

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT TRIAL AND APPEAL BOARD

UNIFIED PATENTS, LLC

Petitioner,

v.

COMPETITIVE ACCESS SYSTEMS, INC.

Patent Owner.

Case No. IPR2023-00584

U.S. Patent No. 10,868,908

PATENT OWNER'S PRELIMINARY RESPONSE

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Exhibit No.	Description
Ex. 2001	Complaint, <i>Competitive Access Systems, Inc. v. Oracle Corp. and Oracle America, Inc.</i> , Case No. 2:22-cv-00287-JRG, filed July 27, 2022

Patent Owner, Competitive Access Systems, Inc., submits this Patent Owner Preliminary Response (“POPR”) pursuant to 37 C.F.R. 42.107(a) to the *Inter Partes* Review (“IPR”) petition (“Petition”) filed by Unified Patents for Claims 1-3, 5, 6, and 13-15 of U.S. Patent No. 10,868,908 (the “’908 Patent”).

I. INTRODUCTION

While living in a rural area, the inventor, Eric Delangis, was unable to obtain high speed internet. Ex. 2001, 8-9. At the same time, he recognized that many network connections of nearby devices were generally underused. *Id.* A percentage of the total bandwidth of those nearby connections was utilized at any given time, such that the remaining bandwidth was unused but also unavailable. *Id.*; *See* Ex. 1001, 11:42-53. Mr. Delangis sought a commercial product that could pool multiple internet connections to provide the increased bandwidth that he desired, but none was available. Ex. 2001, 8-9.

In response, Mr. Delangis invented a novel multipath connection that routes data over several connections using multiple neighboring “network-edge” devices and combines the data for the intended data-requesting device. *Id.*; Ex. 1001, 12:2-13:3. The multipath connection disclosed and claimed in the ’908 Patent provides an increased bandwidth available to the data-requesting device by combining the excess bandwidth available from the network-edge devices, and also allows

network-edge devices to be removed when their excess bandwidth becomes unavailable or added when their excess bandwidth becomes available. Ex. 1001, 11:25-56 and 13:13-14:9.

To coordinate the multipath connection, the data-requesting device sends messages to the server and/or network-edge devices with the multilink request and a destination URL or a multilink session identification and a destination URL. *Id.*, 12:2-14 and 46-60. In relying on a dynamically-changing network of network-edge devices, the destination URL is required to coordinate the multipath connection.

The Petition sets forth four grounds for challenging various claims of the '908 Patent: Ground 1 asserts that Claims 1, 2, 5, and 6 are obvious over Maurya and Low; Ground 2 asserts that Claims 1, 2, 5, 6, and 13-15 are obvious over Maurya, Low, and Krishnan; Ground 3 asserts that Claims 1-2, 5, and 6 are obvious over Maurya, Low, and Delangis-156; and Ground 4 asserts that Claims 1-3, 5, 6, and 13-15 are obvious over Maurya, Low, Krishnan, and Delangis-156. Petition, 12-72. Each of these grounds fails for multiple reasons.

Grounds 1 and 2 fail due to their reliance on Maurya for its alleged disclosure of a multilink session identification. *See* Petition, 28-32, 53, 57-58. The Petition argues that Maurya's endpoint discriminator value, which identifies the endpoint device from which the data was sent, corresponds to the claimed multilink session

identification. *Id.*, 31-32. In contrast, Maurya very clearly discloses that this endpoint discriminator value is assigned to the data source device. *See e.g.*, Ex. 1004, 5:28-58. Petitioner's argument that endpoint discriminator value also functions to identify a multi-link session is a mischaracterization of the prior art. In contrast to the claimed multilink session identification, a single endpoint discriminator value can be associated with many different multi-link channels. *Id.* This is fundamentally different from the claims of the '908 Patent.

Further, each ground relies on Low for its alleged disclosure of a URL identifying a unique resource, and each ground fails for this reason alone. *See* Petition, 22-32, 52-54, 57-58, and 70-71. To start, the phone page URL of Low is not a destination URL that is included in a message coordinating a multipath connection as recited in the challenged claims. In addition, the Petitioner fails to identify any motivation in any of the cited references to cause the skilled artisan to modify the packet of Maurya to include the phone page URL of Low to reach the claimed inventions.

Not only would the POSITA have no reason to modify the packets of Maurya to include a phone page URL, but the Petitioner specifically acknowledges that in the hypothetical combination of Maurya and Low, any URL would be provided on a higher level of the industry-standard communication levels (e.g., layer 3 or above)

while the packets of Maurya are on a lower level (e.g., layer 2), thereby rendering the combination of Maurya and Low argued by Petitioner incompatible on its face. Petition, 26-27; Ex. 1003, ¶¶ 42, 48, 51-52. Additionally, Petitioner's proposed combination would change the principle of operation of Maurya by limiting the data that could be sent over the multi-link sessions from any data coming from a connected endpoint device having the necessary endpoint discriminator value, to only the data from a connected endpoint device having the necessary endpoint discriminator value that is also associated with the destination URL. This combination, which results in changing the principle of operation of Maurya, cannot support *prima facie* obviousness.

In Grounds 3 and 4, Petitioner asserts that Delangis-156, an ancestor to the '908 Patent, constitutes prior art because the specification of an intervening continuation application allegedly does not provide written description support for the claims of the '908 Patent, thereby breaking the priority claim. Petitioner contends that there is no written description support for specific claim elements, but Petitioner is simply incorrect. Petitioner points to select portions of the intervening continuation application as failing to provide written description support for certain claim elements while ignoring both more relevant portions of the specification, as well as the prosecution history in which written description rejections of the specific

claim elements were addressed and overcome. Petitioner also failed to look to the four corners of the specification from the perspective of a person of ordinary skill in the art as required for the analysis.

With Delangis-156 removed from the collection of prior art used as the basis for Grounds 3 and 4, the prior art used as the basis for Petitioner's arguments in Grounds 3 and 4 is identical to prior art used as the basis for Petitioner's arguments of Grounds 1 and 2, respectively. Therefore, Grounds 3 and 4 fail for the same reasons as Grounds 1 and 2, respectively, noted above.

It is axiomatic that, if the prior art does not demonstrate that an independent claim is unpatentable, it cannot be used to demonstrate that any corresponding dependent claim is also unpatentable. *See Hartness Int'l v. Simplimatic Eng'g Co.*, 819 F.2d 1100, 1108 (Fed. Cir. 1987). The Petition therefore fails to demonstrate a reasonable likelihood of success that the challenged claims are obvious over any of the identified prior art combinations. Because all of the grounds fail to render obvious the independent claims, the entirety of the Petition should be rejected.

