

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS INC.,
Petitioner

IPR2023-00402
U.S. Patent No. 8,830,821

**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 (IPR2023-00402) that set forth my opinions regarding U.S. Patent No. 8,830,821 (“the ’821 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 22);
- (3) Declaration of Mr. Miguel Gomez (submitted as Ex.2025);
- (4) Deposition Transcript of Mr. Gomez, (Ex.1037); 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. CLAIM CONSTRUCTION

A. “*selecting ...*”

5. I disagree with Patent Owner and Mr. Gomez that “*selecting an entity pair from said plurality of transport entities based at least in part upon said*

overall cost,” recited in “claim 1 [and 17]...requires selecting from the total number of potential paths associated with ‘said plurality’ of entities.” Resp. 28, 30; Ex.2025, ¶¶65-66. A POSITA reviewing the dependent claims, for example claim 9, would have recognized that the selection need not be made from the total number of potential paths and rather a subset is sufficient. *See* Ex.1001, 8:22-30 (“...selecting a subset of entity pairs wherein each entity pair of said subset has substantially minimum probability of a concurrent failure...selecting an entity pair from said subset that minimizes an entity cost function.”). Accordingly, a POSITA would have understood that the scope of the independent claim includes selecting an entity pair from a subset of entity pairs.

6. Additionally, the interpretation advanced by Patent Owner and Mr. Gomez would exclude an embodiment of the ’821 patent. In more detail, Figure 4C provides “a third overall cost minimizing entity selection embodiment” where an “entity pair is selected from a subset.” *See* Ex.1001, 5:56-66. As shown below at Figure 4C, in this third embodiment a lowest cost “entity pair is selected from a subset” of entity pairs.

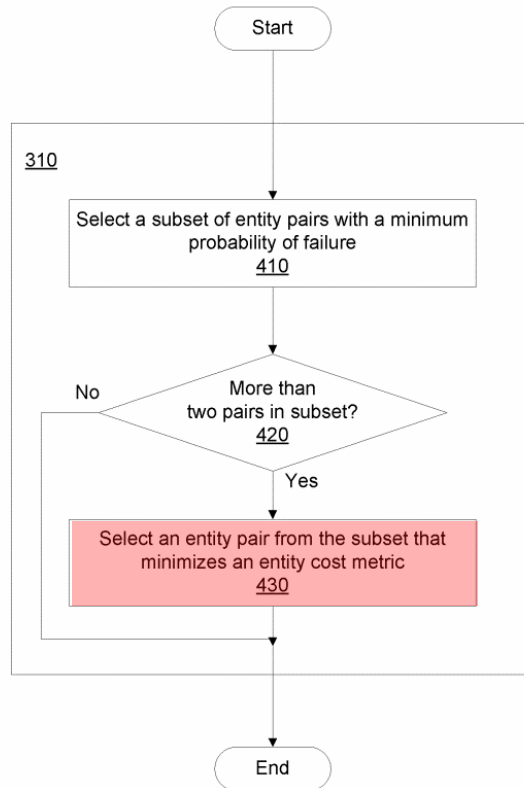


FIG. 4C

Ex.1001, Fig. 4C (annotated)

7. A POSITA would have understood that the scope of claim 1 includes the '821 patents' embodiment of Figure 4C. Additionally, Mr. Gomez, agrees with me that the scope of the independent claim is covered by Figure 4C:

18 Q. And **is the method of Figure 4C**
19 **within the scope of Claim 1?**
20 A. Claim 1 includes the language in
21 Element C, selecting an entity pair from
22 the plurality of transport entities based
23 on at least, in part, upon said overall
24 cost. **So that is part of what also 4C**
25 **does.**

Ex.1037, 150:18-25.

8. Accordingly, Patent Owner's requirement that the selection be from the total number of potential paths should not be adopted since it excludes the embodiment of Figure 4, where an entity pair is selected from a subset of entity pairs.

9. In view of the claim language and the '821 patent's specification, under the plain ordinary meaning, "*selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost*" would be understood by a POSITA to permit selecting from a subset.

B. "*working entity*" and "*protection entity*"

10. I disagree with Patent Owner and Mr. Gomez that the term "*protection entity*" is not "actively transmitting and receiving." Resp. 51-52; Ex.2025, ¶124.

