

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS INC.,
Petitioner

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

**SECOND DECLARATION OF HENRY H. HOUEH, PH.D.,
UNDER 37 C.F.R. § 1.68 IN SUPPORT OF PETITIONER'S REPLY**

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I, Henry H. Houh, Ph.D., do hereby declare as follows:

I. INTRODUCTION

1. I previously submitted a Declaration (Ex. 1003) in this proceeding (IPR2023-00401) that set forth my opinions regarding U.S. Patent No. 7,545,740 (“the ’740 patent”).

2. I submit this Second Declaration in reply to Patent Owner Response.

3. In preparing this Second Declaration, I have considered:

- (2) Patent Owner Response (Paper 18);
- (3) Declaration of Mr. Miguel Gomez (submitted as Ex.2024);
- (3) My Deposition Transcript (Ex.2026);
- (4) Deposition Transcript of Mr. Gomez, (Ex.1026); and
- (5) Any other document reference herein.

4. My qualifications can be found in my first Declaration, Ex.1003 and in my CV, Ex. 1004. The discussion of the level of ordinary skill in the art and relevant legal standards are also the same as my first Declaration. In forming the opinions expressed below, I have considered the documents list above (and any additional documents discussed below) along with my own knowledge and experience.

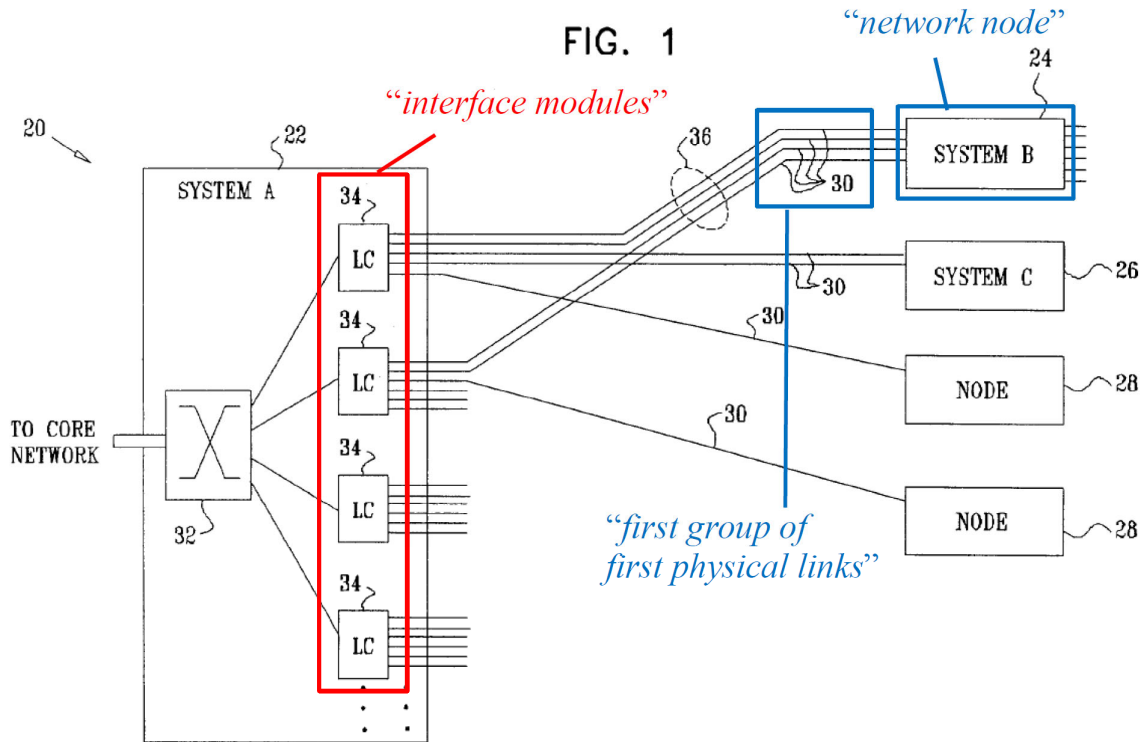
II. UNPATENTABILITY ANALYSIS

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

5. I disagree with Patent Owner’s and Mr. Gomez’s argument that Bruckman does not teach two separate selections. 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.*” Because Bruckman teaches two separate selections, Patent Owner’s argument fails to distinguish the prior art.