Patent Owner respectfully requests that the Board find the challenged claims patentable over Petitioner's challenges and deny institution. 35 U.S.C. §314(a).

II. SUMMARY OF THE '908 PATENT

A. The Invention of the '908 Patent

The '908 Patent is directed to devices utilizing a multipath connection to increase bandwidth available to a receiving device by splitting data that is then routed over multiple device connections before being recombined for the receiving device. Ex. 1001, 10:58-14:53, Claims 1-17.

As described in the '908 Patent, the multipath connection implements broadband through a multilink PPP bundle 87 comprised of connections between an initiating device 85¹ and other neighboring network-edge devices 86. *Id.*, at 11:25-41. Each network-edge device 86 assesses its available bandwidth based on the respective device's currently available bandwidth and the current local demands for that bandwidth, and determines whether it can join the multilink PPP bundle 87. *Id.*, at 12:26-46. The initiating device 85 then sends the multilink initialization packet containing the URL of the destination as well as the multilink PPP session ID and any other pertinent information required for the remote RCG to join in the existing

¹ The '908 Patent refers to a residential communications gateway ("RCG") throughout the specification. For clarity, the term "RCG" is used interchangeably with "device" throughout this POPR.

multilink PPP bundle 87. *Id.*, at 12:51-57. In response, each network-edge device 86 sends a multilink PPP packet to the destination URL with the multilink PPP session ID and requests to be added to the multilink PPP bundle 87. *Id.*, at 12:60-63. When the network-edge devices 86 receive data packets destined for the multilink PPP bundle 87, they simply relate the data packets to the initiating device 85. *Id.*, at 12:66-13:3.

The innovative multipath connection unlocks higher network speeds, increased availability, and greater efficiency. The effective bandwidth between the sender and recipient of the data is improved by transmitting and receiving data over multiple communication channels and aggregating the transmitted data. *Id.*, at 11:42-56. In addition to increasing speeds, the multipath connection also enables data transfers over different connections when certain connections are unavailable, and utilizes bandwidth that otherwise is unused. *Id.*, at 12:1-14:9.

Both independent Claims 1 and 13 recite similar elements, as shown below. Claim 1 is directed to a client device that includes first and second network interfaces, each having a data transfer rate associated with a path from a server to the respective network interface. The client device also includes a processor configured to transmit first and second messages to the server through the different network interfaces, the first message including a multilink request and a destination

URL and the second message including a multilink session identification and the destination URL, and to receive data packets from the server through the different network interfaces.

Claim 1: A client device for multilink data packet communication with a server, the client device comprising:

- a first network interface having a first data transfer rate associated with a first path from the server to the first network interface of the client device;

- a second network interface having a second data transfer rate associated with a second path from the server to the second network interface of the client device; and

- at least one processor configured to:

- transmit a first message through the first network interface to the server, wherein the first message includes a multilink request a destination URL;

- transmit a second message through the second network interface to the server, wherein the second message includes a multilink session identification the destination URL; and

- receive data packets from the server through the first and second network interfaces of the client device during the multilink session wherein the first data transfer rate and the second data transfer rate provide an increased data transfer rate of the first path and the second path from the server to the client device.

Claim 13 is directed to a first device that includes a network interface and a processor. The processor is configured to transmit first and second messages to second and third devices, respectively, through the network interface, the first message including a multilink request and a destination URL and the second message including a multilink session identification and the destination URL, and to receive different data packets from the second device and the third device through the multilink session.

Claim 13: A first device comprising:

a network interface; and

at least one processor configured to:

transmit a first message through the network interface to a second device, wherein the first message includes a multilink request and a destination URL, the network interface to the second device having a data transfer rate associated therewith;

transmit a second message through the network interface to a third device, wherein the second message includes a multilink session identification that is unique to the multilink session and the destination URL, the network interface to the third device having a data transfer rate associated therewith; and

receive the different data packets through the at least one network interface from the second device and from the third device during the multilink session, wherein the data transfer rate associated with the network interface to the second device and

the network interface to the third device provide an increased data transfer rate for the first device.

B. Claim Construction

The Petition was filed after November 13, 2018, and, as such, the proper claim construction standard to be applied is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*), in accordance with its regulation, 37 C.F.R. § 42.100(b). *Apple Inc. v. Firstface Co.*, No. 2021-1001, 2021 WL 4156323, at *1 n.1 (Fed. Cir. Sept. 13, 2021).

Therefore, these claims should be “given their ordinary and customary meaning [and] that the ordinary and customary meaning of a claim term is the meaning that the term would have to a [POSITA] in question at the time of the invention, *i.e.*, as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1312-13.

Petitioner proposes the following construction of two limitations of Claim 1 with missing conjunctions: “the first message includes a multilink request [and] a destination URL; ... the second message includes a multilink session identification [and] the destination URL.” Petition, 9. Patent Owner does not dispute this construction for purposes of this POPR.

C. Level of Ordinary Skill in the Art

For purposes of this POPR only, Patent Owner does not dispute the proposal provided by Petitioner on who would qualify as a person of ordinary skill in the art (“POSITA”): “a person having, at least by October 14, 2002: (1) at least an undergraduate degree in electrical engineering or closely related field, or similar advanced [post]-graduate education in this area; and (2) 2 or more years of experience with communications systems, with more experience substituting for less education and vice versa.” Petition, 8-9. Patent Owner reserves the right to dispute this proposal in this IPR, in any related litigations, and in other proceedings involving the ’908 Patent or any related patents.

III. THE PETITION FAILS TO ESTABLISH A REASONABLE LIKELIHOOD THAT PETITIONER WILL PREVAIL ON ANY SINGLE CLAIM

A. The Legal Framework for Assessing Unpatentability

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. §§312(a)(3) (requiring *inter partes* review petitions to identify “with particularity...the evidence that supports the grounds for the challenge to each claim”)). The burden of persuasion in an IPR “never shifts to the patentee.” *Dynamic*

Drinkware, LLC v. Nat'l Graphics, Inc., 800 F.3d 1375, 1378 (Fed. Cir. 2015).

Moreover, a petitioner should not “place the burden on [the Board] to sift through information presented by the Petitioners, determine where each element [of the challenged claims] is found in [the cited references], and identify any differences between the claimed subject matter and the teachings of [the cited references.]” *Google Inc. v. Everymd.com LLC*, Case No. IPR2014-00347, Paper 9 at 25 (PTAB May 22, 2014).