11. The '821 patent's "method may make use of elements used for MPLS-TP linear protection scheme," which is "IETF draft-zulr-mpls-tp-linear-protection-switching." Ex.1001, 1:58-60, 3:20-22. The MPLS-TP linear protection scheme draft contemplates supporting "1:n architecture" for the protection entity. Ex.1043, 5. At the time, a POSITA would have understood that in 1:n architecture there is one protection entity that is shared among n working entities. *See e.g.*, Ex.1044, 1 ("An architecture in which any of the n working channels can be bridged to a single protection line."). This means that the protection entity may be

actively transmitting and receiving traffic if one working entity fails, while still acting as the protection entity for the remaining n-1 working entities. Because the '821 patent contemplates sharing the protection entity, it would have been understood that the protection entity may be actively transmitting and receiving network data. Patent Owner's implicit construction should not be adopted because it is contrary to the '821 patent's embodiment.

12. In view of the '821 patent's disclosure and knowledge in the art, a POSITA would have construed the term "*working entity*" as "an entity that actively carries network traffic" and the term "protection entity" as "an entity intended to carry network traffic of a working entity if that working entity fails." *See* Ex.1001, 1:51-53, 5:22-25.

III. UNPATENTABILITY ANALYSIS

A. Doshi teaches "*selecting an entity pair from said plurality of transport entities based at least in part upon said overall cost*" in claims 1 and 17.

13. As discussed below, I disagree with Patent Owner that Doshi does not disclose "*selecting...*" in claims 1 and 17. Resp. 25-33; Ex.2025, ¶66-78.

14. I disagree with Patent Owner and Mr. Gomez that Doshi does not teach the claimed selecting because "Doshi teaches a simplified selection process in which an entity pair is selected from a narrow subset of the candidate pairs associated with said plurality of entities." Resp. 28; Ex.2025, ¶66. As I already

noted, a POSITA would have understood that the claim scope includes selecting from a subset of entity pairs. Additionally, the example of 10 MPLS entities does not consider the scope of the claim. Resp. 29-31; Ex.2025, ¶¶67-70. The claim recites a “*plurality*” of MPLS entities. A plurality is generally understood as more than one. As such, in the context of the claim, a POSITA would have understood includes 3 MPLS entities. I understand that Mr. Gomez in his declaration stated that “Doshi requires that the...pairs does not exceed...candidate [MPLS] paths.” Ex.2025, ¶68. Effectively, Mr. Gomez concedes that Doshi at least contemplates that the pairs equal the candidate MPLS paths. As such, there is no dispute that a POSITA would have understood that Doshi contemplates that the pairs may be equal to the number of provided MPLS entities. I also agree with Mr. Gomez that a “POSITA [may] treat pairs as interchangeable, irrespective of their designation as primary/protection paths.” Ex.2025, ¶70. A POSITA would have understood that in the instance where there are 3 MPLS entities (which is included in what the claim requires) and the pairs are interchangeable, Doshi and the ’821 patent contemplate selecting an entity pair from 3 entity pairs (e.g., Pair1=LSP1, LSP2; Pair2=LSP1, LSP3; Pair3=LSP2, LSP3).

15. I disagree with Patent Owner that Doshi’s selection is not from “*said plurality*,” because allegedly, the “selection process curbs the size of the candidate selection set and is effectively a shortcut compared to the selection required by

claim 1” that is made from “a subset of the total provided paths” Resp. 31-32. As I already explained, a POSITA would have understood that the claim scope includes selecting from a subset. Doshi’s candidate pairs are from the provided plurality of MPLS entities and the overall lowest cost pair is selected from the candidate pairs.

16. Regardless, Doshi meets the limitation since the primary and restoration path pairs are selected from the candidate pairs of the provided MPLS LSPs. Pet. 25-31. In the context of Figure 11, Doshi teaches selecting from every possible path pair via the combination of steps 1104 and 1106. In step 1104, a “minimum-cost restoration path” is selected for every one of the K primary paths. Ex.1005, [0143], Figs. 10, 11. As such, in step 1104, Doshi’s process considers (K-1) alternatives, and from all considered alternatives identifies each K primary/restoration path pair combinations. Then, in step 1106, for each K primary/restoration path pairs that were identified at step 1104, Doshi computes the total primary-plus-restoration path cost and ultimately selects the lowest sum as LowKPair at step 1108. As such, contrary to Patent Owner’s assertion, Doshi is not taking any shortcuts—it is breaking the selection process into smaller steps. Every possible pair is still evaluated and potentially selectable based on cost. Thus, Doshi’s candidate pairs are from the same plurality of MPLS entities.