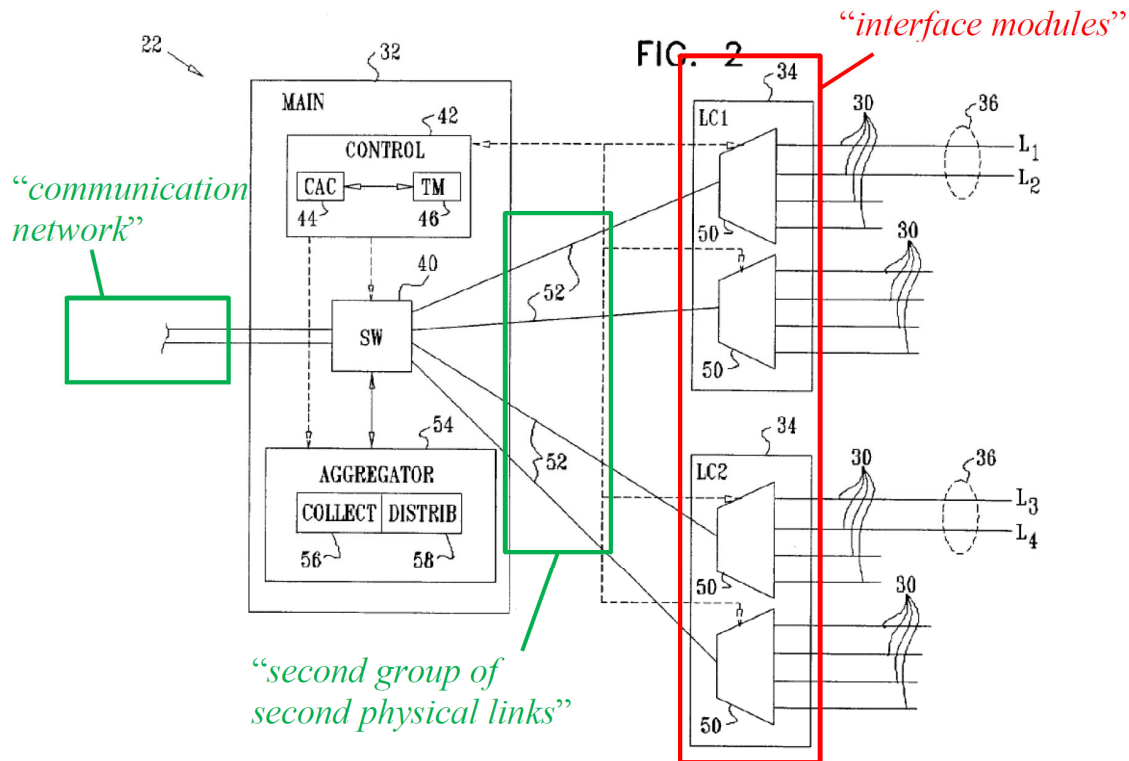
6. Bruckman’s system does indeed make two selections. Bruckman’s system selects a port from a plurality of ports (“*a first physical link out of the first group*”) as well as a trace from a plurality of traces (“*a second physical link out of the second group*”). These are two distinct selections.

7. My original declaration 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 Ex.1003, ¶¶60-62.



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

8. 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.1003, ¶¶67-70.



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

9. 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”). A packet will also pass through one of the links 30. Thus, there is also a “selecting” of one of the links (“selecting ... a first physical link out of the first group”). There are thus two distinct selections. The analysis for dependent claim 11 provides further details on how those links are selected—through two separate sets of bits. Ex.1003, ¶¶137-42.

10. 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.

11. 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 I explained in my deposition. 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 my deposition cited by Patent Owner (Resp., 51-52) are consistent with my original declaration and do not support Patent Owner’s position.

