

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,

Petitioner

v.

PORTSMOUTH NETWORK CORP.,

Patent Owner

Case IPR2024-01450

Patent No. 7,596,088

PATENT OWNER PRELIMINARY RESPONSE

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 Other Authorities	 Pages(s)
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U.S. Patent Publication No. 2004/0190445	
	1, 7, 8, 9, 10, 11, 14, 15, 16, 19, 20, 21, 22, 24, 26, 27, 28
U.S. Patent Publication No. 2005/0220026	
	1, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 23, 24, 25, 26, 27, 28

TABLE OF PATENT OWNER'S EXHIBITS

EX. 2001 *In re Application of Zbigniew Dziong, et al* , File History of U.S.
Application Number 10/817,760; U.S. Publication Number
2005/0220026.

Pursuant to 37 C.F.R. § 42.120, Patent Owner Portsmouth Network Corp. (“Patent Owner”) respectfully submits this Preliminary Response to the Petition filed by Petitioner Cisco Systems, Inc. (“Petitioner”) regarding U.S. Patent No. 7,596,088 (Ex. 1001, “the ’088 Patent”).

I. INTRODUCTION

Petitioner challenges claims 1-4, 6-11, and 13-20 of the ’088 Patent. Patent Owner respectfully submits that the Board should deny institution for at least two reasons.

First, Petitioner fails to establish a motivation to combine U.S. Patent Publication No. 2005/0220026 (Exhibit 1005, “Dziong”) and U.S. Patent Publication No. 2004/0190445 (Exhibit 1006, “Sathyanath”).

Second, Dziong and Sathyanath each have many deficiencies, which are discussed in more detail below, and even as combined, do not meet the limitations of the challenged claims.

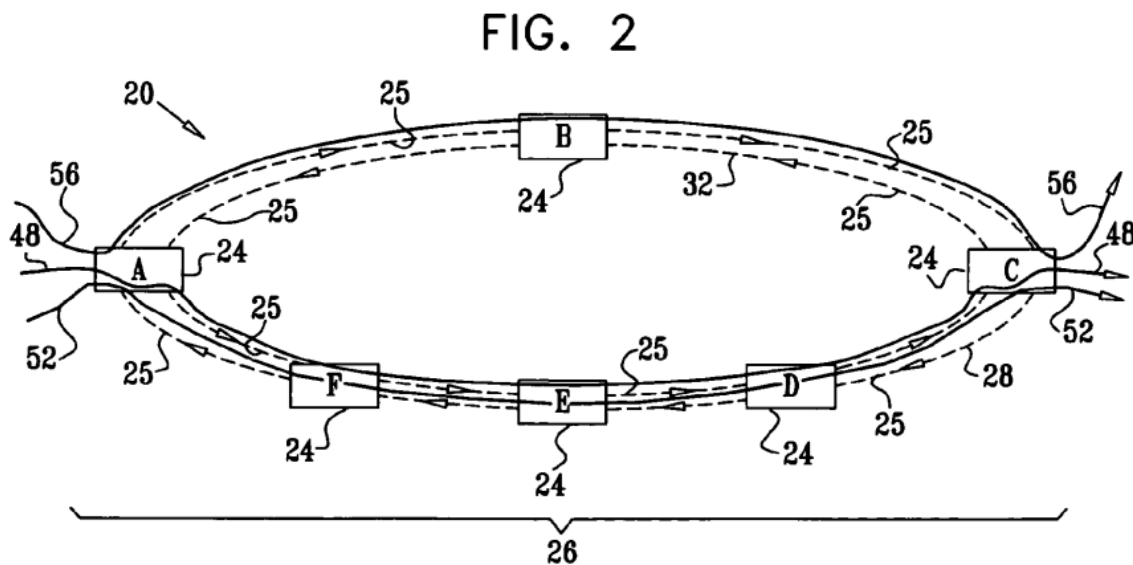
For at least these reasons, and as discussed further below, the Board should find that Petitioner has failed to establish that it is likely to prevail in showing the unpatentability of at least one claim.

II. SUMMARY OF THE ’088 PATENT

The ’088 Patent is directed at “methods and systems for selecting routes for communication connections that share bandwidth allocations in ring

configurations.” EX. 1001 at 1:7-9. “[T]he disclosed methods and systems are used to establish communication connections through ring configurations comprising two ringlets, often denoted a clockwise (CW) and a counter-clockwise (CCW) ringlet.” EX. 1001 at 2:35-38. The ’088 Patent explains that “[a]dditionally or alternatively to addressing ring configurations, the methods and systems described herein can be used to select routes in any suitable network configuration.” EX. 1001 at 9:29-32.