17. Lastly, I disagree with Patent Owner’s and Mr. Gomez’s argument, regarding Doshi’s disjoint path selection method, which effectively repeats the

argument regarding selecting from a subset. As I already noted, a POSITA would have understood that the claim scope includes selecting from a subset. Moreover, even if the claim did not permit selecting from a subset, Doshi's selection in instances where all paths are disjoint would meet the claim. According to Patent Owner and Mr. Gomez, Doshi necessarily selects from a "subset of the total number of path pairs (**since not all pairs are disjoint**), this selection likewise is made from a number of candidate paths that is less or equal than the plurality." Resp. 33; Ex.2025, ¶76. This argument assumes (incorrectly) that where "not all pairs are disjoint." However, a POSITA would have understood that there are circumstances, e.g., in smaller networks, where the topology has all pairs disjoint (no common links). Indeed, Mr. Gomez concedes this point during deposition. Ex.1037, 212:1-12 ("...is it possible for a network to be structured such that all entity pairs are disjoint?... it is possible."). In the instance where all paths are disjoint, Mr. Gomez does not dispute that Doshi's selection would meet the claimed limitation. Further, as already noted above, Patent Owner ignores Doshi's disclosure of that "primary and protection paths...are selected from the plurality of candidate path pairs" "as the overall minimum-cost pair." Ex.1005, [0014], [0142]-[0145], Fig. 11; Pet. 25-31.

- B. Doshi in combination with Guichard teaches “*if an entity pair reselection event occurs, reselecting said entity pair from the group consisting of said entity pair and a replacement entity pair comprising at least one entity distinct from the entities of said entity pair*” in claims 1 and 17.**

18. I disagree with Patent Owner and Mr. Gomez argument that there is not a reason to combine Guichard and Doshi. Resp. 34-44. According to Patent Owner, the motivation to combine was “generic,” pertaining to “[t]he needs of efficiency and reliability.” Resp. 36; Ex.2025, ¶85; *see also* Resp. 36-; Ex.2025, ¶¶81-88. This argument is baseless since the proffered motivation to combine was not based on generic efficiency and reliability, but rather that a POSITA would have been motivated to perform reoptimization evaluations, as taught by Guichard, when implementing Doshi’s pair calculation and selection techniques to identify a potentially better LSP (e.g., for primary or protection LSP paths) with an even lower overall minimum-cost. But regardless, I agree with Mr. Gomez, who testified during deposition that efficiency and reliability are very important when designing a product for a company’s competitiveness:

20 A. In my industry, the industries
21 I've been in, as I've said before, **if a**
22 **product goes out and it's not reliable,**
23 **that company is likely to go under.**

6 A. In a competitive environment like
7 most of the products I've ever worked on
8 are. **You need efficiency to stay**
9 **competitive.**

Ex.1037, 193:20-195:9.

13 It's **very important** to have a
14 reliable product, correct?
15 A. **Correct**.
16 Q. And it's **very important** to have
17 an efficient product, correct?
18 A. In the manner that you define
19 efficiency, **correct**.

Ex.1037, 193:20-195:9. Therefore, efficiency and reliability would have been recognized as important operational characteristics.

19. I also disagree with Patent Owner and Mr. Gomez that there is no expectation of success because “Guichard teaches reoptimization in a system that omits the protection path featured in Doshi; and Doshi omits the reoptimization technique taught in Guichard.” Resp. 38; Ex.2025, ¶89. I do not agree that Doshi is somehow limited to a protection system. This argument also ignores the initially provided motivation to combine and the prior art teaching that it is “highly desirable to detect the existence of” network changes. Ex.1006, 79. *See* Ex.1003, ¶¶ 60-66. I also note that Guichard plainly states that “[i]n some cases, it might be desirable to elect to use a combination of recovery mechanisms.” Ex.2028, 96. And Mr. Gomez agrees that in some cases “it might be desirable” to combine recovery mechanisms when avoiding race conditions:

3 Q. In what cases does Guichard teach
4 that it might be desirable to elect to use
5 a combination of recovery mechanisms?
6 . . .
8 A. In a very narrow set of cases, **it**
9 **might be desirable** if the objectives of the
10 recovery mechanism are in alignment and
11 they do not create and have been validated

12 not to create issues.

Ex.1037, 167:3-12.

20. As such, the prior art (e.g., Guichard) as well as Mr. Gomez’s testimony demonstrates that combining protection and reoptimization mechanisms would have been recognized as desirable. Also, this technology was well-known in the art, indeed textbook knowledge, and as such a POSITA would have had a reasonable expectation of success, including avoiding any race conditions, when implementing the combination of Guichard and Doshi.

21. I disagree with Patent Owner and Mr. Gomez that there would be “significant costs and tradeoffs.” Repl. 39-40; Ex.2025, ¶¶91-93. As I already noted, these technologies were textbook knowledge and a POSITA would have had a reasonable expectation of avoiding any lack of optimality, as Guichard teaches. Ex.2028, 96. And even if there were tradeoffs, a POSITA would nonetheless have been motivated to provide an optimized path in Doshi, as I explained in my first declaration.

