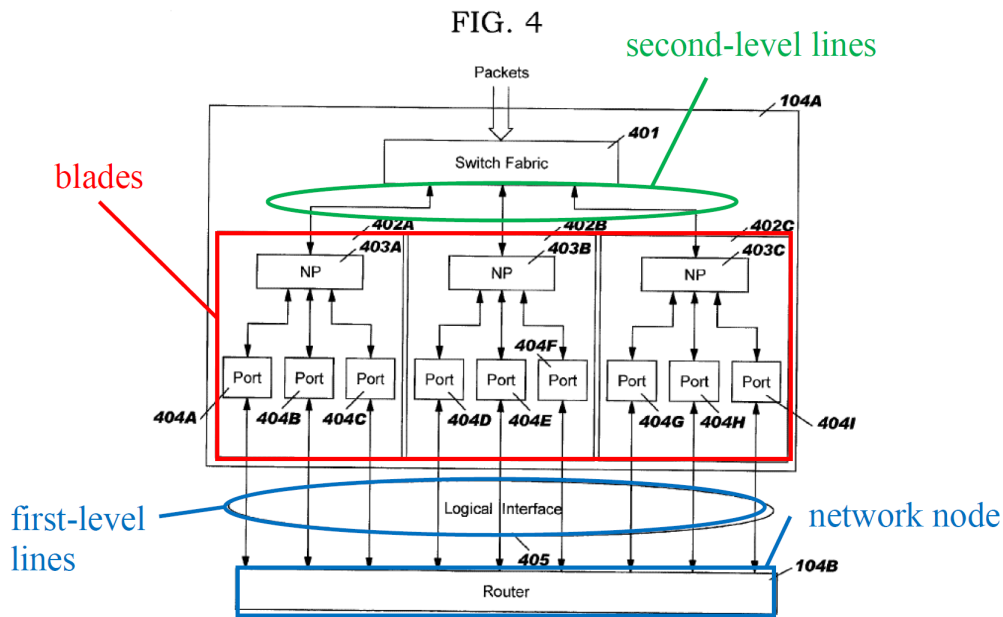
Ex.1005, Table 1, [0063] (annotated); Ex.1003, ¶76.

As explained in the Petition, “[e]ither the modulus operation ‘hash % lagSize’ itself or its result render obvious the claimed ‘*single computation.*’” Pet., 42. Patent Owner does not address this point. Instead, Patent Owner merely repeats variations on its arguments focused on reading a “fixedly assigned” negative limitation into the claims. *See* Resp., 50-53. Patent Owner references an undeveloped argument that the first and second selections must be performed “in sequence.” Resp., 54. But that argument is never explained, and in any event, Patent Owner offers no explanation of how selections could be performed sequentially and yet still “*in a single computation*” and with no temporal requirement. Resp., 22-23.

In summary, Patent Owner fails to refute the Petition’s obviousness analysis of a “*single computation.*”

VI. Basso also provides an example of a hash value that determines a blade/port combination.

Basso's network device uses one hash value to select "an appropriate blade/port combination ... to transmit the received packet of data." Ex.1006, [0012]; Pet., 30. The single hash value ("*single computation*") is used for performing two selections—"both a first-level line (one of the ports) and second-level line (one of the blades)." Pet., 30.



Patent Owner first argues that "the blades in Basso are not physical links ... as required by the claims." Resp., 56. This argument fails, first, because it argues Basso individually when the Petition relied on the Bruckman-Basso combination. *See, e.g.*, Pet., 44-45. Second, the argument ignores how the Petition ties the blades

to their respective second-level lines: “second-level line (one of the blades).” Pet., 29. Basso's Fig. 4 (above) shows how selection of a blade will also select a corresponding second-level line.

Patent Owner next argues that “Petitioner's argument again fails for the same reasons as those discussed in Bruckman.” Resp., 57. Relying on the new feature they propose reading into the claim, Patent Owner notes that Basso is inconsistent with their proposed requirement that “the first physical links must not be fixedly assigned to the second physical links (and the requirement that both of those links must be selected).” Resp., 57. But for the same reasons described above in Section II, Patent Owner's proposed claim construction improperly seeks to incorporate an entirely new structural feature into the claims and, therefore, should be rejected.

Basso, like Bruckman, makes two separate selections. Basso selects a blade from a plurality of blades. *See* Pet., 44-45. Because there is a one-to-one correspondence of blades to second-level lines, selection of a particular blade also acts as a selection of the corresponding second-level line. Basso also selects a port (first-level line) from a plurality of ports. *See* Pet., 44-45. Basso makes these selections in a “*single computation*”—by using a single hash value to select a blade-and-port combination. Ex.1006, [0012]; Pet., 44-45.

Patent Owner also argues that “the ‘blade/port combination’ selection occurs

only after packets have already been directed to a particular blade.” Resp., 58.