With respect to FIG. 2 showing ring 26, there is an existing connection 48 in a counterclockwise ringlet (A-F-E-D-C) that requires 1 Gbps bandwidth allocation in the segments along its route. EX. 1001 at 6:1-7.



EX. 1001, FIG. 2

The ’088 Patent discloses “improved methods and systems for establishing a connection through a communication network, taking into account the ability to

share bandwidth between the new connection and existing connections.” Ex. 1001 at 2:13-17. As disclosed in the '088 Patent, “[a] sharing definition defines connections that may share their bandwidth allocations.” EX. 1001 at 2:17-18. “[T]he set-up procedure of the new connection may comprise a sharing definition stating other connections with which the new connection can share its bandwidth allocation.” EX. 1001 at 7:7-9.

In order to establish a new connection, two or more candidate routes through the network are identified. EX. 1001 at 6:9-13. In the example of FIG. 2, assume the new connection requires another 1Gbps bandwidth allocation. EX. 1001 at 6:8-17. A first candidate route 52 follows the same counterclockwise ringlet (A-F-E-D-C) and a second candidate route 56 follows a clockwise ringlet (A-B-C). *Id.* In the example of FIG. 2, the new connection can share its 1Gbps bandwidth allocation with the existing connection 48. EX. 1001 at 6:8-13.

“For each of the candidate routes, the disclosed methods and systems calculate the additional bandwidth reservation, accumulated over the network segments along the candidate route in question, which would be allocated to the new connection if it were established through this route.” EX. 1001 at 2:20-25. As disclosed in the formulas below, this requires the summation of $BW_{\text{new}} - BW_{\text{existing}}$ for each segment of the candidate route in the clockwise and counterclockwise directions. EX. 1001

at 7:21-63. The formulas only consider those existing connections that share their bandwidth with the new connection. EX. 1001 at 7:63-66.

$$\Delta BW_{CW} = \sum_{S \in \left\{ \begin{array}{l} \text{Clockwise ring} \\ \text{segments along} \\ \text{candidate route} \end{array} \right\}} (BW_{new}^S - BW_{existing}^S)$$

$$\Delta BW_{CCW} = \sum_{S \in \left\{ \begin{array}{l} \text{Counter-clockwise ring} \\ \text{segments along} \\ \text{candidate route} \end{array} \right\}} (BW_{new}^S - BW_{existing}^S)$$

EX. 1001 at 7:37-49.

Unlike the prior art methods, the claimed inventions “**take into account the ability to share bandwidth between the new connection and existing connections** that traverse ring 26.” EX. 1001 at 5:36-39 (emphasis added) Thus, in the example of FIG. 2, the first candidate route 52 is selected. EX. 1001 at 9:1-18. This minimizes the consumed bandwidth. EX. 1001 at 9:16-18.

$\begin{aligned} \Delta BW_{CW} &= \Delta BW_{A \rightarrow B} + \Delta BW_{B \rightarrow C} \\ &= (1 \text{ Gbps} - 0) + (1 \text{ Gbps} - 0) \\ &= 2 \text{ Gbps} \end{aligned}$	Second Candidate Route 56 (A-B-C)
$\begin{aligned} \Delta BW_{CCW} &= \Delta BW_{A \rightarrow F} + \Delta BW_{F \rightarrow E} + \Delta BW_{E \rightarrow D} + \Delta BW_{D \rightarrow C} \\ &= (1 \text{ Gbps} - 1 \text{ Gbps}) + (1 \text{ Gbps} - 1 \text{ Gbps}) + \\ &\quad (1 \text{ Gbps} - 1 \text{ Gbps}) + (1 \text{ Gbps} - 1 \text{ Gbps}) \\ &= 0 \end{aligned}$	First Candidate Route 52 (A-F-E-D-C)

EX. 1001 at 9:5-14 (annotations added).

In the example of FIG. 2, prior art methods that “attempt to maximize available bandwidth or to minimize the number or segments without considering bandwidth sharing would have chosen candidate route 56 instead, causing more bandwidth to be allocated.” EX. 1001 at 9:18-22.

The '088 Patent includes 20 claims, with claims 1, 8, 15, and 17 being independent. Exemplary claim 1¹ is reproduced below.²

[1.0]	A method for establishing a connection through a communication network that includes multiple segments, comprising:
[1.1]	identifying two or more candidate routes for a new connection having a requested bandwidth to be established through the network;
[1.2]	providing a sharing definition specifying one or more other connections, which have respective bandwidths and which are permitted to share a bandwidth allocation with the new connection,
[1.3]	such that a total bandwidth allocated jointly to the new connection and to the other connections in any given segment is equal to a maximum of the

¹ While claim 1 is used as an exemplary claim here, the Patent Owner reserves the right to argue each claim separately.

