

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS, T-MOBILE
USA, INC., T-MOBILE US, INC., and AT&T MOBILITY, LLC,
Petitioner,

v.

ASPEN NETWORKS, INC.,
Patent Owner.

Case IPR2025-00008
Patent 8,009,554 B2

Before CHARLES J. BOUDREAU, AMBER L. HAGY and
DONALD E. DAYBELL, *Administrative Patent Judges*.

DAYBELL, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Cellco Partnership d/b/a Verizon Wireless, T-Mobile USA, Inc.,
T-Mobile US, Inc., and AT&T Mobility, LLC (collectively, “Petitioner”)
filed a Petition requesting *inter partes* review of claims 1–28 (“challenged

claims”) of U.S. Patent No. 8,009,554 B2 (Ex. 1001, “the ’554 Patent”) pursuant to 35 U.S.C. §§ 311–319. Paper 5 (“Pet.”). Aspen Networks, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 9 (“Prelim. Resp.”).

We have authority under 35 U.S.C. § 314 and 37 C.F.R. § 42.4 to determine whether to institute review. Upon consideration of the arguments and evidence before us, we conclude that Petitioner has not shown a reasonable likelihood of success in establishing that any claim of the ’554 Patent is unpatentable, and thus we decline to institute review.

The Petition is *denied*, and *inter partes* review is not instituted.

A. Real Parties in Interest

Petitioner identifies itself, i.e., all four parties identified in the caption, as the real party in interest. Pet. 91. Patent Owner identifies itself as the real party in interest. Paper 7, 1 (Mandatory Notices).

B. Related Matters

Each party identifies the following related matters:

Aspen Networks, Inc. v. AT&T Inc. et al., Case No. 2:23-cv-00476-RWS-RSP (E.D. Tex.).

• *Aspen Networks, Inc. v. Cellco Partnership d/b/a Verizon Wireless*, Case No. 2:23-cv-00557-RWS-RSP (E.D. Tex.).

• *Aspen Networks, Inc. v. T-Mobile US, Inc. et al.*, Case No. 2:23-cv-00558-RWS-RSP (E.D. Tex.).¹

Pet. 92; Paper 7, 1. These matters have been consolidated into the -00476 case number, and are referred to here together as “the Underlying Litigation.”

¹ Petitioner identifies this case as -00476, which appears to be a typographical error repeating the lead case number. Pet. 92.

C. The '554 Patent²

The '554 Patent discloses a method for improving quality of service for video and voice calls sent over Internet links, which use multiple different paths. Ex. 1001, code (57). The method is discussed with reference to Figure 4, below:

² The '554 Patent issued from U.S. Patent Application No. 12/137,258, filed June 11, 2008. Ex. 1001, codes (21), (22).

Fig 4 Move SIP Control Flow and RTP Stream. The Flow Chart

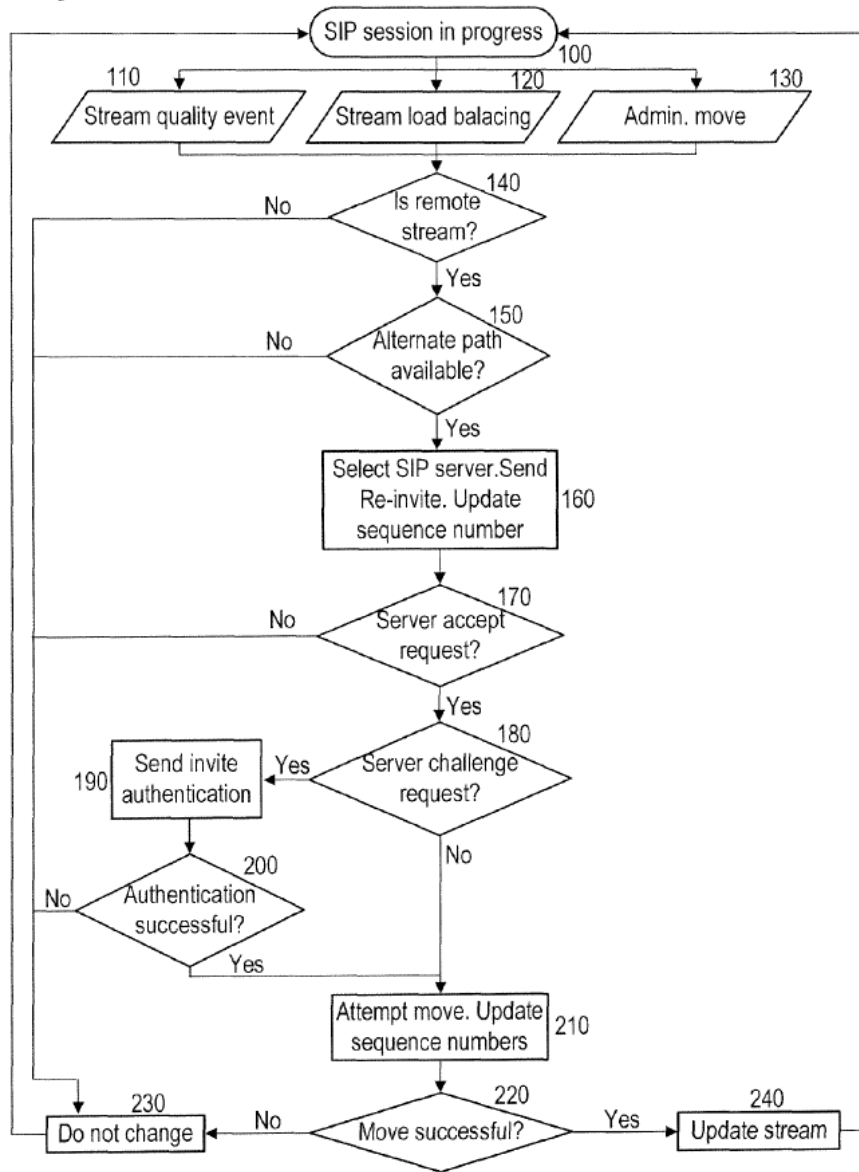


Figure 4 is a flow chart of the method described in the '554 Patent for achieving quality of service for voice and video over IP, using multiple links in either a non-mobile domain or mobile domain. *Id.* at 4:26–28.