A claim is unpatentable under §103(a) 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 said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective indicia of non-obviousness (i.e., secondary considerations). *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). “To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of

obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

Further, a petition seeking to establish obviousness based on more than one reference, as is the case here, “must articulate sufficient reasoning with rationale underpinning to combine the teachings.” *Wilson Elec., LLC v. Cellphone-Mate, Inc.*, Case No. IPR2018-01778, Paper 10 at 15 (PTAB Apr. 23, 2019) (citing *KSR Int’l*, 550 U.S. at 418). Still further, a proposed modification of a prior art reference applied in an obviousness rejection cannot render the prior art reference unsatisfactory for its intended purpose. M.P.E.P. § 2143.01 (citing *In re Ratti*, 270 F.2d 810, 813 (CCPA 1959) (“If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.”)).

B. Ground 1: The Petition Does Not Establish that Claims 1, 2, 5, and 6 Would Have Been Obvious over Maurya and Low

Ground 1 alleges that Claims 1, 2, 5, and 6 are obvious over the combination of U.S. Patent No. 6,160,808 to Maurya (“Maurya”) and International Publication No. WO 97/22212 to Low (“Low”). Yet Ground 1 fails to demonstrate that Maurya and Low disclose all limitations of independent Claim 1. The Petition also fails to adequately explain why a POSITA would have, and could have, selected the

particular components from Maurya and Low and combined them in the manner proposed to render the challenged claims obvious.

1. Asserted References

a. Maurya

Maurya is directed to a multi-link protocol that enables two peers to transmit data over multi-link transmission channels. Ex. 1004, 5:7-6:12. Under conventional multi-link point-to-point (PPP) protocols, data is encapsulated into packets and transmitted through a network of single-link transmission channels between two peers. Packets are assembled in order of receipt at the receiving peer, which works easily when using single-link transmission channels. Such conventional ordering is problematic when each transmission channel individually includes multiple links. Ex. 1004, 3:66-4:35.

Conventional multi-link PPP packets include information that enables the multi-path connection, including a header portion identifying a multi-path connection, the encapsulated segmented data, and a sequence number. Ex. 1004, 8:25-9:13, Figs. 2 and 3. The sequence number increases by one with each successive packet and is used by the receiving peer to reassemble the segments into the proper order to reconstruct the data. *Id.*, at 3:28-35. When conventional single-link transmission channels are used between the peers, the sending peer distributes

packets in a round-robin basis among the several links, and the receiving peer extracts the segments from the received packets for reassembling into the PPP frame based on the sequential sequence numbering. *Id.*, at 3:28-35, 5:59-6:05.

Maurya is directed to a multi-path protocol 600 that enables a multi-path connection over multi-link transmission channels 630_n , such as the example embodiment illustrated in Fig. 6A below. *Id.*, at 11:59-63, Fig. 6A. When multi-link transmission channels 630_n are used between the peers such as a PC client computer 610 and a server computer 665, the sending peer, e.g. PC client 610, sends streams of packets over interfaces 615 to a plurality of ISDN terminal adapters 620_n . Ex. 1004, 11:38-45 and Fig. 6A. The data packets are then sent over each channel 630_n to the respective ISDN terminal adapters 661_n , and then forwarded to the receiving peer, e.g. the server computer 665. *Id.*, at 11:40-12:10. Because each channel 630_n includes pairs of links 632, 634, conventional sequence numbering in standard packets sent over these links 632, 634 would result in gaps between packets sent to the receiving peer 665, which would be unable to reassemble the received packets. *Id.*, at 12:36-65.