² Patent Owner uses the same annotations (e.g., [1.0], [1.1], etc.) as in the petition for consistency. It is noted that Petitioner separates [1.2] and [1.3].

	requested bandwidth and of the bandwidths of the other connections in the given segment;
[1.4]	for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition;
[1.5]	selecting a preferred route having a minimum value of the cumulative additional bandwidth reservation out of the two or more candidate routes; and
[1.6]	establishing the new connection using the preferred route.

III. SUMMARY OF DZIONG (EX. 1005)

Dziong is directed at link-based recovery methods for mesh networks. EX. 1005 at Abstract, [0004]. The networks disclosed in Dziong are fundamentally different from networks in the '088 Patent, as further discussed below.

Dziong explains that path-based recovery methods recover from failure of one of the links in a path by rerouting traffic for the entire path along a recovery path with only the same source and destination nodes. EX. 1005 at [0007]. Dziong distinguishes path-based recovery methods by explaining that link-based recovery

methods recover from failure of one of the links in a path using a link-detour path, instead of rerouting the entire path. EX. 1005 at [0008].

Dziong teaches calculating a link-detour path in two ways.

First, “assuming that the primary path was already calculated, a ***shortest-path algorithm*** can be used for calculation of a minimum-cost link-detour path after excluding the protected link [in the primary path] from the network topology.” EX. 1005 at [0103]. As discussed above in the summary of the ’088 Patent, this approach is expressly distinguished in the ’088 Patent.

Second, “a link's detour path is calculated using link-state and link-cost functions that take into account link-sharing capabilities.” EX. 1005 at [0106]. “[T]he link-cost function can take into account several metrics including: administrative weight (which can be considered as a link bandwidth unit cost), available bandwidth, and delay.” EX. 1005 at [0111]. Similar to the Matsunaga reference distinguished during prosecution of the ’088 Patent, Dziong’s calculation depends on various factors other than bandwidth and is therefore contrary to the inventions of the ’088 Patent. EX. 1002 at 247; Petition at 11.

IV. SUMMARY OF SATHYANATH (EX. 1006)

Sathyanath is directed at restoration paths for mesh networks. EX. 1006 at Abstract. Like Dziong, the networks in Sathyanath are fundamentally different from the networks in the ’088 Patent, as further discussed below.

Sathyanath teaches calculating the path cost for a plurality of candidate restoration paths. EX. 1006 at [0014]. Sathyanath teaches the restoration path should be disjoint from the primary path. EX. 1006 at [0201]. However, Sathyanath acknowledges that a link in the restoration path may already be providing protection for a number of other links in other primary paths in the network. *E.g.*, EX. 1006 at [0202].

Sathyanath's cost calculation only considers the actual reserved bandwidth to protect against failure in one of the other primary paths. Sathyanath's calculation does not consider the allocated bandwidth. A person of ordinary skill in the art ("POSA")³ would have understood that if the link in the restoration path is using bandwidth for another primary path (either as a primary link or as an active protection link), then the throughput on the link would be low.

V. GROUND 1: DZIONG + SATHYANATH

Petitioner's first Ground, which is the only ground that challenges the independent claims of the '088 Patent, is based on the combination of Dziong and Sathyanath. The combination of Dziong and Sathyanath, however, fails to render obvious challenged claims 1-4, 6, 8-11, 13, and 15-20 at least because Petitioner fails

³ Petitioner's definition of a POSA is acceptable for this discussion, although the Patent Owner reserves the right to offer a different POSA in the future.

to establish a motivation to combine Dziong and Sathyanath, and the combination of Dziong and Sathyanath fails to disclose terms:

[1.1] “identifying two or more candidate routes for a new connection having a requested bandwidth to be established through the network”;

[1.2]-[1.3] “providing a sharing definition specifying one or more other connections, which have respective bandwidths and which are permitted to share a bandwidth allocation with the new connection, such that a total bandwidth allocated” (allocated bandwidth not Dziong/Sathyanath’s reserved bandwidth);

[1.4] “for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition.” (allocated bandwidth not Dziong/Sathyanath’s reserved bandwidth);

[1.6] “establishing the new connection using the preferred route.”
(Dziong/Sathyanath fail to establish the new connection using the preferred route).

A. PETITIONER FAILS TO ESTABLISH MOTIVATION TO COMBINE DZIONG AND SATHYANATH

1. *Petitioner fails to meet its burden in the petition.*

Petitioner argues that “[i]t would have been obvious to a POSITA considering Dziong to also refer to and consider Sathyanath because Dziong expressly directs and encourages this.” Petition at 22. Petitioner relies on (1) the identification and incorporation by reference of the application that published as Sathyanath in the cross-reference section of Dziong (EX. 1005 at [0001]); (2) the generic statement that separate or alternative embodiments are not “mutually exclusive” (EX. 1005 at [0027]); and (3) the generic statement that “various modifications” may be apparent to a POSITA (EX. 1005 at [00196]). Petition at 22-23.