The method of Figure 4 commences with a voice call already in progress, at step 100. The voice call uses Session Initiation Protocol (SIP), which is a standard protocol for setting up and maintaining voice calls over packet-switched networks such as the Internet. Ex. 1001, 1:19–23. Calls

routed over packet-switched networks follow a series of network hops from node to node, referred to as a network path, from a source node (such as a mobile telephone) to a destination node (such as a receiving telephone or computer). *Id.* at 5:62–6:48.

At steps 110–130, a decision is made on any of a variety of bases to consider switching the network path from the originally created path to an alternate path. Ex. 1001, 4:48–5:38. This may be done because of a decrease in network quality (step 110), because of a desire to balance the load on various nodes in the network (step 120), or because an administrator decides to move the call to a different path (step 130). *Id.* At step 140, a check is made to see if the stream of packets representing the call is coming from a location remote to the control system. *Id.* If not, then there would be no benefit to switching paths, and the method returns to step 100 (step 230). *Id.* If so, then a check is made to see if an alternate path exists (step 150). *Id.* If not, then the method returns to step 100 (step 230). *Id.* If so, then at step 160 a SIP server is selected to manage the call that is about to be moved. *Id.* A number used in the SIP signaling sequence is updated as well. *Id.*

At step 170, a check is made to see if the SIP server accepts the request to move the call. Ex. 1001, 4:48–5:38. If not, then the call is not moved, and the method returns to step 100 (step 230). *Id.* If the SIP server accepts the request to move the call, then a check is made at step 180 to see if the SIP server requests authentication from the calling party. *Id.* If so, then at steps 190 and 200 the caller authenticates the call. *Id.* If authentication fails, then the call is not moved, and the method returns to step 100 (step 230). *Id.* If authentication succeeds (or was not requested), then at step 210 the call is attempted to be moved. *Id.* Here again, the SIP signaling sequence number used by the packets of the call is updated. *Id.* At step 220, a check is

made to see if the call was successfully switched. *Id.* If not, then the call is not moved, and the method returns to step 100. *Id.* If so, then the call is moved at step 240, and the method then returns to step 100. *Id.*

A stated core objective of the '554 Patent is to avoid having calls dropped or broken. Ex. 1001, 2:33–37, 2:59–3:2. The '554 Patent describes that this objective is realized in part by moving calls from one path to another without breaking or dropping the call. *Id.* at 3:47–4:18. The '554 Patent explains that the method recited in Figure 4 is central to ensuring that such calls do not break. *Id.* at 5:62–67, 7:19–25. The '554 Patent states that in the embodiment set forth in Figure 4, the “SIP signaling sequence number must be maintained” and furthermore that “[t]he state involving the SIP signaling sequence number . . . must be maintained.” *Id.* at 5:1–38. Thus, maintaining SIP signaling sequences is described to be at the core of the '554 Patent's disclosed and claimed improvement over the prior art.

D. Illustrative Claims

Claims 1–28 are challenged. Pet. 2. Claims 1, 8, 15, and 22 are independent. Claim 1 is illustrative.³

Claim 1:

- [1.0] A method of enhancing the reliability of a transmission from a source to a destination in a communications network using a network protocol that operates on top of the Internet Protocol (IP), the method comprising:
 - [1.1] transmitting data between a source and destination over a first network path made up of one or more network links where at

³ The headings with bracketed letters identifying each of the claim elements correspond to those used by Petitioner to reference the claim elements. *See* Pet. ix – xiv. We use them here for ease of reference, understanding, and consistency.

least one of the network links is to a local area network that is remote from the transmission source; and

[1.2] switching the transmission from the first network path to one of a plurality of alternative network paths;

[1.3.1] wherein said transmission is not disrupted as a result of said switch to the one of a plurality of alternative network paths,

[1.3.2] said transmission contains audio or video data, and

[1.3.3] at least one Network Address Translation (NAT) is performed on said transmission;

[1.4] said transmission uses the Real Time Protocol (RTP);

[1.5] said transmission uses the Session Initiation Protocol (SIP); and

[1.6] the SIP signaling sequence of the transmission is maintained after said switching from the first network path to the one of a plurality of alternative network paths.

Ex. 1001, 8:9–29. Claim 8 is a system version of claim 1. *Id.* at 8:47–9:3.

Claim 15 is similar to claim 1, except that claim 15 recites that “at least one Port Address Translation (PAT)” (instead of “at least one [NAT]”) is performed on the recited transmission. *Id.* at 9:21–44. Claim 22 is a system version of claim 15. *Id.* at 10:10–33.

E. Evidence relied on by Petitioner and Patent Owner

Petitioner relies on the following references.