22. I disagree with Patent Owner and Mr. Gomez that that “Petitioner has failed to provide any reason for adapting that combination to practice reselection with respect to entity pairs.” Resp. 40-44; Ex.2025, ¶¶94-103. Patent Owner argues that the combination fails because “to the extent that a POSITA were to adapt Doshi to practice reoptimization (or reselection) that reoptimization would

occur with respect to individual entities in a pair.” Resp. 41. In other words, Patent Owner contends that “reoptimization would be used only with respect to the primary path.” Resp. 41.

23. Patent Owner’s argument is misplaced since the claim only requires that there be “*one entity distinct from the entities of said entity pair.*” In the instance where the primary path is reoptimized (e.g., because there is a new better LSP path), the reselection per the proposed combination would still meet the claim since reselecting the entity pair would be from the original entity pair and a replacement entity pair comprising a new primary LSP path.

24. This argument also ignores, as I explained in my first declaration, that in “implementing the combination with Doshi, a POSITA would have evaluated any restored and new LSPs along with all existing LSPs (including the currently utilized LSP pair) by repeating Doshi’s candidate pair cost determination and selection techniques)” to select the overall-minimum cost LSP pair. Pet. 40-44; Ex.1003, ¶119. Because Doshi’s candidate pair cost determination and selection techniques are repeated, all possible LSP pair combinations of would be evaluated and an LSP pair that provides the overall minimum-cost would be selected.

25. I also note that any arguments regarding “heuristics” in Xu miss the point since this discussion is limited to NP-hard problems, which do not apply to the proposed combination of Doshi and Guichard.

26. I disagree with Patent Owner and Mr. Gomez that there would not be a reasonable expectation of success. Repl. 44-45; Ex.2025, ¶¶104-113. As I have noted above, the prior art (e.g., Guichard) demonstrates that POSITAs had in fact made the proposed combination, e.g., by teaching that such a combination is desirable. Ex.2028, 96. Moreover, in my first declaration I submitted evidence of prior art systems that reoptimized paths. This evidence demonstrates that POSITAs had the technical capabilities to perform path reoptimization generally, including in the context of protection systems.

27. I also disagree with Patent Owner that there is no reasonable expectation of success in “[p]erforming the same computations repeatedly in response to state changes.” Resp. 47; Ex.2025, ¶112. To the contrary, a POSITA would have recognized that there is nothing unpredictable about performing the same computations repeatedly.

C. The prior art renders obvious “*logic configured to determine a probability of concurrent failure of said working entity and said protection entity*” in claim 14.

28. I disagree with Patent Owner and Mr. Gomez argument that “Doshi teaches a POSITA to ignore the probability of failure” while “the ’821 Patent discloses that the probability of failure is a factor in the claimed cost determination for the entity pairs.” Resp. 49-51; Ex.2025, ¶119. Contrary to these contentions, Doshi plainly considers the probability of concurrent failure as part of its

calculations and selection process of Figure 11. The probability of failure is a factor in Doshi's cost determination since it performs one calculation (LowKSum) that is based on shared paths (which have a higher probability of joint failure) and another calculation (LowLSum) for disjoint paths (with "very insignificant" probability of joint failure).

29. I also note that Doshi's process of Figure 11 is very similar to the '821 patent's method of Figure 4C, which determines a subset of entity pairs with a minimum probability of failure (e.g., disjoint pair).

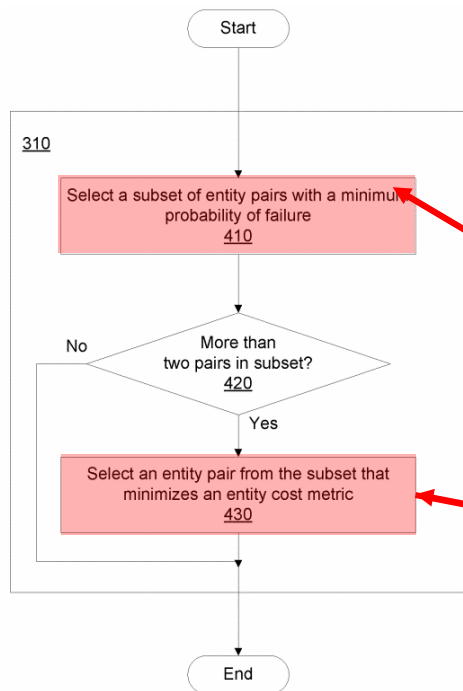


FIG. 4C

Ex.1001, Fig. 4C (annotated).