Petitioner fails to meet its burden. There must be a clear and “satisfactory explanation” for the motivation that includes an express and “rational connection” with the evidence presented. *See, e.g., In re NuVasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016). Dziong is directed at link-detour paths, while Sathyanath is directed at recovery paths expressly distinguished by Dziong. For example, Dziong specifically notes that path-based recovery can achieve the same outcomes as link-based recovery “though much less efficiently.” Ex. 1005 at [0070]. A POSA working on the problem of protection in link-based shared systems would be aware of the inefficiencies of path-based recovery, and would be unlikely to consider references, like Sathyanath, in resolving those issues.

Petitioner fails to identify specific teachings in Sathyanath that a POSA would have been motivated to implement in Dziong with a reasonable expectation of success. Petition at 22-23. “[A] clear, evidence supported account of the contemplated workings of the combination is a prerequisite” to concluding “that a relevant skilled artisan would have been motivated to make the combination and reasonably expect success in doing so.” *Personal Web Techs., LLC v. Apple*, 848 F.3d 987, 994 (Fed. Cir. 2017). Petitioner simply states that “it would have been obvious to a POSITA to combine various features of different examples in Dziong and Saythanath.” Petition at 22-23. Petitioner does not explain how the features would have been combined or why there would have been a reasonable expectation of success in doing so. Accordingly, Petitioner’s motivation to combine Dziong and Sathyanath fails.

B. PETITIONER FAILS TO ESTABLISH THAT EACH CLAIM AS A WHOLE WOULD HAVE BEEN OBVIOUS TO A POSA

A claim is only unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007).

As discussed herein, there are many differences between the claimed subject matter and the prior art. Petitioner fails to establish that each claim, as a whole, would have been obvious to a POSA.

1. Considering the differences between claims limitation [1.1] and the prior art, Petitioner fails to establish that claim 1 as a whole would have been obvious

Claim limitation [1.1] recites “identifying two or more candidate routes for a new connection having a requested bandwidth to be established through the network.” Similar language is recited in claim limitations [8.3], [15.5], and [17.2]. Petitioner’s analysis for each of the independent claims limitations is the same. See Petition at 63, 69, and 71. For at least the reasons discussed below, Petitioner fails to meet its burden regarding the independent claims of the ’088 Patent.

a. Petitioner’s reliance on Dziong is misplaced.

In support of its arguments that Dziong discloses this limitation, Petitioner points to Figures 6(a) and 6(b) and asserts that they disclose “identifying two or more candidate routes for a new connection having a requested bandwidth to be established through the network.” Petition at 29. In support of this argument, Petitioner points to the disclosure in Dziong that “SLRG 4 corresponds to one or more demands totaling 15 units of bandwidth between nodes A and D” as well as a description of ““providing sufficient recovery bandwidth . . . to accommodate a

failure’ on a primary path.” *Id.* Petitioner argues that “[s]ince the reserved bandwidth on the A-D primary path is 15 units, it would have been obvious for the candidate recovery paths A-B-C-D and A-C-D to have the same “requested bandwidth” (15 units) to ensure that the primary path’s traffic could be accommodated on the recovery path if needed.” *Id.*

Petitioner, however, mischaracterizes FIGS. 6(a) and 6(b).

First, there is nothing in Dziong to suggest 15 units of reserved bandwidth on link A-D. There needs to be a minimum of 15 units of bandwidth reserved **on link A-B** to protect the 15 units of demand on SLRG 4 (link A-D). EX. 1005 at [0089].

Second, the amount of reserved bandwidth on link A-B is 48 units. EX. 1005 at [0090]. Dziong makes clear that link A-B shares this reserved bandwidth among disjoint SLRGs 3, 4, and 5. EX. 1005 at [0090]. In Petitioner’s hypothetical of failure on link A-D, Petitioner fails to address the amount of allocated bandwidth on A-B-C-D or A-C-D. Petitioner also fails to address sharing allocated bandwidth on A-B-C-D or A-C-D with one or more existing connections.

Third, link A-B is not part of the link-detour path for the **other 24 units of demand** on SLRG 4 (link A-D). EX. 1005 at [0089]. Petitioner fails to address the amount of bandwidth required to ensure that the hypothetical “primary path’s traffic” on link A-D could be accommodated by the hypothetical candidate routes.

Fourth, it was made clear during prosecution that in the context of Dziong, “available bandwidth” means “unused bandwidth.” EX. 2001 at 43⁴ (“As used in the present application, the term “total available bandwidth” on a link refers to a measure of the total amount of currently unused bandwidth on the link. The bandwidth is “available” because it is unused at present.”). This understanding is consistent with FIG. 6(b) which discloses, for link A-B, a link capacity of 96 units which equals 48 reserved units + 36 available/unused units + **12 used units**. Petitioner does not address the allocated/used bandwidth on link A-B.