Name	Reference	Exhibit
Tagg	US Pat. App. Pub. No 2005/0286466	1005
Kottilingal	US Pat. No. 8,467,377 B2	1006
Politis	Christos Politis, et. al. <i>Multilayer Mobility Management for All-IP Networks: Pure SIP vs. Hybrid SIP/Mobile IP</i> , in Proceedings of the 57th IEEE Semiannual Vehicular Technology Conference, 2003	1007

Petitioner also relies on the Declaration of Dr. Paul van der Weide (Ex. 1003). In its Preliminary Response, Patent Owner relies on the Declaration of Dr. Izhak Rubin (Ex. 2001).

F. Asserted Grounds

Petitioner asserts that claims 1–28 are unpatentable on the following grounds:

Ground	Claim(s) Challenged	35 U.S.C. §⁴	Reference(s)/Basis
1	1–28	103(a)	Tagg
2	1–28	103(a)	Kottilingal, Politis

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art (“POSITA”) as of the time of the invention of the ’554 Patent “would have been familiar with designing rules for implementing policies for service plans for use of an access network and provisioning those rules to network elements for policy enforcement” and would have gained this knowledge

through a mixture of training and work experience, such as by having a Bachelor’s degree in electrical engineering or computer science and two years of experience; or by obtaining a Master’s degree in electrical engineering or computer science, but having only one year of experience; or by having no formal education but experience in network service plan provisioning systems of at least four years.

Pet. 10.

⁴ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103. Because the ’554 Patent was filed before the effective date of the relevant amendment, the pre-AIA version of §103 applies.

Patent Owner generally agrees with Petitioner’s assertion, but disputes that a POSITA must specifically have “been familiar with designing rules for implementing policies for service plans for use of an access network and provisioning those rules to network elements for policy enforcement.”

Prelim. Resp. 17–18. At this juncture, we adopt the agreed-upon portion of Petitioner’s definition, without the specific requirement relating to designing rules. This definition appears to be consistent with what is reflected by the content of the applied prior art references. *Cf. Okajima v. Bourdeau*, 261 F.3d 1350, 1354–55 (Fed. Cir. 2001) (recognizing that the applied prior art may reflect an appropriate level of skill). Our analysis would be the same under either definition.

B. Claim Construction

We use “the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b) (2024). The claim construction standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), is applicable.

Claim terms are generally given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the specification, the prosecution history, other claims, and extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises, although extrinsic evidence is less significant than the intrinsic record. *Phillips*, 415 F.3d at 1312–17. Usually, the specification is dispositive, and “it is the single best guide to the meaning of a disputed term.” *Id.* at 1315.

Only those claim terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019). Neither party proposes any terms for construction. Pet. 9; Prelim. Resp. 18. We find that one term, “SIP signaling sequence,” requires construction in order to resolve the controversy.

I. “SIP signaling sequence”

Claims 1, 8, 15, and 22 each recite a “SIP signaling sequence,” which is “maintained after said switching from the first network path to the one of a plurality of alternative network paths.” Ex. 1001, 8:27–29, 9:1–3, 9:42–44, 10:30–32.⁵ Neither party proposes a construction for this term in this proceeding, but the nature of Petitioner’s arguments applying the prior art to this term necessitates that we construe this term. Both parties have also proposed constructions for this term in the Underlying Litigation. Ex. 3002, 6 (Joint Claim Construction Statement).

⁵ Petitioner notes a potential lack of antecedent basis with regard to this term in at least claim 1. Pet. 39 n.9. We find that we are able to adjudicate the prior-art challenges presented herein, regardless of the potential lack of antecedent basis, and thus need not address this issue further. *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 813 (Fed. Cir. 2021) (“[I]t is not always impossible to adjudicate a prior-art challenge, one way or the other, just because some aspect of a claim renders the claim indefinite.”); *see also* 35 U.S.C. § 311(b) (scope of *inter partes* review is limited to grounds “that could be raised under section 102 or 103 and only on the basis of prior art consisting of patents or printed publications”).

a) Language of the Claims

We turn first to the language of Claim 1.⁶ Claim 1 recites a transmission that uses “the Session Initiation Protocol (SIP).” Ex. 1001, 8:26. This claim further recites that “the SIP signaling sequence of the transmission is maintained after said switching from the first network path to the one of a plurality of alternative network paths.” *Id.* at 8:27–29. Thus, the “SIP signaling sequence” is a Session Initiation Protocol signaling sequence. Session Initiation Protocol is a standard protocol used with Voice over Internet Protocol (VoIP) to create and manage voice transmissions across large networks such as the Internet. *Id.* at 1:19–25.

b) Disclosures of the Specification

The specification discusses the “SIP signaling sequence” chiefly with reference to a Flow Chart Description of the steps in Figure 4. Ex. 1001, 4:41–5:37. As discussed above, the flow chart of Figure 4 depicts a method for using multiple different data paths to improve the quality of service for voice/video over IP. *Id.* at 4:26–29. This method generally discloses that one of a set of events triggers a search for a new network path along which to transmit the data. *Id.* at 4:41–5:37, Fig. 4, steps 110, 120, 130. If a new path is found, a new SIP connection is set up. *Id.* at 4:41–5:37, Fig. 4, step 160. At this point, a “SIP sequence number” is updated. *Id.* Then, once the SIP connection is created, the packets are moved from the first path to the second path. *Id.* at 4:41–5:37, Fig. 4, step 210. Here again, a “SIP sequence number” is updated. *Id.*

⁶ The specific language recited in claims 1, 8, 15, and 22 for this element is substantially similar, and we construe each of these four instances the same. We use the language of claim 1 as representative.

With respect to the discussion of updating step 160, the specification states:

The SIP signaling sequence number must be maintained between the SIP device and the server.