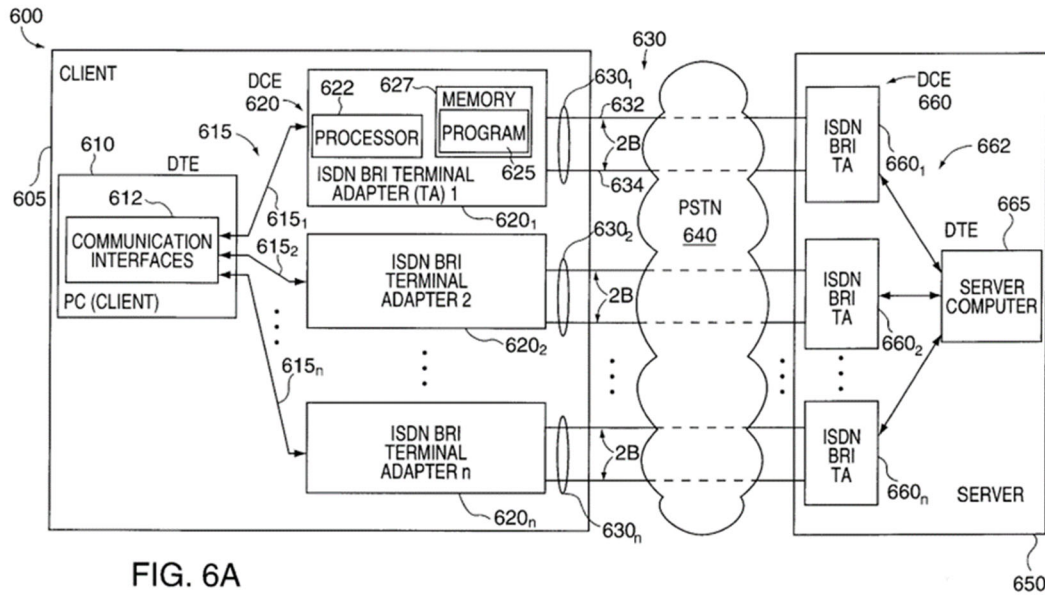


FIG. 6A

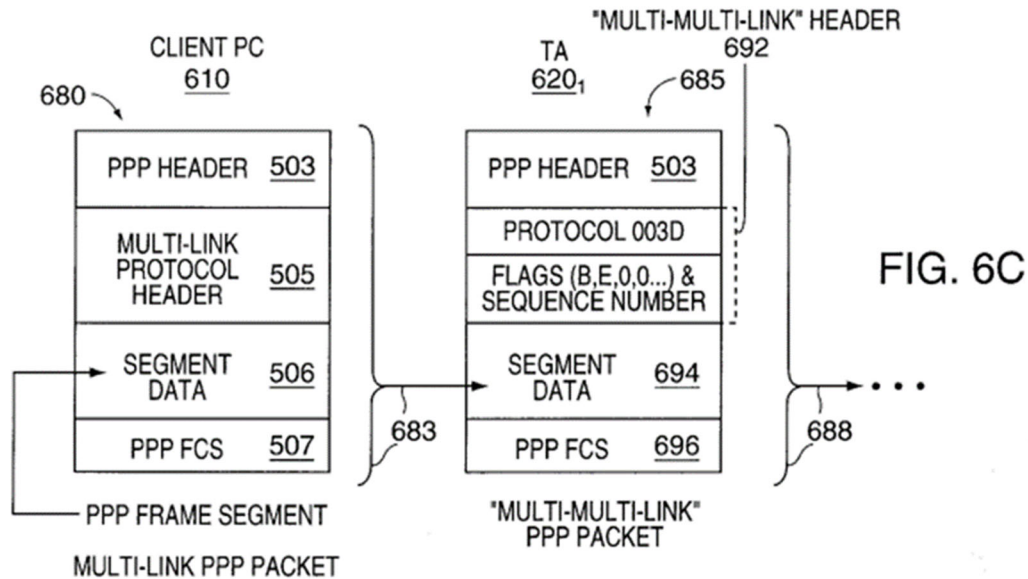
Id., Fig. 6A.

The multi-link protocol of Maurya packetizes each individually-transmitted packet as the segmented data within a second layer of packetized data in the multi-link PPP stream, creating a “multi-multi link packet.” *Id.*, at 15:22-56 and Fig. 6C. Once the multi-multi link packets are received at the receiving terminal adapter 660_n, the receiving terminal adapter 660_n orders the packets based on the sequence number in its multi-multi link header, then strips each multi-multi link packet of its multi-multi link header, and finally transmits the packets in their proper order to the server computer 665. *Id.*, at 17:9-19.

Further, Maurya discloses the use of an endpoint discriminator value unique to the originating device that is sent to each sending terminal adapter 620_n, which in

turn sets the value of its own endpoint discriminator to match that of the sending peer 610. *Id.*, at 9:35-49 and 13:61-14:21. While each sending terminal adapter 620_n negotiates with a corresponding receiving terminal adaptor 660_n, each terminal adaptor 620_n sends the same endpoint discriminator value of the sending peer 610 to its receiving terminal adaptor 660_n.

Fig. 6C reproduced below illustrates the process of packetizing a data packet 680 into a multi-multi link data packet 685. Each packet 680 includes a PPP header 503 and a multi-link protocol header 505, which provide information through various fields. *Id.*, 15:22-31. For example, a value of one in the type field indicates that the packet is a Link Control Protocol (LCP) Configure Request packet, sent by a PPP peer when that peer desires to change a configuration parameter associated with the link. *Id.*, at 8:30-33. A value of 17, 18, or 19 in the type field indicates a multi-link maximum receive reconstructed unit request, a multi-link short sequence number header request, and a “multi-link endpoint discriminator” option, respectively. *Id.*, at 8:67-13:9.



Id., Fig. 6C.

b. Low

Low is directed to a switched telecommunication system that uses service resource items (URLs) to set up a network. *See, e.g.*, Ex. 1005, 1:7-9 and 2:2-16. Generally, the system of Low enables a user to access setup control logic for a channel through a public switched telephone network (PSTN). Ex. 1005, 16:12-29.

Fig. 13, reproduced below, demonstrates this functionality with respect to a “personal number” service in which a first user can setup a single, unique, unchanging personal phone number (a “Webtel” number) that can be used by others to reach the first user by phone, even when the first user changes their “real phone number” (a B-telNb). *Id.*, at 35:9-22. In this example, the system allots the first user a unique personal number that is associated with a dedicated “phone page,” which

associates the Webtel number with the first user's current real telephone number. *Id.*, at 35:19-22. The phone page is located at a URL, which, when accessed, returns the current real phone number. *Id.*, at 35:18-19. Accordingly, when another user calls the first user's Webtel number, the system accesses the phone page associated with the Webtel number, acquires the first user's current real phone number, and uses the current real phone number to complete the call. *Id.*, at 35:27-36:10.

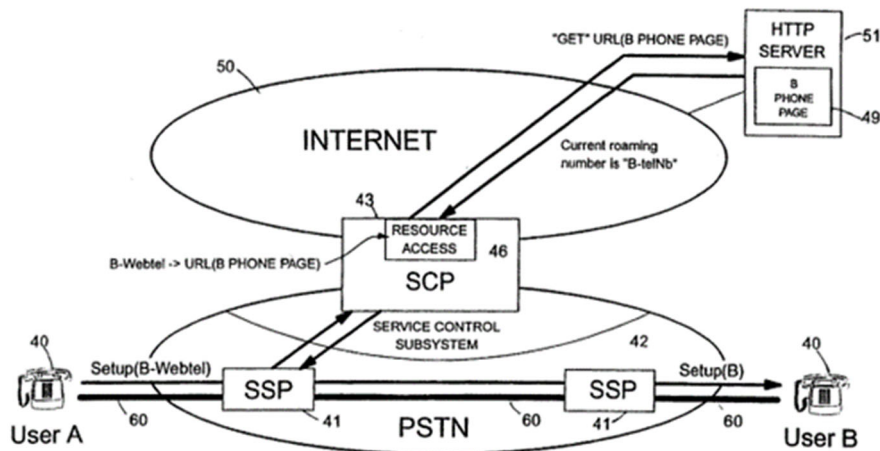


FIG. 13

Id., Fig. 13.

More specifically, when a phone call is made, the service switching point (SSP) generates a service request that is conveyed to the service control point (SCP). *Id.*, at 20:29-32. The service logic program running in the SCP is a skeleton form, being instantiated on receipt of a service request and then serving to initiate service

resources access and to return the results of this access to the entity that made the service request. *Id.*, at 21:20-27. The association between the unique number and the URL of the phone page is stored in an association table accessible to SCP 43. *Id.*, at 35:24-25. Therefore, the SCP receives the unique number from the first user and locates the URL through a table. *Id.*

2. Maurya and Low Fail to Disclose a Second Message That Includes a Multilink Session Identification As Recited in Claims 1, 2, 5, and 6

Each of Claims 1, 2, 5, and 6 specifies transmitting a “second message including a multilink session identification.” *E.g.*, Ex. 1001, Claim 1. Petitioner points to the endpoint discriminator value of Maurya as corresponding to the claimed multilink session identification, but the endpoint discriminator value of Maurya corresponds to the identification of a device, not the identification of a multilink session, and these different identifications are not fungible. *See* Petition, 29-32.