As discussed, *infra*, Petitioner fails to establish that Dziong considers the amount of allocated/used units in its link-cost calculation. Petitioner relies only on the amount of available/unused bandwidth in a link-detour path. Petition at 29-30. This is opposite to the teachings of the '088 Patent. As such, Petitioner fails to establish that Dziong discloses this limitation.

b. Petitioner’s reliance on Sathyanath is misplaced.

In support of its argument for this limitation, Petitioner also points to Sathyanath as “provid[ing] further examples of ‘*identifying*’ potential recovery

⁴ *In re application of Zbigniew Dziong, et al*, “Amendment Under 37 CFR1.111”, August 12, 2008, page 8.

paths. Petition at 31. In support of its argument, Petitioner discusses FIG. 17 of Sathyanath. FIG. 17 of Sathyanath shows primary path L1-L2. Petitioner argues that “[s]ince the primary path has bandwidth of four units, it would have been obvious to a POSITA that the corresponding recovery path would also require four units of bandwidth (“having a requested bandwidth”).” Petition at 32.

Petitioner relies on paragraphs [0215] and [0222] with respect to FIG. 17 of Sathyanath for support. Petition at 31-32. However, FIG. 17 only shows L1-L6 and notes that L8, L9, and L10 are outside of the partial network 1700 shown in FIG. 17. EX. 1006 at [0220]. Sathyanath discloses calculations for determining the amount of additional **reserved** bandwidth required on a restoration path. For example, when evaluating path L3-L4, “it is found that link L1 is already shared and that, if node R1 were to choose this restoration path [L3-L4], then the reservation bandwidth on L3 would need to be increased.” EX. 1006 at [0221]. Thus, Sathyanath does not consider a candidate route for a new connection (*e.g.*, L3-L4) having a requested bandwidth that is the same bandwidth as L1-L2 as alleged by Petitioner. Instead, Sathyanath considers L3-L4 having a reserved bandwidth that is the maximum bandwidth required for L1, L8, and L10.⁵

⁵ Similarly, for L5-L6, it depends on the entries in the TE/Share database. EX. 1006 at [0223].

The claims of the '088 Patent distinguish “a requested bandwidth” [1.1] and “a maximum of the requested bandwidth and of the bandwidths of the other connections in a given segment” [1.3]. Petitioner fails to establish that Sathyanath renders obvious claim limitation [1.1]. Further, Petitioner fails to establish why a POSITA would have looked to Sathyanath for this limitation and/or that a POSITA would have had a reasonable expectation of success in implementing Sathyanath’s purported “identifying” in Dziong.

c. Claim limitation [1.1] appears in the other claims.

Claim limitation [1.1] is present in each of independent claims 1, 8, 15, and 17. In independent claims 8, 15, and 17, the present participle of the verb “identifying” is converted to the infinitive form “to identify”. Otherwise, limitation [1.1] is identical in each of independent claims 1, 8, 15, and 17, and the Petition’s obviousness assertion fails for each of claims 1, 8, 15, and 17 for the reasons described above. Dependent claims 2-4, 6-7, 9-11, 13-14, 16 and 18-20 are not obvious as being dependent upon a claim which is not obvious.

2. Considering the differences between claim limitations [1.2]-[1.3] and the prior art, Petitioner fails to establish that claim 1 as a whole would have been obvious

Claim limitations [1.2]-[1.3] recite “providing a *sharing definition specifying one or more other connections*, which have respective bandwidths and which *are permitted to share a bandwidth allocation* with the new connection, such that *a total bandwidth allocated* jointly to the new connection and to the other connections in any given segment is equal to a maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment” (emphasis added). Similar language is recited in claim limitations [8.4]-[8.5], [15.6]-[15.7], [17.3]-[17.4]. Petitioner’s analysis of the independent claim limitations is similar.⁶ Petition at 63-64, 69, 72.

For both references, Petitioner focuses on reserved bandwidth, not allocated bandwidth. Petitioner fails to consider allocated bandwidth shared between new and existing connections as claimed in the ’088 Patent.

a. Petitioner’s reliance on Dziong is misplaced.

⁶ Petitioner acknowledges: “Where limitation [1.2] recites ‘providing a sharing definition,’ this limitation [[8.4]] recites ‘to accept a sharing definition.’” Petition at 63.

Dziong does not disclose or render obvious a sharing definition as recited in the claims of the '088 Patent.

First, as discussed below with respect to [1.6], Dziong teaches away from establishing a connection for the link-detour path before failure. Therefore, even if there were multiple possible link-detour paths, there are no other connections.