Ex. 1001, 4:41–5:37. With respect to the discussion of updating step 210, the specification states:

The state involving the SIP signaling sequence number (often referred to as the “cseq” value[]), must be maintained throughout the dialog. For a new “transaction” this number must monotonically increase; for a re-transmit of an old transaction, it must remain the same.

Id. These are the only two passages in the specification where a “SIP signaling sequence” is recited.

c) File History Discussion

In the file history, there are two instances where SIP signaling was considered. First, the Examiner in rejecting certain claims observed:

White does not disclose maintaining SIP sequencing after a switchover. Yi discloses maintaining sequencing after a switchover (para 72 note: the sequence number of a control header is maintained and used for synchronization).

Ex. 1002, 102 (Nov. 26, 2010 Final Rejection).⁷ Applicant responded to this rejection in relevant part by observing that Yi’s signaling was not SIP signaling, but instead related to a different protocol, RTP. *Id.* at 149 (Jan. 25, 2011 Response) (“[T]he Sequence Number (SN) disclosed at paragraph [0072] in Yi relates to RTP packets that are transmitted in the manner disclosed in Yi.”). Because the prosecution history’s discussion of SIP signaling is limited to discussing and then distinguishing the Yi prior art as

⁷ Because Ex. 1002 contains multiple documents which are independently paginated, we cite for this exhibit to the pagination added by Petitioner.

failing to teach the SIP protocol, the discussions in the prosecution history are of little assistance in construing this term.

d) Parties' Litigation Contentions

In the Underlying Litigation, the parties each propose constructions for this term. Ex. 3002, 6. The parties each focus on one of the two passages discussed above from the specification as support for their respective proposed constructions. *Compare id.* (Plaintiff's Proposed Construction), *with id.* (Defendants' Proposed Construction). Plaintiff/Patent Owner's proposed construction largely tracks the discussion of step 210. *Id.* ("SIP signaling sequence, or 'cseq' number, is monotonically increased for new transmissions or preserved for retransmissions."). Defendant/Petitioner's proposed construction largely tracks the discussion of step 160. *Id.* ("SIP signaling sequence number of the transmission is maintained throughout a dialog with a SIP server.").

e) Analysis

Claim 1 recites a "SIP signaling sequence" and states that this sequence must be "maintained" after a network path switch. Ex. 1001, 8:27–29. The claim otherwise sheds little light on what a "SIP signaling sequence" is or how such a sequence is "maintained" after a network switch. The specification discusses "SIP signaling sequence numbers" and provides examples of how such numbers are maintained after a network switch. *Id.* at 5:1–38. The specification references a "number" that the "SIP signaling sequence" term grammatically modifies. *Id.* Thus, a "SIP signaling sequence" can make use of numbers.

There is, however, no indication in the specification that the invention's "SIP signaling sequence" is limited to the use of numbers. These examples, which recite SIP sequence numbers or "cseq" numbers and the

implementation details that such numbers “monotonically increase” for new transactions or “remain the same” for re-transmits, are not expressed using definitional language. These are, therefore, merely preferred embodiments, which can inform what the proper claim scope should be, but cannot be imported into the claim. *Info-Hold, Inc. v. Applied Media Techs. Corp.*, 783 F.3d 1262, 1267 (Fed. Cir. 2015) (“Absent an intentional statement of restriction, we refuse to restrict the patent's claims to cover only server-initiated transmissions.”) Thus, we decline to import the concept of a “number” into the construction of this term. *Cf.* Ex. 3002, 6 (both parties’ litigation constructions incorporate the concept of a “number” into their proposed constructions).

There is, however, a consistent thread that flows through the relevant disclosures of the specification; namely, that the “state involving the SIP sequence” is maintained throughout a dialog. Ex. 1001, 5:1–38 (step 210); *see also id.* (step 160). Using the method of Figure 4, including steps 160 and 210 and maintaining the SIP signaling state, is how the ’554 Patent discloses that calls are not broken or dropped. *See, e.g., id.* at 7:10–25. Maintaining the “state” of the SIP signaling sequence includes (but is not limited to) the teachings that a “SIP signaling sequence number” is maintained, as well as the details of how that number is maintained, as set forth in the specification.

We find that the state of the SIP signaling sequence as that term is used in the specification refers to the rules (or paradigm) used to identify a collection of SIP signals as a “SIP signaling sequence,” and in particular the rules used to identify the next SIP packet received as belonging to a sequence of packets previously received. One key to the disclosed invention discussed in the specification is the concept that the invention prevents a call

from being broken or dropped when a network switch occurs. Ex. 1001, 3:45–4:9. The specification contends that the invention accomplishes this goal by configuring the packets involved in a VoIP call such that the receiving device (e.g., a SIP server) is able to recognize those packets as belonging to the same call, even though the packets are received over different paths. *Id.* at 7:35–50; 7:60–8:3. The particular way that the receiving devices are able to recognize that the packets are part of the same call is, per the claims, because the SIP signaling sequence is maintained after a network switch. *Id.* at 8:27–29.

Thus, where a sequence of SIP signals uses numbers such as cseq values, there is a rule for identifying what the next signal in the sequence is. Ex. 1001, 5:1–38. A receiving device that knows the rule can identify an incoming packet as the next packet in the same signaling sequence as previously received packets, by applying the rule. *Id.* at 7:35–50. The specification provides one example rule, that the next SIP signal bears a monotonically-increasing cseq number. *Id.* at 5:1–38. But there could be other such rules as well. For example, the value could be monotonically decreased, or the value could be determined using some other formula.⁸ The claims also do not require that the sequence of SIP signals use “numbers” as sequence identifiers.⁹ Other labeling paradigms could be possible as well,

⁸ Patent Owner’s litigation claim construction improperly imports implementation details from the preferred embodiment, such as “cseq numbers” and the limitations that these numbers “monotonically increase” for new transmissions, or be “preserved” for re-transmissions. While such embodiments would be one way of maintaining a SIP signaling sequence, the specification does not clearly limit the invention to only these embodiments.