The claimed “multilink session identification” is an identification associated with a multilink session under its plain and ordinary meaning. Within the context of Claim 1, the “multilink session identification” is an identification associated with the multilink data packet communication created in response to the multilink request of the first message. Ex. 1001, Claim 1. The specification explains that:

[A]n RCG—85 that decides to initiate a multilink PPP session with a remote computer i.e. internet URL, requests a multilink PPP session

with that URL resource via Link Control Protocol (LCP) session management. The initiating RCG—85 and the remote server computer (not shown) will negotiate the pertinent multilink parameters such as compression, packet size, sync/async, link quality monitoring, bit stuffing etc. **As part of a successful multilink PPP session setup, the initiating RCG—85 receives a multilink PPP session ID**, or “magic number”, which is used to identify this particular multilink PPP session...”

Id., at 12:2-14 (emphasis added). The claimed multilink session identification, therefore, is associated with a multilink PPP session.

In contrast, Maurya discloses that “during LCP negotiations, a multi-link PPP system at the end of each link in a multi-link PPP bundle will supply its unique endpoint discriminator address to the PPP system situated at the other end of that link. As such, each ISDN terminal adapter, as a multi-link PPP system, will conventionally have a different endpoint discriminator associated with it.” Ex. 1004, 13:23-29. Maurya emphasizes this point by clarifying that “**a multi-link PPP originator, such as, e.g., a server or a client application executing at a PC, assigns itself a unique endpoint discriminator value.**” *Id.*, at 13:62-64. The POSITA would understand and appreciate that the identification of a device is not the same as the identification of a multi-link session. Maurya simply does not

disclose that the endpoint discriminator value or any other field is assigned to the multi-link session itself.

In particular, use of the endpoint discriminator value of Maurya means that a sending device sending data through many different, separate multilink sessions cannot differentiate between the various sessions, and a receiving device cannot discern which packets belong to which multilink session. In contrast, use of the claimed multilink session identification allows a sending device to send data through different, identifiable multi-link sessions and the receiving device to associate received data with individually identifiable multi-link sessions. Discerning multi-link sessions improves the ability of the receiving device to recombine the data packets into a viewable, usable format.

Maurya, therefore, does not teach or suggest a second message including a multilink session identification as required in Claims 1, 2, 5, and 6. Petitioner cannot demonstrate that Maurya's endpoint discriminator value amounts to the claimed multilink session identification. Ground 1 fails and the Board should deny institution.

3. Maurya and Low Fail to Disclose First and Second Messages That Include a Destination URL As Recited in Claims 1, 2, 5, and 6

Additionally, each of Claims 1, 2, 5, and 6 specifies transmitting a “first message including... a destination URL” and a “second message including... the destination URL.” Ex. 1001, Claim 1. Petitioner concedes that Maurya does not teach or suggest including a destination URL in the messages or packets of its multi-link connection and attempts to remedy this deficiency by pointing to the URL taught by Low, but this combination fails to disclose first and second messages including the destination URL as claimed. *See* Petition, 22-28.

Maurya discloses specific packets that include all of the information needed to organize and enable the multi-link connection described therein. Ex. 1004, 1:39-46, 8:25-9:13, 9:56-10:29, and 15:22-16:5. Low discloses a “phone page” URL that, when accessed, returns the current real phone number of the user associated with the URL. Ex. 1005, 35:18-19.

The URL of Low is not a “destination” URL associated with any component of a multipath connection. Further, Low does not teach or even suggest the use of a URL to be included in a message or packet as required under the challenged claims. Low instead discloses retrieving the URL of a user’s phone page through a look-up table accessible to the SCP 43. *Id.*, at 25:9-27:6. There is no message or packet or

other data transferred in the system of Low that includes a URL. Accordingly, there is no element in the packet of Maurya that could be substituted with the URL corresponding to a phone page as taught by Low.

Thus, Maurya and Low explicitly do not disclose “transmit[ting] a first message..., the first message including... a destination URL” and “transmit[ting] a second message..., the second message including... the destination URL” as required by Claims 1, 2, 5, and 6 of the '908 Patent. For this additional reason, Ground 1 fails and the Board should deny institution.

4. Petitioner Fails to Show Motivation to Combine Maurya and Low

Petitioner has failed to adequately demonstrate that there is any motivation for a POSITA to add the URL of Low to the packet of Maurya for at least two reasons: (a) there is no teaching or suggestion in the cited art to modify the packet of Maurya to include the URL of Low, and (b) the proposed combination would change the principle of operation of Maurya, which is impermissible to show obviousness. *See* Petition, 24-28.

a. There is No Teaching or Suggestion to Modify the Packets of Maurya to Include the URL of Low

Maurya is a multi-link protocol that enables data transfer through multiple-link transmission channels between peers to improve data transfer speed. Ex. 1004,

5:7-6:12. Low is a switched telecommunication system for a telephone network. Ex. 1005, 1:7-9 and 2:2-16. Although Maurya and Low are each concerned, in their own ways, with communication systems, this is not sufficient to establish that a POSITA would have an objective reason to combine the references or that the resultant combination would have been obvious. Rejection of a claim based on obviousness cannot be sustained by mere conclusory statements; there must be some articulated reasoning with some rational underpinning to support the conclusion of obviousness. *KSR v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

As an initial matter, Petitioner broadly generalizes Low's disclosure as "accessing resources through a switched telecommunications system" (Petition, 15), which mischaracterizes the actual technology disclosed: forwarding telephone calls using an internet server provider. Because Low relates to transferring phone calls over telephone channels, and does not relate in any manner to Maurya's goal of increasing the bandwidth available for transferring data through its networks, a POSITA would not have been motivated to apply any of the disclosure of Low to the multi-link connection of Maurya.

Maurya discloses the LCP configuration packets that include *all information necessary* to create the multi-link connection described therein. *See* Ex. 1004, 1:39-

45; 8:24-44 and 8:60-9:55. Maurya continues to describe the contents of packets that are used in the multi-link protocol. *Id.*, at 15:22-31. A POSITA would have no reason to look to Low to fill gaps that do not exist in Maurya. There is no need in Maurya for a URL to access a phone page as taught by Low or to access any other details of the multi-link connection as urged by the Petitioner. Petition, 25.

Further to the lack of need for a URL in the packets of Maurya, Petitioner's argument that the packets of Maurya *could* have included a destination URL contradicts Petitioner's basis for this argument. Specifically, Petitioner argues that "because [Maurya's] invention relates to specific fields of LCP configuration packets, it does not go into detail regarding other information that may be included in the overall message, such as information for identifying the server resource." Petition, 27. This assertion is false. The LCP configuration packets 200, 300, 400 of Maurya do not have this information because LCP configuration packets simply set up the connection and are wholly irrelevant to other packets that transfer data over the connection once it is established. *See* Ex. 1004, 1:39-46 and 7:22-39.