For example, Dziong discloses that “[t]his information [including how much bandwidth can be-shared at each link] is obtained by advertising, across the network, the amount of bandwidth reserved for recovery on each link and by bookkeeping, in each node, information about all recovery paths **that would be activated when a protected link fails.**” EX. 1005 at [0060]. Thus, Dziong does not disclose a sharing definition as claimed at least because Dziong does not disclose one or more other connections.

Second, Dziong makes clear that recovery is guaranteed “for a single failure” which shows that Dziong does not disclose a bandwidth allocation as claimed. Dziong merely discloses bandwidth reservation.

Petitioner alleges that “Dziong’s “actually reserved” bandwidth corresponds to the claimed “total bandwidth allocated.” Petition at 40 (citing EX. 1003 at ¶81). Petitioner relies only on the expert declaration, which argues that the actual reserved bandwidth “guarantee[s] the service’s recovery from any **single failure** along its

route.” EX. 1003 at ¶81 (citing EX. 1005 at [0052]). As explained below, the cited support is insufficient.

For example, with respect to FIG. 6(b), the reserved bandwidth on link A-B is 48 units. However, if SRLG 4 fails, the allocated bandwidth would be 15 units, not 48 units. Thus, the reserved bandwidth is not the same as the allocated bandwidth. Petitioner fails to establish that the allocated bandwidth is “equal to a maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment.”

Third, Petitioner mischaracterizes FIG. 6(b) of Dziong. Petition at 33-34. There are not three protection paths shown in FIG. 6(b). Instead, FIG. 6(b) shows link A-B has a reserved bandwidth of **48 units** in order to protect against SRLG 3 failure (48 units), SRLG 4 failure (15 units), or SRLG 5 failure (36 units). Link A-B is the protection path.

Additionally, as discussed above, FIG. 6(b) shows that link A-B has a link capacity of 96 units which equals 48 reserved units + 36 available/unused units + 12 used units. Thus, the bandwidth allocated on link A-B is 12 units. In the event of SRLG 4 failure, the allocated bandwidth would be increased by 3 units to be **15 units**. Petitioner does not address the allocated bandwidth.

Fourth, Petitioner does not analyze “a total bandwidth allocated jointly to the new connection and to the other connections” because Petitioner only analyzes the reserved bandwidth, not the allocated bandwidth.

b. Petitioner’s reliance on Sathyanath is misplaced.

Sathyanath does not disclose or render obvious a sharing definition as recited in the claims of the ‘088 Patent. At most, Sathyanath discloses a TE/Share database that specifies connections that share reserved bandwidth. “Sharing” “refers to the facility to share reserved protection capacity on a link between more than one LSP.” EX. 1006 at [0062]. Sathyanath does not disclose sharing allocated bandwidth. Sathyanath makes clear that bandwidth is only allocated in response to a failure.

Sathyanath expressly distinguishes reservation of bandwidth versus allocation of bandwidth. EX. 1006 at [0059]-[0060]. Sathyanath teaches that “in preferred embodiments of this invention, the protection bandwidth is **not allocated** until after the detection of a failure. ... Further, **because the protection bandwidth is only reserved and not allocated, “sharing” can be supported.**” EX. 1006 at [0060]; see also EX. 1006 at [0082](“The bandwidth to support the service is typically reserved (but not allocated) on the protection path at the time of the primary service setup.”); see also EX. 1006 at [0177](“ in embodiments of the present invention, bandwidth is **not allocated** on the links of the protection path, but instead is just reserved on the

links and allocated only in the event of a failure along one or more of the primary paths that are protected by the links.”).

Sathyanath does not disclose or render obvious “a total bandwidth allocated that is “equal to a maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment.” Again, Petitioner relies on reserved bandwidth, not allocated bandwidth. In Sathyanath, bandwidth is only allocated upon failure. When that bandwidth is allocated, the bandwidth is not “equal to a maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment.”

Sathyanath describes, with respect to FIG. 17, the TE/Share DB which includes entries for each link in the restoration path (*e.g.*, L3-L4). The TE/Share DB shows: Entry for L3 in TE/Share/DB → 4: L1, L6, 5::L10. EX. 1006 at [0216]. Sathyanath explains that the **actual reserved** bandwidth on link L3 would be 5 units. EX. 1006 at [0220].

For link L3, the maximum of the requested bandwidth and of the bandwidths of the other connections in the given segment would be **5 units**. However, this only refers to the actual reserved bandwidth, not the total bandwidth allocated upon failure.

Sathyanath explains that link L1 is already shared and so the reserved bandwidth on link L3 would need to be increased by 3 additional units. EX. 1006 at [0221].