⁹ Petitioner’s litigation claim construction improperly imports the limitation from the preferred embodiment that the SIP signaling sequence must be

such as text labels, characters or other symbols. But whatever the rule is that defines that a given set of SIP signals is a “SIP signaling sequence” as claimed, and identifies the next signal in the sequence, the claims require that this rule be “maintained” in the event of a network switch.

Thus, for purposes of this decision, we construe the term “the SIP signaling sequence of the transmission is maintained after said switching from the first network path to the one of a plurality of alternative network paths” of claim 1, and the corresponding terms in claims 8, 15, and 22, to require that the same rule or paradigm is used to identify that an incoming SIP packet is the next SIP packet in a sequence, regardless of whether that packet is transmitted on the first network path or the one of a plurality of alternative network paths. We decline to import the concept of a “number” into the construction of this term.

2. *Other Terms*

No other terms require construction for purposes of this decision.
See Realtime Data, 912 F.3d at 1375.

C. *Legal Principles*

Petitioner bears the burden to demonstrate unpatentability, and that burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). A claim is unpatentable under 35 U.S.C. § 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.

defined using a “number” and that the transmission must be with a “SIP server.” Ex. 3002, 6. These are both examples of preferred embodiments, but are not set forth in the specification as limitations on the entire invention.

See 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) where in evidence, so-called secondary considerations, including commercial success, long-felt but unsolved needs, failure of others, and unexpected results.¹⁰ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

D. Ground 1: Asserted Obviousness over Tagg

1. Summary of Tagg

Tagg is a United States Patent Application Publication disclosing a system for providing a handoff for a mobile device that is connected to a network. Ex. 1005, code (57). An embodiment of Tagg's system is depicted in Figure 15, reproduced below:

¹⁰ There is no evidence of any secondary considerations presently in evidence in this matter, so we do not further address this prong of the analysis.

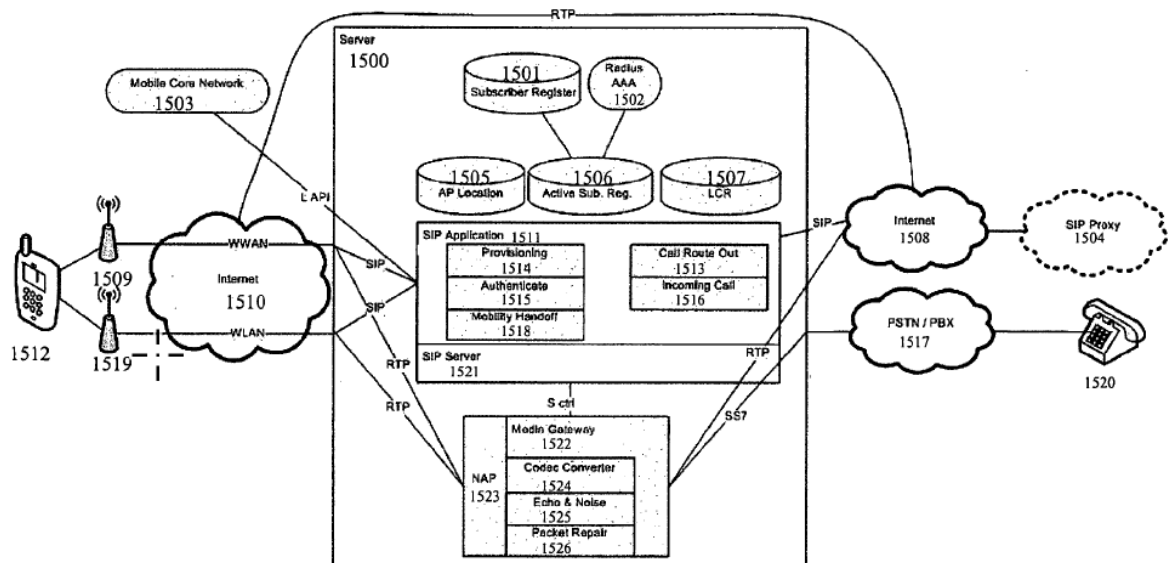


Figure 15

Figure 15 depicts a system for handling telecommunications functions including call handling and termination. Ex. 1005 ¶ 324. A call originates from mobile device 1512. *Id.* The call is initially sent via WLAN link 1519 or alternatively via WWAN link 1509, then through Internet 1510, to server 1500. *Id.* ¶ 326. This call uses the SIP protocol to communicate with SIP application 1511. *Id.* ¶ 324. The SIP application and mobile gateway 1522 process the call, and send it along to its destination, either via Internet 1508 to a SIP proxy (e.g. a computer or other telecommunications device) or via the Publicly Switched Telephone Network (PSTN) to telephone 1520. *Id.* at Fig. 15. When the call is sent to a SIP proxy, the SIP application uses SIP to set up and configure the connection to the SIP proxy. *Id.* ¶¶ 96, 238, 242–250.