Petitioner goes on to argue that, as the POSITA "would have known, LCP packets operate at the data link layer, and the data link layer encapsulates information identified by higher communication layers, such as a destination URL requested by a client executing a web application." *Id.* But, this explanation of

different communication layers does not add up to the packet of Maurya including a URL. Petitioner's reasoning instead explains how the POSITA would in fact *not* have understood the LCP configuration packets of Maurya to include a URL because the LCP configuration packets operate at the data link layer that, as Petitioner concedes, merely "provides the functional and procedural means for data transfer itself." *See* Ex. 1003, 27-28. Petitioner admits that any URL would be provided at a higher communication level, *not* within the LCP packets. Petition, 26-27; Ex. 1003, ¶¶ 42, 48, 51-52. Petitioner's expert notes this distinction between the connection configuration, which occurs first, and the data transfer itself, which occurs once the connection is established. Ex. 1003, ¶ 50 (citing Ex. 1014, 2:44-47, which states "Once the session with the server 22 is established, URL 12 is sent to server 22."). The POSITA, therefore, would not have understood the LCP packets to include a URL.

Finally, the URL in the system of Low is merely a phone page that is translated by a service logic program into a currently available number in order to connect a phone call over a telephone line. There is no information in the packet of Maurya that could be substituted with the phone page URL as taught by Low. The POSITA would have no reason whatsoever to include a phone page as disclosed in Low in the packet of Maurya because Maurya has no need to access a phone page.

The Petitioner has failed to demonstrate that a POSITA would incorporate the phone page URL of Low into the packets of Maurya to create a system in which a destination URL is included in both a first message and a second message sent between devices of a multipath connection to transfer data. As articulated in the Petition, Ground 1 fails to present a legally sufficient motivation to combine Maurya and Low.

b. The Proposed Combination Changes the Principle of Operation of Maurya

Additionally, a POSITA would never have the motivation to combine Maurya with Low because the combination would change the principle of operation of Maurya and render it inoperable for its intended purpose, which cannot support *prima facie* obviousness.

“[W]hen a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.... The opposite conclusion would follow, however, if the prior art indicated that the invention would not have worked for its intended purpose...” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009) (citing *KSR Int’l*, 550 U.S. at 417); *see also Meiresonne v. Google, Inc.*, 849 F.3d 1379, 1382 (Fed. Cir. 2017). Here, Petitioner’s expert acknowledges that the combination of Maurya and Low

would require some modifications to achieve the claimed invention, conceding that the combination is not simply an arrangement of old elements. Petition, 28 (citing Ex. 1003, ¶ 89).

Even with this admission, the Petition conveniently ignores the effect that the modification of Maurya by Low would have on the multi-link connection of Maurya. As described above, each LCP configuration packet 200, 300, 400 of Maurya includes the details needed to create the connection for data transfer and does not include a URL. *See* Ex. 1004, 1:28-46 and 7:22-39. While the LCP configuration packets of Maurya allow downstream devices to identify with the data sending peer through an endpoint discriminator value, the multi-link channel of Maurya is set up to allow *any* data to be transmitted from the sending peer through the links. Incorporating a URL identifying a unique resource into the packet of Maurya would require the multi-link connection of Maurya to coordinate the data transfer based on both the endpoint discriminator value *and* the URL, further limiting the data allowed to be transmitted over the multi-link channel. This modification to Maurya would change its principle of operation.

In a hypothetical embodiment in which a URL were incorporated into the LCP configuration packets of Maurya, the modified multi-link channel of Maurya would only allow data from the unique resource identified by the URL of Low to be

transmitted over the channel. The LCP configuration packets of Maurya intentionally do not set up a channel that is so restricted. Given the understanding of the connection configuration on layer 2 and the data transfer on the higher levels, the POSITA would understand that mixing the data transfer details with the LCP packets of Maurya would completely change the system of Maurya.

“[O]bviousness is a question of law based on several underlying factual findings... including... whether proposed modifications would change a reference’s ‘principle of operation... [C]ombinations that change the ‘basic principles under which the [prior art] was designed to operation,’ or that render the prior art ‘inoperable for its intended purpose,’ may fail to support a conclusion of obviousness. *Plas-Pak Industries, Inc. v. Sulzer Mixpac AG*, 600 Fed.Appx. 755, 757-58 (Fed. Cir. 2015). Here, the Maurya-Low combination fails to support *prima facie* obviousness because it changes the principle of operation of Maurya, rendering it unsatisfactory for its intended purpose.

Accordingly, Ground 1 fails for at least this reason and the Board should deny institution.

C. Ground 2: The Petition Does Not Establish that Claims 1, 2, 5, 6, and 13-15 Would Have Been Obvious over Maurya, Low, and Krishnan

1. Asserted Reference

a. Krishnan

U.S. Patent No. 5,809,070 to Krishnan (“Krishnan”) is directed to systems and methods that provide high speed data transmission over multiple low speed communication links. Ex. 1006, 1:36-67. A host computer 10 is coupled to separate modems 12, 14 that communication over telephone lines 16, 18 to another computer. *Id.*, at 2:23-41. The host computer 10 is programmed to split a single high speed data stream into multiple low speed links of modems 12, 14. *Id.*

2. Krishnan Fails To Disclose a Second Message that Includes a Multilink Session Identification As Recited in Claims 1 and 13

Like Claim 1, Claim 13 also recites “transmit[ing] a second message..., the second message including a multilink session identification.” Ex. 1004, Claim 13. The Petition does not rely on Krishnan to teach the “multilink session identification,” and relies on Maurya for the disclosure thereof. Petition, 57-58. As discussed above, Maurya fails to disclose, teach, or suggest this claim element. *See* Section III(B)(2). The Petition, therefore, fails to establish the proposed combination of Maurya, Low, and Krishnan discloses this element.

3. Krishnan Fails To Disclose First and Second Messages That Include a Destination URL As Recited in Claims 1 and 13

Like Claim 1, Claim 13 also recites “transmit[ting] a first message..., the first message including... a destination URL” and “transmit[ting] a second message..., the second message including... the destination URL.” The Petition does not rely on Krishnan to teach this claimed limitation, and relies on the Maurya and Low combination. Petition, 52-54. As discussed above, the Maurya and Low combination fails to disclose, teach, or suggest this claim element. *See* Section III(B)(3). The Petition, therefore, fails to establish the proposed combination of Maurya, Low, and Krishnan discloses this element.