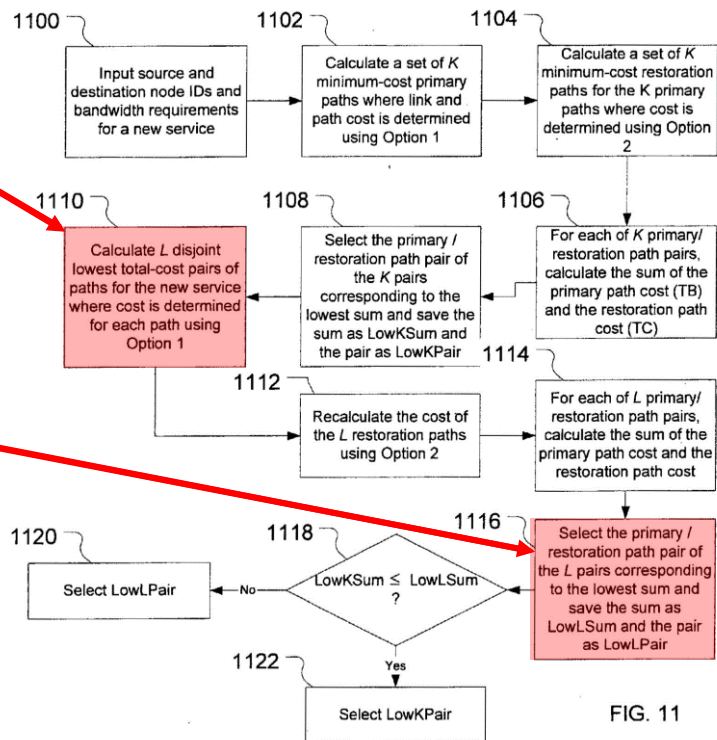


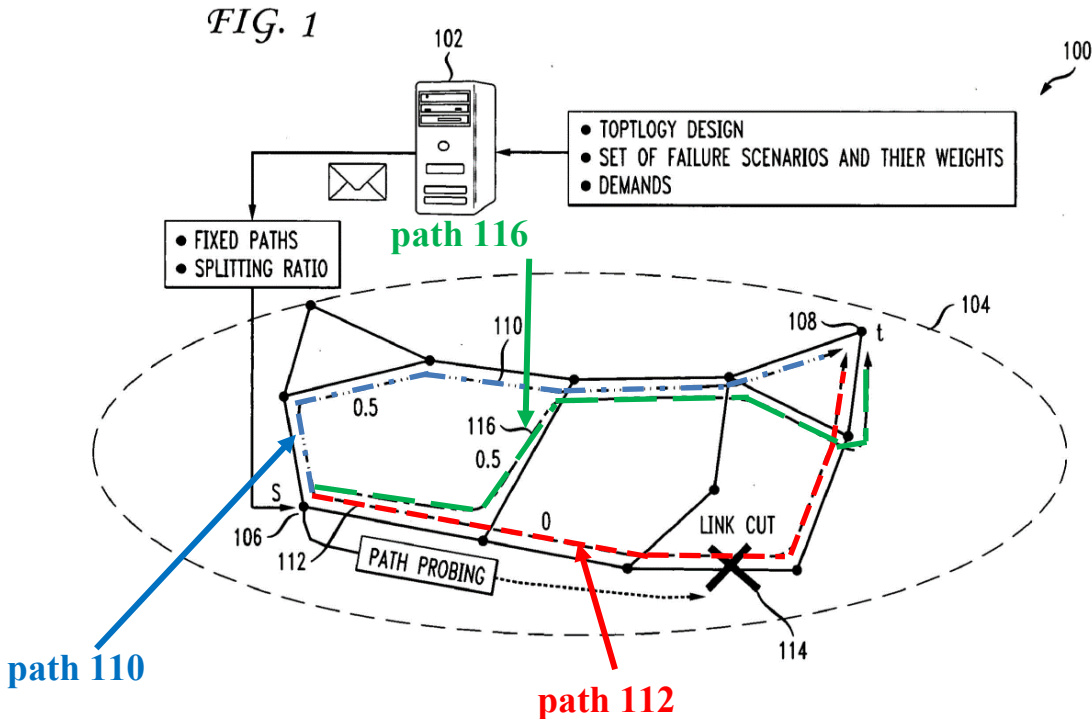
FIG. 11

Ex.1005, Fig. 11 (annotated).