Once the call is in progress, there are various scenarios that could trigger what Tagg refers to as a “handoff.” Ex. 1005 ¶ 277. Tagg discloses two types of handoffs, “seamless” and “non-seamless.” *Id.* ¶¶ 278–284. Seamless handoffs are those where the user need not take any actions to

effectuate the handoff, and where there is no break in the call. *Id.* ¶¶ 278–281. Non-seamless handoffs involve user decisions or appreciable breaks in the call. *Id.* ¶¶ 282–284. Tagg further discloses several classes of handoffs, including “make-before-break,” “break-before-make,” and “break & make” handoffs. *Id.* ¶ 285. “Make-before-break” handoffs involve sending packet streams via two paths during the handoff. *Id.* Thus, during the handoff, packets will be sent on both the original path and the new path. “Break-before-make” handoffs involve breaking the original connection with a pause before packets are sent on the new path. *Id.* “Break & make” handoffs are technically the same as “break-before-make” handoffs, except the handoff occurs quickly enough that the user does not notice the break. *Id.*

Tagg provides various case examples of situations where a handoff would be done. Ex. 1005 ¶¶ 286–320, Table 6, Fig. 14. We address cases 1 and 6 further. Case 1 (1460 of Fig. 4) is a handoff from a WLAN to a WWAN connection, as shown in Figure 15 above. *Id.* ¶¶ 287–296. This handoff may be either seamless (break-before-make or make-before-break) or non-seamless (break-before-make with notice to the user). *Id.* ¶¶ 289–291. Case 6 (1464 of Fig. 4) is the inverse of case 1, where a handoff is made from a WWAN to a WLAN connection. *Id.* ¶ 320. Either make-before-break or make-and-break (aka break & make) can be used for a case 6 handoff. *Id.* In either case, the call can be switched back and forth from the WLAN to the WWAN and the user’s call will appear to the rest of the world as if they are not moving between networks. *Id.* SIP server 1500, however, is aware that the call has switched paths, as the handoff is effectuated “by either rapidly switching the IP stream from the WLAN socket to the WWAN socket connection” or “copying the IP stream to two sockets” for a seamless handoff, or switching the IP stream with a pause for a non-seamless

transition. *Id.* ¶¶ 290–291. As shown in Figure 15, SIP server 1500 sees these two paths as separate paths of entry into SIP server 1500.

2. *Claim 1: Limitation 1.6*

Petitioner asserts that claims 1–28 would have been obvious over Tagg in view of the knowledge of a POSITA. Pet. 20–58. For purposes of this decision, we need only analyze Petitioner’s arguments directed to limitation 1.6, as well as the corresponding limitations of claims 8, 15, and 22. As discussed below, we find that Petitioner fails to sufficiently demonstrate a reasonable likelihood of success in showing that Tagg teaches or suggests limitation 1.6 of claim 1.

Limitation 1.6 recites:

the SIP signaling sequence of the transmission is maintained after said switching from the first network path to the one of a plurality of alternative network paths.

Ex. 1001, 8:27–29. We have construed this limitation to require that the same rule or paradigm is used to identify that an incoming SIP packet is the next SIP packet in a sequence, regardless of whether that packet is transmitted on the first network path or the one of a plurality of alternative network paths. *Supra*, Section II.B.1

Petitioner contends that Tagg discloses or suggests limitation 1.6. Pet. 39–41. Specifically, Petitioner contends that “Tagg discloses placing a call to a SIP proxy or server over a WWAN or WLAN by a handset that may further include a ‘SIP stack . . . for signaling.’” Pet. 39 (citing Ex. 1005 ¶¶ 246–247, 324) (alteration in original). Tagg’s system converts the phone number into a SIP INVITE command, and then “a connection is established . . . and the call can proceed.” Pet. 39–40 (citing Ex. 1005 ¶ 414) (alteration in original). Petitioner contends that Figure 15 of Tagg shows that “the same

SIP signaling sequence is preserved to and through a SIP server or SIP proxy regardless of switching from a WWAN to WLAN or vice versa.” Pet. 40.

Petitioner's annotated Figure 15 is reproduced below:

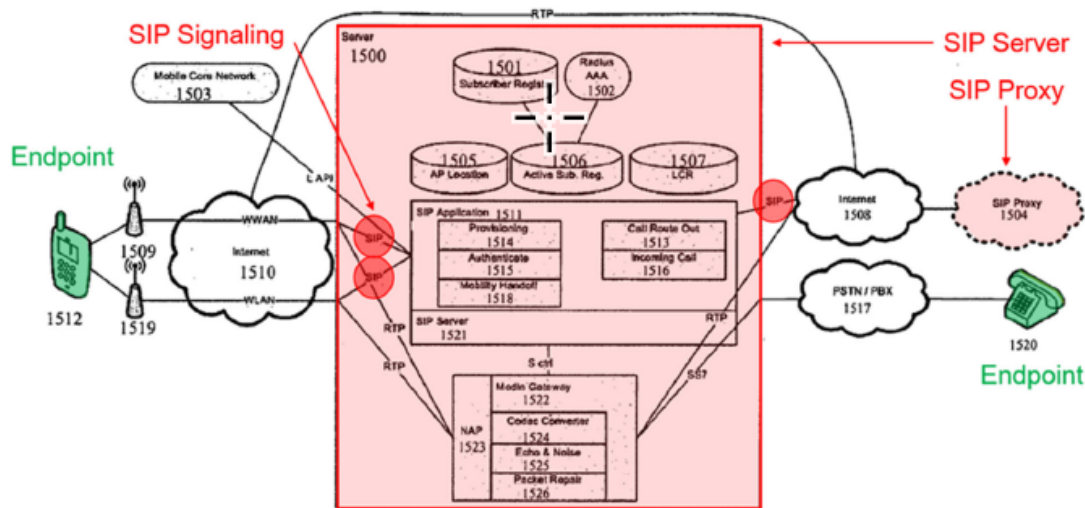


Figure 15

Annotated Figure 15 includes a box around the elements of server 1500, highlights of the “SIP” labels on the lines connecting server 1500 to Internet 1510, 1508 and a label identifying them as “SIP Signaling,” a label identifying server 1500 as a “SIP server,” and finally a label highlighting “SIP proxy 1504”). In the annotated figure, an endpoint 1512 sends traffic via either a WWAN or a WLAN through Internet 1510, to server 1500 highlighted by Petitioner. This traffic, as highlighted by Petitioner, uses the SIP protocol. The traffic passes through server 1500, again using the SIP protocol as highlighted by Petitioner, and proceeds through Internet 1508 to SIP proxy 1504, or PSTN 1517 to endpoint 1520.

Petitioner concludes that a POSITA “would have understood that Tagg’s SIP protocol uniformity in directionality teaches that a ‘SIP signaling sequence . . . is maintained’ regardless of switching between the WWAN and the WLAN because this allows the user to ‘appear[] to the rest of the

world as if they are not moving between networks.” Pet. 40–41 (citing Ex. 1005, Fig. 15, ¶¶ 247, 320) (alteration in original). Petitioner’s declarant testifies nearly identically to the text of the Petition. *Compare* Pet. 39–41, with Ex. 1003 ¶¶ 118–123.

We disagree with Petitioner’s view of Tagg. At best, the cited portions of Tagg disclose that SIP is used by endpoint 1512 to communicate with SIP server 1500, and by the SIP server to communicate with SIP proxy 1504. Figure 15 discloses that SIP is used for both of the paths from endpoint 1520 to SIP server 1500, via the WWAN or the WLAN. Figure 15 further discloses that SIP is used for the path from SIP server 1500 to SIP proxy 1504. But Figure 15 and the accompanying text are silent about any “sequences” of SIP signals at all, much less whether any such “sequences” are maintained, as required by the language of limitation 1.6. Ex. 1005 ¶¶ 324–346, Fig. 15. Instead, Tagg’s specification simply discloses that SIP is used to perform call management functions. *Id.* ¶¶ 245–247.

Tagg’s cases 1 and 6, relied on by Petitioner, teach that Tagg’s server can ensure that the end user appears to the rest of the world (i.e. the devices upstream of the SIP server) as if no network change is being made. Ex. 1005 ¶ 320. Tagg further teaches that either “make before break” or “make and break” schemes may be used. *Id.* But these cases do not explain *how* any SIP signaling sequences are used, much less how or even that any SIP signaling sequence is maintained when a network switches. At most, Tagg teaches that each path will have an IP (Internet Protocol) address, which may be the same or different for each path. *Id.* ¶ 288. But IP addresses are part of the IP

protocol, not the SIP protocol.¹¹ Thus, even were Tagg to be read as disclosing or suggesting that IP addressing schemes are maintained or otherwise accounted for in a network switch, that would not be sufficient to disclose or suggest that SIP signal sequences are maintained.

Furthermore, under our construction of limitation 1.6, it must be shown that the same rules or paradigm used to identify that an incoming SIP packet is the next SIP packet in a sequence, regardless of whether that packet is transmitted on the first network path or the one of a plurality of alternative network paths. The Petition is silent on this point. The closest Petitioner comes is the assertion that Figure 15 depicts preservation of “the same SIP signaling sequence,” with the Petitioner’s explanation being that Tagg allows simultaneous connections across a WWAN and a WLAN, and that “POSITAs would have understood that Tagg’s SIP protocol uniformity in directionality teaches that a ‘SIP signaling sequence . . . is maintained.’” Pet. 39–40.

Petitioner’s statement about “Tagg’s SIP protocol uniformity in directionality” is unclear. Pet. 40. To the extent that Petitioner means that Tagg teaches that its SIP traffic all flows in the same direction, that is irrelevant to the issue at hand here.¹² To the extent that Petitioner means that Tagg teaches that its SIP traffic arrives at the intended destination, regardless of the specific path taken, that fails to meet the specific limitation of the claim, which requires more than merely that the traffic arrives as

¹¹ SIP is a higher-level protocol used to implement voice traffic such as telephone calls, and sits on top of the lower-level protocols such as Internet Protocol (IP). Ex. 1005 ¶ 100.

¹² This would also appear to be inaccurate, since a phone call is typically bi-directional, not uni-directional.

expected. Instead, the claim requires that a SIP signaling sequence is maintained after a network switch.

Petitioner does not clear up this ambiguity and it is difficult to discern Petitioner's intended position. But under either of these possible options, Petitioner's challenge is not persuasive. If Petitioner intends to advance a different position, such position is unclear. A petition must specify "with particularity[] each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim." 35 U.S.C. § 312(a)(3) (2018). Petitioner fails to meet that standard for this limitation.¹³

Petitioner's declarant repeats nearly word-for-word the text of the Petition. *Compare* Pet. 39–41 (citing Ex. 1003 ¶¶ 117–124), *with* Ex. 1003 ¶¶ 117–124; *accord* Prelim. Resp. 24–26. There is no further elucidation or explanation as to, for example, *what* a POSITA would have understood from reading Tagg, *which* passages in Tagg such a POSITA would have looked to in order to develop this understanding, *why* a POSITA would have come to the understanding Petitioner advances, or *how* a POSITA would have come to the understanding advanced by Petitioner. Declarations such as this are entitled to little if any weight. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022) (precedential) (finding a

¹³ To the extent that the Petition may be read as asserting that Tagg inherently teaches maintaining a SIP signaling sequence across a network switch, the Petition fails to satisfy the high burden to show inherency. *Rosco, Inc. v. Mirror Lite Co.*, 304 F.3d 1373, 1380 (Fed. Cir. 2002) (holding that inherency requires a showing that the missing material "is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill"). Petitioner does not articulate any inherency argument, much less provide the required showing in support thereof.

declaration was “conclusory and unsupported, add[ing] little to the conclusory assertion for which it [was] offered to support, and [was] entitled to little weight”).