4. Petitioner Fails to Show Motivation to Combine Maurya, Low, and Krishnan

The Petitioner does not rely on Krishnan to provide motivation to combine Low with Maurya. Petition, 53-54. As discussed above, Petitioner fails to establish that the skilled artisan would be motivated to add the URL of Low to the packet of Maurya. *See* Section III(B)(4). The Petition, therefore, fails to establish motivation to combine Maurya, Low, and Krishnan.

D. Ground 3: The Petition Does Not Establish that Claims 1-3, 5, and 6 Would Have Been Obvious over Maurya, Low, and Delangis-156

1. Asserted Reference

a. Delangis-156

The '908 Patent claims priority through a series of *continuations* to U.S. Application No. 10/686,375, now patented as U.S. Patent No. 7,606,156 (“Delangis-156”) filed October 14, 2003, which claims the benefit of priority to U.S. Provisional No. 60/418,521 filed October 15, 2002. Ex. 1002, 8 and 49.

Petitioner asserts that the claims of the '908 Patent lack written description support under 35 U.S.C. §112 ¶ 1 to intervening U.S. Application No. 13/531,294 (the “'294 Application”), which issued as U.S. Patent No. 8,861,349 (the “'349 Patent”), breaking the priority claim such that U.S. Patent No. 7,606,156 (issued October 20, 2009) constitutes prior art under 35 U.S.C. §102(a). Petition, 64-65. Here, it should be noted that all the intervening applications between the '908 Patent and Delangis-156 are continuations applications and not continuations-in-part.

Due to the numerous errors in Petitioner’s written description analysis, the Board should deny institution. As the '294 Application provides written description of the challenged claims, the '908 Patent properly claims priority to the '294 Application and thus to Delangis-156 as well.

2. Delangis-156 is Not Prior Art Because the Priority Application Provides Sufficient Written Description

There is no dispute that the '908 Patent properly claims priority to Delangis-156 filed October 14, 2003. Ex. 1002, 8 and 49. During prosecution, the Examiner issued written description rejections of claim elements that were amended to recite the limitations identified by Petitioner as unsupported by the specification, overcoming the written description rejections. *Id.*, at 267-269, 287-298, 305-307, and 335-344.

Petitioner now seeks to rehash the same issues addressed during prosecution. Additionally, Petitioner's allegations of insufficient written description on three separate points are defective, with each argument based on selective excerpts from the specification instead of the four corners of the patent in view of the POSITA, as well as without consideration for written description questions raised during prosecution.

a. Legal Standard

"In order to gain the benefit of the filing date of an earlier application under 35 U.S.C. §120, each application in the chain leading back to the earlier application must comply with the written description requirement of 35 U.S.C. §112." *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1571 (Fed. Cir. 1997). The function of the written description requirement is to ensure that the applicant had possession

at the time of filing of subject matter subsequently claimed. *See, e.g., Moba, B.V. v. Diamond Automation, Inc.*, 325 F.3d 1306, 1319 (Fed. Cir. 2003). “Specifically, based on ‘an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art . . . , the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed.’” *Hologic, Inc. v. Smith & Nephew, Inc.*, 884 F.3d 1357, 1361 (Fed. Cir. 2018). The written description analysis thus requires an examination of both the patent disclosure (i.e. the specification and figures) and the state of the knowledge in the art at the time of the invention. *See Capon v. Eshdar*, 418 F.3d 1349, 1357-59 (Fed. Cir. 2005); *LizardTech, Inc. v. EarthResource Mapping, Pty, Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005) (“A claim will not be invalidated on section 112 grounds simply because the embodiments of the specification do not contain examples explicitly covering the full scope of the claim language. That is because the patent specification is written for a person of skill in the art, and such a person comes to the patent with the knowledge of what has come before.”).

Importantly, the law ***does not require*** the specification to recite the claimed invention *in haec verba* or require a description of every possible embodiment of the invention. *See, e.g., Cordis Corp. v Medtronic Ave.*, 339 F.3d 1352, 1365 (Fed. Cir.

2003) (“An applicant is not required to describe in the specification every conceivable and possible future embodiment of his invention”). In fact, a single example provided in the specification can be sufficient written description of a larger category. *See, e.g., Bilstad v. Wakalopoulos*, 386 F.3d 1116, 124 (Fed. Cir. 2004) (holding that “disclosure of a species may be sufficient written for a later claimed genus including that species”).

b. Support For the Limitation “First Message Includ[ing]... a Destination URL” Recited in Claims 1 and 13

Petitioner’s argument that the ’294 Application does not disclose a “first message [that] includes a destination URL” is without merit. *See* Petition, 65-67. Specifically, the specification of the ’349 Patent states:

[A]n RCG—85 that decides to initiate a multilink PPP session with a remote computer i.e. internet URL, requests a multilink PPP session with that URL resource via Link Control Protocol (LCP) session management. The initiating RCG 85 and the remote server computer (not shown) will negotiate the pertinent multilink parameters... As part of a successful multilink PPP session setup, the initiating RCG—85 receives a multilink PPP session ID, or “magic number”, which is used to identify this particular multilink PPP session and is also used for adding or removing links from the multilink bundle—87.

... The initiating RCG—85 determines the number of remote RCGs—86 that it wants to use to get the desired bandwidth for the transfer and sends multilink PPP service requests via the 802.11 b/g wireless connections—88 to the selected remote RCGs—86. The selected remote RCGs—86 respond back to the initiating RCG with either an acceptance or denial of multilink PPP service request... **The initiating RCG[—85]** then selects which of the responding remote RCGs—86 it will use for the multilink PPP bundle—87 and **sends them a multilink initialization packet containing the URL of the destination as well as the multilink PPP session ID (magic number)** and any other pertinent information required for the remote RCG to join in the existing multilink PPP bundle—87.

Ex. 1009, 11:46-58, 11:65-12:33 (emphasis added). In view of the specification as well as the state of the knowledge in the art at the time of the invention, the POSITA would understand that the inventor had possession of the claimed subject matter at the time of filing.

In addition, the prosecution history shows that Claims 1 and 13 were amended to recite “the first message includes... a destination URL” in response to a written description rejection, thereby moving the claims onto allowance. Petitioner fails to acknowledge the prosecution history of this element or identify any error in the Examiner’s analysis.