30. Therefore, Doshi’s disclosure of selection logic configured to perform the method of Figure 11, including logic to determine disjoint pairs that have “very insignificant” probability of simultaneous failures, teaches “*logic configured to determine a probability of concurrent failure...*”

31. I disagree with Patent Owner and Mr. Gomez that Xu does not disclose not disclose a “*working entity*” and a “*protection entity*” “[b]ecause each path p is constantly transmitting if it is available, each path is by default a ‘working entity,’ i.e., it is constantly transmitting and receiving traffic, and there is therefore no designated ‘protection entity.’” Resp. 51-52; Ex.2025, ¶124. I note that this statement concedes that Xu discloses a “*working entity*.” As I discussed in the claim construction section, the embodiments of the ’821 patent include shared protection entities that may be actively transmitting and receiving network data. As such, the mere fact that a path in Xu may (or may not) be shared and actively transmitting and receiving traffic does not preclude that path from also acting as a “*protection entity*.”

32. Additionally, I note that Patent Owner’s technical understanding is wrong since Xu “combines path protection and traffic engineering.” Ex.1025, [0001]. And Xu’s protection path need not actively carry traffic, per the embodiment of Figure 1, reproduced below. Ex.1025, [0033], Fig. 1.



Ex.1025, Fig. 1 (annotated).

33. In the above figure, Xu discloses that “[u]nder normal operating conditions, traffic is sent via paths 110 and 112,” without stating that path 116 carries traffic. Ex.1025, [0033]. Xu further discloses that NMS 102 observes network links and “[o]nce NMS 102 has detected a link cut, such as represented by 114, **traffic is immediately redistributed** to the remaining paths, in this example via paths 110 and 116, based on their static configuration.” Ex.1025, [0033]. A POSITA would have understood that path 116 corresponds to a “*protection entity*” because at least some traffic from path 112, a “*working entity*,” is redistributed to this path when the link on path 112 is cut. To the extent it is determined that a “*protection entity*” cannot carry traffic, per Patent Owner’s implicit construction,

Xu's path 116 meets that requirement under normal circumstances. Thus, regardless the construction, Xu teaches both a "*working entity*" and a "*protection entity*."

34. I also disagree with Patent Owner and Mr. Gomez that "Xu discloses a heuristic (or shortcut) that is used to avoid determining a probability of failure." Resp. 53-54; Ex.2025, ¶126. This argument ignores that Xu discloses heuristics in the limited context of an embodiment characterized as "NP-hard." Ex.1025, [0057]. Xu, however, is not limited to NP-hard scenarios. *See* Ex.1025, [0113] ("[T]his does not imply that the problem...discussed in the present disclosure is NP-hard."). For example, Xu's three path embodiment, shown at Figure 1, is not NP-hard.

35. I also disagree that Xu "does not disclose a mechanism or logic for determining the probability of concurrent failure of an entity pair" because "Xu's prebaked probabilities are...different from calculating probabilities in a dynamically changing system like an MPLS network." Resp. 53-54; Ex.2025, ¶126. Mr. Gomez testified during deposition that the claim does not require "computing" probabilities or "dictate an order" of when the logic is executed. Ex.1037, 173:20-174:19.

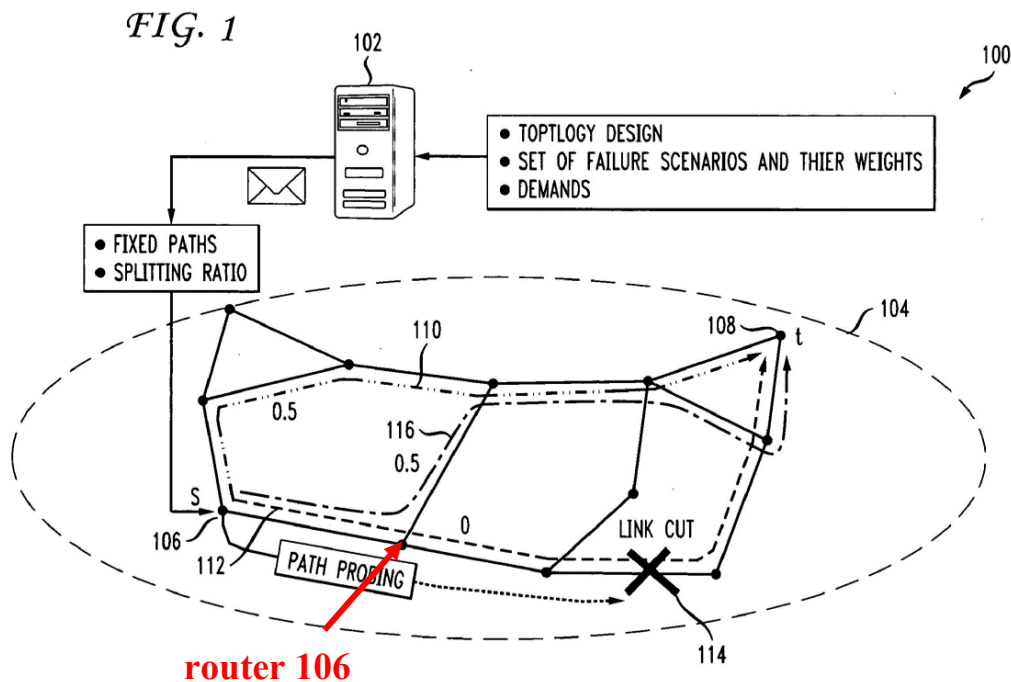
36. Additionally, Patent Owner's argument ignores embodiments in the '821 patent. According to the '821 patent "a pair having multiple spans and/or