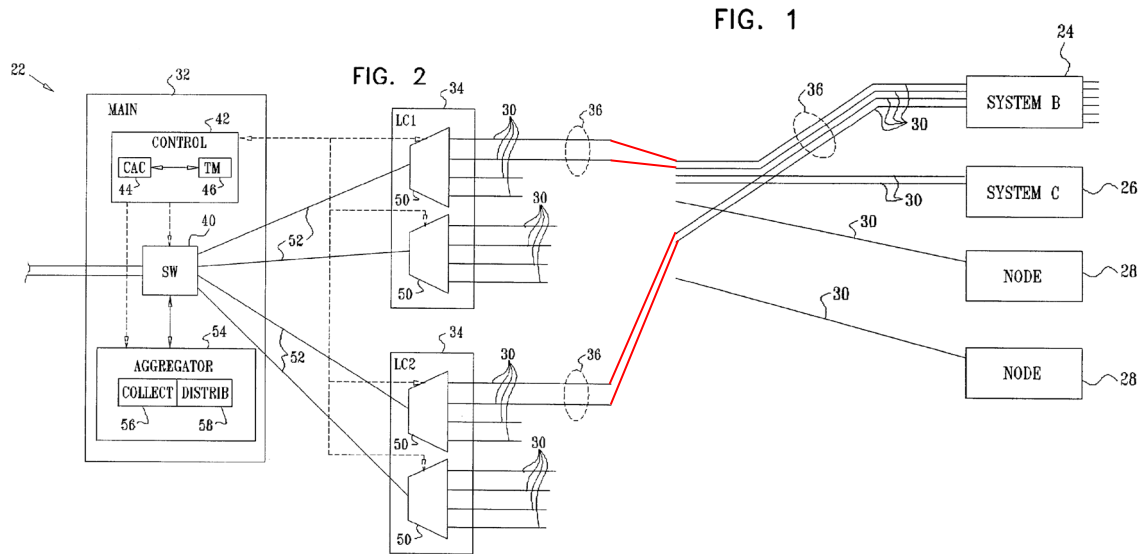
B. Bruckman teaches “*physical links arranged in parallel*” as claimed.

12. I disagree with Patent Owner and Mr. Gomez’s position that Bruckman’s traces are not “*arranged in parallel*” because “each of the traces 52 is coupled to different endpoints, in particular, a switching core 40 (on the left) and a

concentrators 50 (on the right).” Resp., 36. Patent Owner appears to interpret the term “parallel” to mean that traces must 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. But interpreting the term “parallel” to require that traces end at “relevant endpoints” as defined by Patent Owner is inconsistent with the specification of the ’740 patent.

13. My original declaration explains why Bruckman’s traces 52 are “*arranged in parallel*.” Ex.1003, ¶¶67-70. I originally cited 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]; Ex.1003, ¶68. I also stated that “Bruckman explains “the link aggregation function applies not only to links 30 in group 36 but also to traces 52.” Bruckman, [0057]. Ex.1003, ¶68. 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).



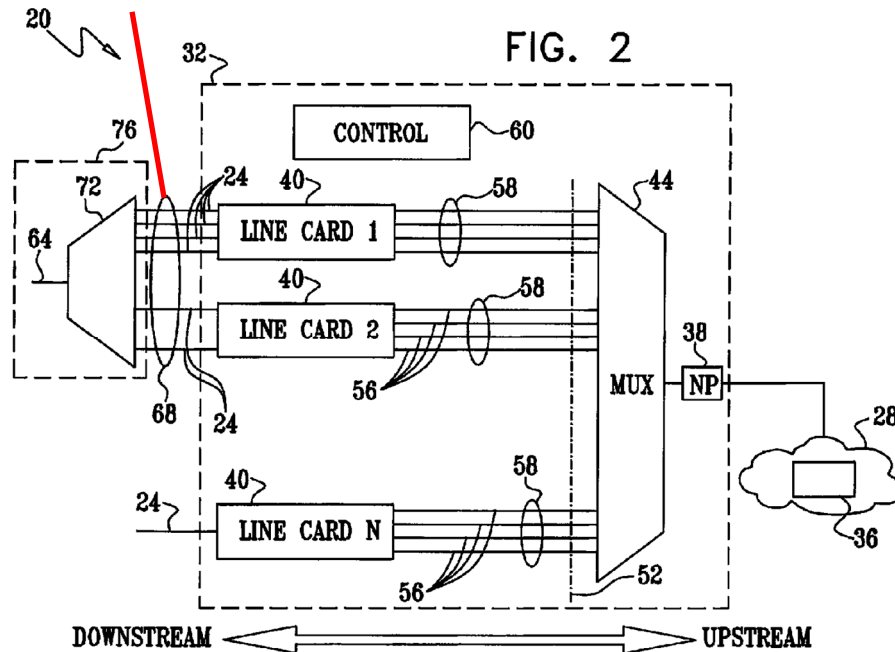
Ex.1001, Figs. 1 & 2 (annotated).

1. The intrinsic record does not support Patent Owner's implied construction.

14. Patent Owner argues that its “understanding of ‘arranged in parallel’ and the lack of a fixed relationship between first and second physical links is consistent with every embodiment depicted in the figures of the ’740 patent.” Resp., 39. But this is not correct. The ’740 patent does indeed describe 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 and yet are still referred to as being in parallel. The ’740 patent both describes and claims these links in LAG 68 as being *in parallel*. See Ex.1001, 1:10-14 (“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”), Claim 1 (“a first group of first physical links **arranged in parallel**”).

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



Ex.1001, Fig. 2 (annotated).