Specifically, in a response filed June 21, 2019, Claims 1 and 13 recited “the first message includes... first information that identifies at least one of the at least two or more network interfaces of the client device that is capable of receiving one or more data packets during the multilink session.” Ex. 1002, 286-294. In the next Office Action dated August 16, 2019, the Examiner rejected the limitation “first information that identifies at least one of the at least two or more network interfaces of the client device that is capable of receiving one or more data packets during the multilink session” under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. *Id.*, at 305-307. Applicant amended Claims 1 and 13 to recite “the first message includes... a destination URL ~~first information that identifies at least one of the at least two or more network interfaces of the client device that is capable of receiving one or more data packets during the multilink session,~~” and the rejection was withdrawn. *Id.*, at 335-344.

Given the support in the specification and the explicit written description analysis of the term at issue by the Examiner, Petitioner’s argument for lack of written description of the limitation “the first message includes... a destination URL” by the specification of the ’349 Patent lacks merit.

c. Support For the Limitation “Transmit[ting] a Second Message... To the Server” Recited in Claims 1 and 13

Petitioner’s argument that the ’294 Application does not disclose “transmit[ting] a second message to the server” is also without merit. *See* Petition, 67-68.

As noted above, the specification of the ’349 Patent states:

An RCG—85 that decides to initiate a multilink PPP session with a remote computer i.e. internet URL, requests a multilink PPP session with that URL resource via Link Control Protocol (LCP) session management. **The initiating RCG—85 and the remote server computer (not shown) will negotiate the pertinent multilink parameters...**

... The initiating RCG—85 determines the number of remote RCGs—86 that it wants to use to get the desired bandwidth for the transfer and sends multilink PPP service requests via the 802.11 b/g wireless connections—88 to the selected remote RCGs—86. The selected remote RCGs—86 respond back to the initiating RCG with either an acceptance or denial of multilink PPP service request... **The initiating RCG[—85] then selects which of the responding remote RCGs—86 it will use for the multilink PPP bundle—87 and sends them a multilink initialization packet containing the URL of the destination as well as the multilink PPP session ID (magic number) and any other pertinent information required for the remote RCG to join in the existing multilink PPP bundle—87.**

Ex. 1009, 11:46-58, 11:65-12:33 (emphasis added).

To reiterate the ability of the RCG device 85 to send messages to the server, Figure 2 illustrates such communications. Describing Figure 2, the specification of the '349 Patent states:

RCG 44 is connected via its modem to the LEC's local Class 5 Office A 47. In this example, the service provider's connections to the IXC A Modem Bank & Router 48 are through IXC Inter-Office Trunks 46... The SIP Invite IP Packet that is sent from User A RCG 44[,] transits the LEC's Class 5 Office A 47 facilities and is routed to the IXC A Modem Bank/Router 48 via the IXC A InterOffice Trunks 46. It is the job of the router to take the IP packet and route it on to its intended destination, in this case the appropriate SIP proxy server 51... The SIP Proxy Server process... performs a look up to determine the termination destination for the call...

Ex. 1009, 6:61-7:22. Thus, the POSITA would understand that the RCG device communicates with and sends messages to the server.

In addition, the prosecution history shows that Claims 1 and 13 were amended to recite "transmit a second message... to the server" in response to a written description rejection, thereby moving the claims onto allowance. Again, Petitioner does not acknowledge the prosecution history of this element or identify any error in the Examiner's analysis.

In the response filed June 21, 2019, Claims 1 and 13 recited “transmit a second message through a different one of the at least two or more network interfaces...” Ex. 1002, 286-294. In the next Office Action dated August 16, 2019, the Examiner rejected the limitation “transmitting a message including... information that identifies at least one of the at least two or more network interfaces of the device” under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. *Id.*, at 305-307. Applicant amended Claims 1 and 13 to replace the limitation at issue with “transmit a second message through ~~a different one of the at least two or more network interfaces~~ interface to the server” and the rejection was withdrawn. *Id.*, at 335-344.

In view of the support in the specification and the amendment of this limitation in response to a written description rejection, Petitioner’s assertion that the limitation “transmit a second message... to the server” is unsupported by the specification of the ’349 Patent lacks merit.

d. Support for Dependent Claims

Petitioner’s argument that the claims of the ’908 Patent “go to scope much broader than the ’294 Application’s ‘stand-alone, external modem like’ RCG” is also baseless. *See* Petition, 68-70. Petitioner handpicks isolated portions of the specification in a veiled attempt to support its argument, which is wholly

inconsistent with the “objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art” required for the analysis. *See Hologic*, 884 F.3d at 1361.

Petitioner argues that the claims purport to cover cellular and Bluetooth devices and interfaces for performing multilink bundling, and that there is no indication in the specification that the inventor had possession over the broad genus. *Id.*, at 68-69. In contrast, the specification of the ’349 Patent clearly states that “any wireless interface scheme can be used to implement this device” (Ex. 1009, 11:17-18):

An 802.11 b/g interface—87 is shown as the preferred embodiment, since its 11/54 Mbps interface is considered sufficient bandwidth at this time also, its transmission distances are sufficient for implementation of this device, as opposed to other shorter ranged wireless transmission schemes. **However as time goes on, some other wireless interface may be more desirable. There is nothing special or specific to the 802.11 wireless interface that makes it particularly suited to this application. Any wireless interface scheme can be used to implement this device.**

Ex. 1009, 11:8-18 (emphasis added).

Recognizing that “the applicant is not required to describe in the specification every conceivable and possible future embodiment of his invention,” the POSITA

would understand that the inventor had possession of the claimed invention—a multipath connection protocol between multiple devices—at the time of filing. *See Cordis Corp.*, 339 F.3d at 1365.

3. Ground 3 Fails for the Same Reasons as Ground 1

Because Delangis-156 is not prior art, the prior art used in Ground 3 is identical to the prior art used in Ground 1 noted above and fails for the same reasons set forth in Section III(B)(1)-(4).

E. Ground 4: The Petition Does Not Establish that Claims 1-3, 5, 6, and 13-15 Would Have Been Obvious over Maurya, Low, Krishnan, and Delangis-156

1. Delangis-156 Is Not Prior Art

As set forth above in Section III(D)(2) above, the '908 Patent's priority claim to the '294 Application is valid, and therefore Delangis-156 is not prior art.

2. Ground 4 Fails for the Same Reasons as Ground 2

Because Delangis-156 is not prior art, the prior art used in Ground 4 is identical to the prior art used in Ground 2 noted above and fails for the same reasons set forth in Section III(C)(1)-(4).

IV. CONCLUSION

Petitioner has failed to demonstrate that there is a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition.

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Certification of Word Count Under 37 C.F.R. §42.24(d)

The undersigned hereby certifies that the foregoing contains 9,004 words according to the word count of the word-processing software used to prepare the foregoing.

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CERTIFICATE OF SERVICE

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