nodes in common may be more likely to simultaneously fail than a pair having no spans or nodes in common.” Ex.1001, 3:47-50. The ’821 patent discloses that the **“spans and/or nodes” “failure probabilities may be assigned...manually by a network operator based on network knowledge,” “vendor-provided,” and “infrastructure failure probabilities.”** Ex.1001, 6:20-33. In view of this disclosure, a POSITA would have understood “network knowledge,” “vendor-provided probabilities,” and “infrastructure failure probabilities” to be predetermined probabilities of failure of spans and/or nodes in the concurrent failure probability matrix. As such, a POSITA would have understood that in the ’821 patent, the network operator assigning failure probabilities of spans and/or nodes (which have been predetermined) configures the probability matrix to determine a probability of simultaneous failure for a pair that has the spans or nodes in common.

37. I note that Xu’s failure model is similarly configured. Like the ’821 patent, Xu discloses that a **“network operator”** inputs potential or planned failure states or scenarios, with each having a **“predetermined probability of occurrence.”** Ex.1025, [0006], [0033], [0041]. Also like the ’821 patent, Xu’s failure scenarios apply to **“links or nodes”** that are **“most probable”** to **“cause[] simultaneous failure of multiple upper layer links.”** Ex.1025, [0049]. Xu’s utilizes the failure scenarios with a “shared vulnerability” to “calculate multiple

diverse paths so that at least one of them works for each failure scenario.” See Ex.1025, [0040]. As such, in the instance where multiple paths (e.g., working and protection paths) traverse the same node (e.g., router), a POSITA would have understood that a probability of simultaneous failure of the paths that traverse the node corresponds to a probability of failure of the shared node.

38. As an example, illustrated below is Xu’s Figure 1.



Ex.1025, Fig. 1 (annotated).

In the instance where a failure of router 106 causes paths 112 and 116 (which as discussed above correspond to a “*working entity*” and a “*protection entity*”) to also fail. As such, the probability of router 106 failing corresponds to a probability of simultaneous failure of paths 112 and 116

39. Mr. Gomez did not dispute that the '821 patent's probability matrix corresponds to a failure model (which is what Xu discloses):

2 Q. Is the probability matrix the
3 model of failure modes?

6 A. I don't think it's only a model.

Ex.1037, 189:2-6.

40. Accordingly, a POSITA would have understood that Xu's failure model corresponds to "*logic*." A POSITA would have also recognized that the network operator inputting failure scenarios (with a predetermined probability of occurrence) for links and nodes that are shared among different paths, "*configures*" the failure model "*to determine a probability of concurrent failure concurrent failure*" because the probability of failure for shared links and nodes corresponds to a probability of simultaneous failure for a pair that has the links or nodes in common.

D. Doshi teaches "*selecting a working entity...and...a protection entity from said entity pair*..." in claims 2 and 18.

41. I explained in my first declaration that Doshi describes that the "primary and restoration paths for the new service are selected from the plurality of candidate path pairs." Ex.1005, [0014]; *see also* Ex.1005, Claim 1. I also explained that, like the '821 patent, Doshi teaches "Switching Between Working and Protection LSPs." Ex.1005, [0266]-[0267]. The analysis in my declaration has not been addressed by Patent Owner.

E. The prior art renders obvious “*sequentially replacing said working entity and said protection entity ...*” in claim 13.

42. I disagree with Patent Owner and Mr. Gomez that the prior art does not render obvious “*sequentially replacing said working entity and said protection entity ...*” in claim 13. Resp. 57-62; Ex.2025, ¶¶134-148.