Patent Owner fails to tie this alleged distinction to any specific claim language, and for that reason alone it fails. Notably, the claims do not recite any negative limitations barring a packet from having been previously processed or forwarded by another device. In any event, when one of Basso's blades makes a selection for a different blade, the packet is simply forwarded to that different blade: “[I]f network processor 403A identified blade 402B/port 404D as being the blade 402/port 404 combination to transmit the processed packet, then network processor 403A may forward the processed packet to switch fabric 401 which may then direct the processed packet to blade 402B/port 404D.” Basso, [0046]. Dr. Houh explained this in his deposition. Ex.2026, 177-180. Ex.1025, ¶¶22-26.

Patent Owner's arguments do not refute the obviousness analysis presented in the Petition, in which Basso provides additional disclosure of selecting, in a single computation, two links from two separate groups.

VII. The Petition addresses every limitation of the claims.

Patent Owner accuses the Petition (wrongly) of failing to address limitations [29.1], [29.2], [29.3], and [30.2]. Each of these limitations are similar to limitations that were previously addressed. Thus, for repetitive claim language, the Petition cites back to the previous analysis of similar limitations (which, notably, Patent Owner does not dispute).

A. The Petition addresses [29.1] and [29.2].

Patent Owner wrongly argues that “The Petition omits any discussion of limitations 29.1 and 29.2.” Resp., 69. But rather than quote repetitive claim language in full, the Petition uses ellipses for particular clauses or sets of clauses. As an example, limitations [29.0]-[29.2] are identified in the claim appendix. Pet., 103. The Petition’s analysis identifies these limitations using ellipses: “Apparatus for ... modules being bi-directional.” Pet., 74. For this repetitive claim language, the Petition cites “*See* [17.0]-[17.2] Ex.1003, ¶¶218-20.” Pet., 74. Thus, the Petition provided sufficient clarity regarding the obviousness grounds applied to claim 29 by referring to earlier analysis of substantially the same subject matter. Notably, Patent Owner does not raise any arguments specific to the cross-cited claim 17 analysis; instead, Patent Owner repeatedly agrees with Petitioner that the limitations in claim 17 are not meaningfully different from claim 1. *See* Resp., 22 n.1, 33 (“...claims 17,... similarly require...”).

B. The Petition addresses [29.3].

Patent Owner also wrongly argues that the Petition does not address the language of limitation [29.3]. Resp., 67-69. The Petition’s analysis of [29.3] refers back to limitation [3.1]. Patent Owner argues that limitation [3.1] does not include the portion of [29.3] related to the data frames: “*so as to transfer the data frames between the one or more user interface modules and the communication network.*”

But Patent Owner ignores that claim 3 depends from claim 1, where this concept was already addressed. For example, the analysis for limitations [1.3] and [1.5] addresses that the backplane traces transfer data frames between the interface modules and communication network. Pet., 36-42. Patent Owner does not dispute that the prior art renders obvious [1.5], and Patent Owner's arguments regarding [1.3] are without merit. *See supra*, Section IV. The Petition's claim 29 analysis cites back to these claim 1 limitations. Claim 29 cites back to sections [1.2], [1.4], [3.1], [18.1], [17.0] to [17.2], and [19.4]. Pet., 74-75. Sections [17.0] to [17.2] further cite back to [1.1], [1.3], [1.5], and [1.6]. Pet., 70-72. By citing back to previously addressed limitations, the Petition shows why Bruckman renders claim 29 obvious and provided sufficient notice to Patent Owner regarding how the prior art is mapped to all challenged claims.

C. The Petition addresses [30.2].

Patent Owner argues that the Petition “omits any discussion of the limitation requiring ‘which are arranged to process data frames having frame attributes sent between the user ports and the communication network.’” Resp., 70. But again, the Petition cites back to previous analysis. Limitation [30.2] cites back to [29.3] (Pet., 75), which for the reasons explained above at VII.B, ultimately relies on the analysis of limitations [3.1] and claim 1. Patent Owner does not identify any meaningful difference in the language of [30.2] and [29.3]—nor, for that matter,

any limitation in claim 30 that is meaningfully different from limitations already addressed with respect to other claims.

As already addressed for at least [1.3] and [1.5], Bruckman's system transfers data frames "*having frame attributes sent between the communication network and the network node.*" See Pet., 37 ("concentrators multiplex data traffic"), 40-41 ("determines the link... based on information in the frame header"); Ex.1005, [0058]. The analysis for [1.3] cites to Bruckman's teaching that "[e]ach line card 34 comprises one or more concentrators 50, which comprise **multiple ports that serve respective links 30.**" Pet., 37. The analysis of [1.5] explains that Bruckman's links 30 are connected to customer nodes and have various attributes including frame headers. Patent Owner does not dispute the substance of this analysis—for claim 1 or any other claim.

There was no need for the Petition to repeat analysis that was already provided. By citing to previously addressed limitations, the Petition addresses every claim limitation sufficiently to show obviousness.

VIII. 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,

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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 5,584.

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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 March 29, 2024

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