In the event of failure on link L1, the bandwidth allocated to link L3 would be **4 units**. This amount of allocated bandwidth is not equal to the maximum of the requested bandwidth and of the bandwidths of the other connections (L1, L6, L10) in the given segment (L3).

Notably, Petitioner's analysis fails to consider link L3. Petition at 42-43. Since the [1.2]-[1.3] terms are not found in the combination of Dziong with Sathyanath, obviousness cannot be found, and the Petition must be denied.

c. Claim limitations [1.2]-[1.3] appear in the other claims.

Claim limitations [1.2]-[1.3] are present in each of independent claims 1, 8, 15, and 17. In independent claims 8, 15, and 17, the present participle of the verb "providing" is changed to the infinitive form "to accept" of a similar word. Otherwise, limitations [1.2]-[1.3] are identical in each of independent claims 1, 8, 15, and 17, and the Petition's obviousness assertion fails for each of claims 1, 8, 15, and 17 for the reasons described above. Dependent claims 2-4, 6-7, 9-11, 13-14, 16 and 18-20 are not obvious as being dependent upon a claim which is not obvious.

3. Considering the differences between claim limitation [1.4] and the prior art, Petitioner fails to establish that claim 1 as a whole would have been obvious

Claim limitation [1.4] recites “for each of the two or more candidate routes, calculating a cumulative additional bandwidth reservation to be allocated to the new connection in the segments along the candidate route, responsively to the sharing definition.” Similar language is recited in claim limitations [8.6], [15.8], and [17.5]. Petitioner’s analysis for each of the independent claim limitations is the same. See Petition at 64, 69, and 72. For at least the reasons discussed below, Petitioner fails to meet its burden regarding the independent claims of the ‘088 Patent.

Petitioner argues that Dziong discloses a link-cost function optionally using administrative weights. Petition at 45. Petitioner argues that it would have been obvious for a POSA to exclude the use of administrative weights in the CPP function in order to map Dziong to the claim limitation [1.4]. But Petitioner identifies no reason a POSA would have been motivated to exclude the use of administrative weights in the CPP function. Moreover, Petitioner misplaces reliance on Dziong.

First, Dziong acknowledges that each different bandwidth in the SONET hierarchy has a different administrative weight. EX. 1005 at [0124]. For at least this reason, a POSA would not have been motivated to exclude the use of administrative weights in the CPP function. The CPP function is a static link-cost function based on administrative weights. EX. 1005 at [0112].

Second, Dziong distinguishes the use of a static link-cost function based on administrative weight versus a dynamic link-cost function based on available bandwidth. EX. 1005 at [0112]. Petitioner relies on the static link-cost function shown in FIG. 9. Petition at 45. However, a POSA interested in calculating link cost based on available bandwidth, as argued by Petitioner, would not have modified the CPP function of FIG. 9 and instead, would have used a dynamic link-cost function. Petitioner fails to address any dynamic link-cost function.

Third, Petitioner fails to establish that Dziong considers the amount of allocated/used units in its link-cost calculation. Petitioner argues for a link-cost function based on available bandwidth. However, as explained earlier, in the context of Dziong, available bandwidth means unused bandwidth. This is opposite to the teachings of the '088 Patent.

Petitioner also relies on Sathyanath in its analysis of claim limitation [1.4]. Petition at 46-48. However, like Dziong, Sathyanath is directed at recovery paths and does not consider the amount of allocated/used units in a particular link. As discussed above, Sathyanath is concerned only with reserved bandwidth, not

allocated bandwidth⁷. As a result, the [1.4] term is not found in the combination of Dziong with Sathyanath, and obviousness of the claims 1 cannot be found.

Claim limitation [1.4] is present in each of independent claims 1, 8, 15, and 17. In independent claims 8, 15, and 17, the present participle of the verb “calculating” is converted to the infinitive form “to calculate”, and the order of the clauses is changed. Otherwise, limitation [1.4] is identical in each of independent claims 1, 8, 15, and 17, and the Petition’s obviousness assertion fails for each of claims 1, 8, 15, and 17 for the reasons described above. Dependent claims 2-4, 6-7, 9-11, 13-14, 16 and 18-20 are not obvious as being dependent upon a claim which is not obvious.

4. Considering the differences between claim limitation [1.6] and the prior art, Petitioner fails to establish that claim 1 as a whole would have been obvious

Claim limitation [1.6] recites “establishing the new connection using the preferred route.” Similar language is recited in claim limitations [8.8], [15.10], and [17.7]. Petitioner’s analysis for each of the independent claim limitations is the same.

⁷ Sathyanath distinguishes between reserved and allocated bandwidth at Sathyanath [0059]-[0060]: “the bandwidth associated with the protection path (LSP- 7) for service path LSP-2 is not allocated in advance of a failure, but is, instead, only reserved”

Petition at 64, 69, and 72. For at least the reasons discussed below, Petitioner fails to meet its burden regarding the independent claims of the '088 Patent.