15. I believe the plain and ordinary meaning of “parallel” is sufficiently understood by a POSITA. My understanding of the plain and ordinary meaning is consistent with how the term parallel is provided in the ’740 patent itself. 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, different lines

that transfer data between user interface module and a communication network are parallel lines. I believe 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. The fact that different lines pass through different line cards does not mean the lines are not in parallel.

16. Bruckman's traces 2 are "*arranged in parallel*" because they transfer data between a customer node 24 and a core network. Bruckman, [0047]; Ex.1003, ¶¶40-44. Patent Owner's inconsistent and unworkable interpretation of the word "parallel" does not refute my analysis with respect to this term.

2. The extrinsic evidence provided by Patent Owner does not support its implied construction.

17. Patent Owner's citations to external evidence do not support its implicit construction of "arranged in parallel." 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.

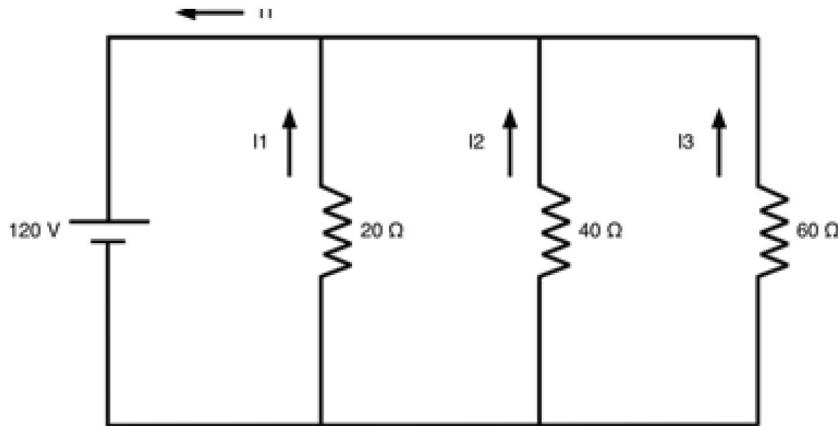


Figure 20. Parallel circuit current flow

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

18. But the '740 patent does not use the term “parallel” in the context of basic circuit design. Rather, the '740 patent describes the term parallel in the context of networking. Accordingly, it is my opinion that discussions of the term “parallel” as they relate to circuits are unhelpful.

19. Patent Owner further mischaracterizes my deposition testimony regarding the term “parallel.” Resp., 41-44. I 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. I then replied that “it's certainly consistent with things that are described in the -- in the specification as well.” Ex.2026, 62. But my statement here does not provide an explicit definition of what is meant by parallel. Rather, I was noting that the backplane traces in the '740 patent, which are described as parallel are indeed parallel.

20. I 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, I 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.

21. But my 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. My statements in deposition do not indicate that Bruckman’s traces are not in parallel solely just because they pass through different concentrators. I provided further clarification during my 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.”). Bruckman’s traces are “parallel” as that term is commonly understood by POSITAs and consistent with the ’740 patent specification.

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

22. I also disagree with Patent Owner’s and Mr. Gomez’s positions with respect to Basso. 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]; Ex.1003, ¶47. In other words, 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).” Ex.103, ¶47.

23. Patent Owner first argues that “the blades in Basso are not physical links ... as required by the claims.” Resp., 56. But, this argument ignores my analysis that ties the blades to their respective second-level lines: “second-level line (one of the blades).” Ex.1003, ¶47.

24. Basso, like Bruckman, makes two separate selections. Basso selects a blade/second-level line from a plurality of blades. *See* Ex.1003, ¶¶75-84. Because there is a one-to-one correspondence of blades to second-level lines, selection of a particular blade results in selection of the corresponding second-level line. Basso also selects a port (first-level line) from a plurality of ports. *See* Ex.1003, ¶¶75-84. Basso further makes these selections in a “*single computation*”—by using a single hash value to select a blade/port combination. Basso, [0012]; Ex.1003, ¶¶75-84.

25. Patent Owner also argues that in the network processor “that performs the ‘blade/port combination’ selection occurs only after packets have already been directed to a particular blade.” Resp., 58. But this argument ignores the teachings of Basso. 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]. I explained this in my deposition. Ex.2026, 177-180.

26. Accordingly, Patent Owner’s arguments do not refute the obviousness analysis presented in my declaration, in which Basso provides an additional example of selecting links from two separate groups in a single computation.

III. CONCLUSION

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

Dated: 3/28/24

Henry H. Houh
Henry H. Houh, Ph.D.