43. In my first declaration, I explained that “it would have been obvious for the LSPs of the originally selected pair (e.g., a primary LSP and a protection LSP) to be sequentially replaced as the ongoing reoptimization efforts identify lower cost LSPs” and provided examples of such circumstances. Ex.1003, ¶177-178; Pet. 59-61. I also explained that “it would have been obvious for a single event-triggered reoptimization evaluation to find that both the primary and protection LSPs are suboptimal” and, in such circumstances to “replace the LSPs sequentially.” Ex.1003, ¶179; Pet. 59-61; Pet. 62-63. I also explained that “a POSITA would have found it obvious to replace the LSPs sequentially in order **to minimize interruption in service**” and that “a POSITA would have appreciated the desirability of maintaining a working and protection path throughout the replacement process.” Ex.1003, ¶179; Pet. 62-63.

44. The explanations I provided in my first declaration referred back to limitations [1.3]-[1.4], and reflected general knowledge in the art. Indeed, the prior art of record demonstrates that it was known to sequentially replace LSPs (referred to as “make-before-break”) during reoptimization, because it was recognized as

desirable to maintain the LSP throughout the replacement process to avoid interruption of service. Ex.1011, 12 (“**[I]t is highly desirable not to disrupt traffic...[this] requirement necessitates establishing a new LSP tunnel and transferring traffic from the old LSP tunnel onto it before tearing down the old LSP tunnel. This concept is called ‘make-before-break.’**”); *see also* Ex.1006, 81 (“As soon as that new TE LSP is successfully set up, the old is torn down. This is known as the make-before-break mechanism.”); Ex.1010, 251 (“The networks routing optimality may be restored by occasional re-optimization that re-routes some of the LSPs. Note that features such as the make-before-break...are usable for LSP re-routing.”).

45. Patent Owner’s own submitted evidence further demonstrates that it was common knowledge (in fact a “**key property of MPLS TE**”) to avoid traffic disruptions by sequentially replacing LSPs. Ex.2028, 81 (“A key property of MPLS TE is its ability to reoptimize a TE LSP along a more optimal path without any traffic disruption.”), 388 (“**[W]hen a reoptimization evaluation is triggered... each TE LSP to be reoptimized is signaled along the new path in a nondisruptive fashion using the make-before-break procedure.**”); Ex.2033, 19; Ex.2035, 22.

IV. MR. GOMEZ IS NOT ONE OF ORDINARY SKILL IN THE ART

46. In my first declaration, I explained that a POSITA “would have been someone knowledgeable and familiar with network communications and multiprotocol label switching-transport (MPLS) techniques available at the time. Such a POSITA would have a bachelor’s degree in computer science, computer engineering, electrical engineering, or equivalent training, and approximately two years of experience working in the field of network communications and would be knowledgeable regarding MPLS techniques.” Ex.2025, ¶¶27-29. I provided the stricter definition because MPLS is a specialized area of network communications. It was known in the art that MPLS is an industry-standardized version of a Cisco proprietary technique called “tag switching,” which Cisco publicly described in early 1997. *See* Ex.1040, [0020]; Ex.1041, [0015]; Ex.1042. In view of Cisco’s disclosure, the IETF first formed a group to work on what became the MPLS standard in 1997. <https://datatracker.ietf.org/wg/mpls/history/>. I agree with Patent Owner that “many engineers in the field of network communications do not deal with MPLS techniques as part of their day-to-day responsibilities.” Prelim. Resp. 20-21. For example, Mr. Gomez’s work on a “videoconferencing system” where “resources [were] reserved” would not impart to him the requisite knowledge to understand MPLS or provide opinions on this technology. Ex.1037, 216:9-217:2; *see also* Ex.1037, 106:15-107:20. Although MPLS can involve resource

reservations, it does not have to, and it certainly implicates topics and features (e.g., label switching) that go beyond mere resource reservations.

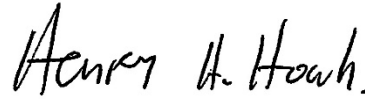
47. As I explained during deposition, my Ph.D. thesis was on label-switch-paths, prior to MPLS becoming a standard. I have also worked with MPLS networks in various circumstances. In the 2000-2001 time frame, I was working professionally in the area of network testing. I conceived, designed and managed a programmable data network test platform that launched commercially in 2001¹. As part of this project, I studied how to use the product to test protocols including TCP, RTP, and MPLS. In the course of working on this project, I applied for a patent that included testing networks that used MPLS technology. *See e.g.*, Ex.1045, Claims 3-4.

V. CONCLUSION

48. 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.

¹ See, e.g., <https://www.eetimes.com/empirix-debuts-hammer-packetsphere-network-emulator/>

Second Declaration of Henry H. Houh, Ph.D.
Inter Partes Review of U.S. 8,830,821

A handwritten signature in black ink that reads "Henry H. Houh." The signature is written in a cursive style with a period at the end.

Dated: March 28, 2024

Henry H. Houh, Ph.D.