Dziong teaches identifying possible link detour paths in the event of link failure. However, Dziong does not teach **establishing** a connection on the link-detour path as required by claim limitation [1.6].

In support of its argument, Petitioner relies on paragraph 58 of Dziong and excerpts just a portion of it in its Petition. Petition at 50. This paragraph, however, if read in full, actually teaches away from the claim limitation. In full, paragraph 58 of Dziong discloses:

“A source node may assume that bandwidth for a new connection is available, and then start to signal to establish the primary path and link-detour paths for the connection. However, during the process of establishing those paths, **it might be found that one of the links along the paths cannot support the required bandwidths**. In this case, the paths need to be ripped up and the signaling “cranked back” to the originating source node, which needs to try an alternative path. **Crankbacks can be very undesirable because of the delay associated with them.**”

EX. 1005 at [0058] (emphasis added).

Thus, Dziong teaches away from using a signal to establish the primary path and link-detour paths at the same time. Petitioner’s citation to the reservation message is only for reserving bandwidth, but not for establishing a connection. Instead, Dziong discloses establishing a connection in the link-detour path in response to link failure. “When the link fails, the recovery message... activates

connections” in the link-detour path. EX. 1005 at [0117]; *see also* EX. 1005 at [0060].

Petitioner also relies on Sathyanath which refers to pre-established connections. Petition at 50. However, a POSA would not be motivated to use Sathyanath’s teachings regarding a pre-established connection as acknowledged by Dziong.

As discussed above, Sathyanath notes that a link in the restoration path may already be providing protection for a number of other links in other primary paths in the network. *E.g.*, EX. 1006 at [0202].

As Dziong warns, the entire reservation period must be considered. In the future, the link-detour path may be the “sole occupant of the reserved bandwidth” and then “incur[] a cost for reserving additional restoration bandwidth.” EX. 1005 at [0113]. As such, based on the prior art disclosures, a POSA would have been motivated to wait for the bandwidth information ***at the time of link failure*** in order to evaluate possible link-detour paths. A POSA would not have been motivated to use a pre-established link-detour path as disclosed in Sathyanath in order to arrive at the claim limitation [1.6] at least because that path may not have “a minimum value of the cumulative additional bandwidth reservation” at the time of link failure.

Since neither Dziong nor Sathyanath teach the establishment of a new connection using the preferred route as claimed, obviousness cannot be found, and the Petition must be denied.

Claim limitation [1.6] is present in each of independent claims 1, 8, 15, and 17. In independent claims 8, 15, and 17, the present participle of the verb “establishing” is converted to the infinitive form “to establish”. Otherwise, limitation [1.6] is identical in each of independent claims 1, 8, 15, and 17, and the Petition’s obviousness assertion fails for each of claims 1, 8, 15, and 17 for the reasons described above. Dependent claims 2-4, 6-7, 9-11, 13-14, 16 and 18-20 are not obvious as being dependent upon a claim which is not obvious.

VI. GROUND 2: DZIONG + SATHYANATH + JENSEN

Ground 2 only challenges certain dependent claims. For at least the reasons discussed above with respect to Ground 1, Ground 2 fails as well.

VII. CONCLUSION

The Petition must fail when the totality of the evidence is compared to the claims as a whole. Petitioner has failed to do that here. First, Petitioner has failed to show that a POSA would have been motivated to combine Dziong and Sathyanath. And even if they were motivated to combine the references, the combination of

Dziong and Sathyanath fails to teach “identifying two or more candidate routes for a new connection having a requested bandwidth”, “providing a sharing definition specifying one or more other connections, which have respective bandwidths and which are permitted to share a bandwidth allocation with the new connection”, “such that a total bandwidth allocated jointly to the new connection”, “calculating a cumulative additional bandwidth reservation to be allocated to the new connection”, and “establishing the new connection using the preferred route”. Without any one of these elements, the obviousness assertion fails. For at least the reasons set forth herein, Patent Owner respectfully requests that institution be denied.

Respectfully submitted,

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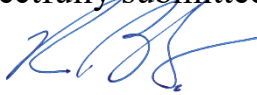
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CERTIFICATE OF COMPLIANCE

This Patent Owner Preliminary Response (“POPR”) consists of no more than 14,000 words, excluding table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The POPR complies with the type-volume as mandated in 37 C.F.R. § 42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare the paper (Microsoft Word).

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned hereby certifies the PATENT OWNER PRELIMINARY RESPONSE and all exhibits thereto were served on the undersigned date via email, as authorized by Petitioner, at the following email addresses:

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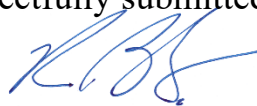
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