In conclusion, we find that Petitioner fails to sufficiently show a reasonable likelihood of success in establishing that Tagg teaches or suggests limitation 1.6 or the corresponding limitations of independent claims 8, 15 and 22. Thus, Petitioner fails to show a reasonable likelihood of success of prevailing on its assertions as to Ground 1.

3. *Ground 2: Asserted Obviousness over Kottilingal in view of Politis*

a) *Summary of Kottilingal*

Kottilingal discloses a system for handing off a call from a LAN connection to a cellular connection. Ex. 1006, 1:62–2:24. This system uses a series of SIP messages sent from a transmission source to a destination. *Id.* at 2:25–41. These messages include messages sent along a first network path, as well as messages sent along a second network path. *Id.* at 7:64–8:17, 9:49–10:10. In Kottilingal, a communication between a source and a target begins with a SIP INVITE message sent along a first network path, as shown in Figure 5 below.

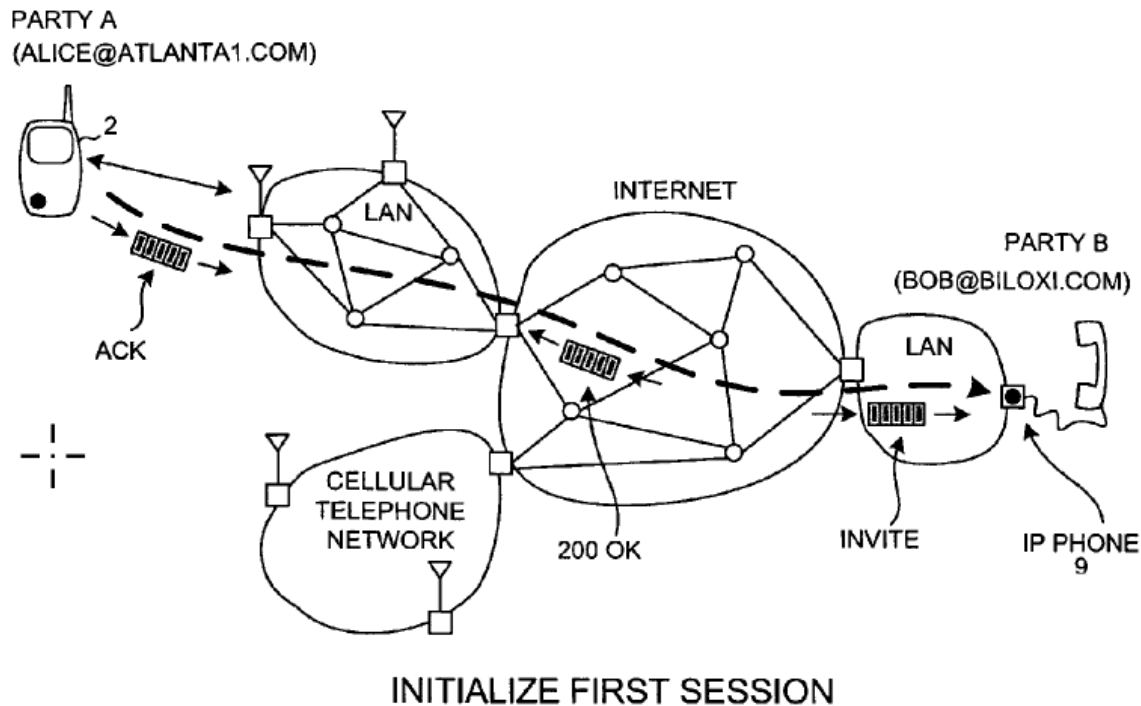


FIG. 5

Figure 5 depicts the packet flows between a calling phone and a receiving phone, for a caller 2 initiating a call to a receiving phone 9. The call is routed over a first path, which includes a LAN, the Internet, and a second LAN at receiving phone 9's end. The call is initiated with an INVITE message, to which a 200 OK response message is sent, which in turn prompts calling phone 2 to send an ACK message.

The SIP INVITE message has the following format:

```
INVITE SIP:BOB@BILOXI.COM SIP/2.0
  VA: SIP/2.0/UDP
  PC33.ATLANTA1.COM;BRANCH=Z9HG4BK776ASDHDS
  MAX-FORWARDS: 70
  TO: BOB <SP:BOB@BILOX.COM>
  FROM: ALICE
  <SIP:ALICE@ATLANTA1.COM>;TAG=1928301774
  CALL-ID: A84B4C76E66710@PC33.ALTANTA1.COM
  CSEC: 314159 INVITE
  CONTACT: SIP:ALICE@PC33.ATLANTA1.COM.
```

CONTENT-TYPE: APPLICATION/SDP
CONTENT-LENGTH: 142

INVITE FOR FIRST SESSION

Ex. 1006, Fig. 4.

When Kottilingal determines to move a communication stream from one network to another, it initiates the move by issuing a SIP SPAWN message, as shown in Figure 9 below.

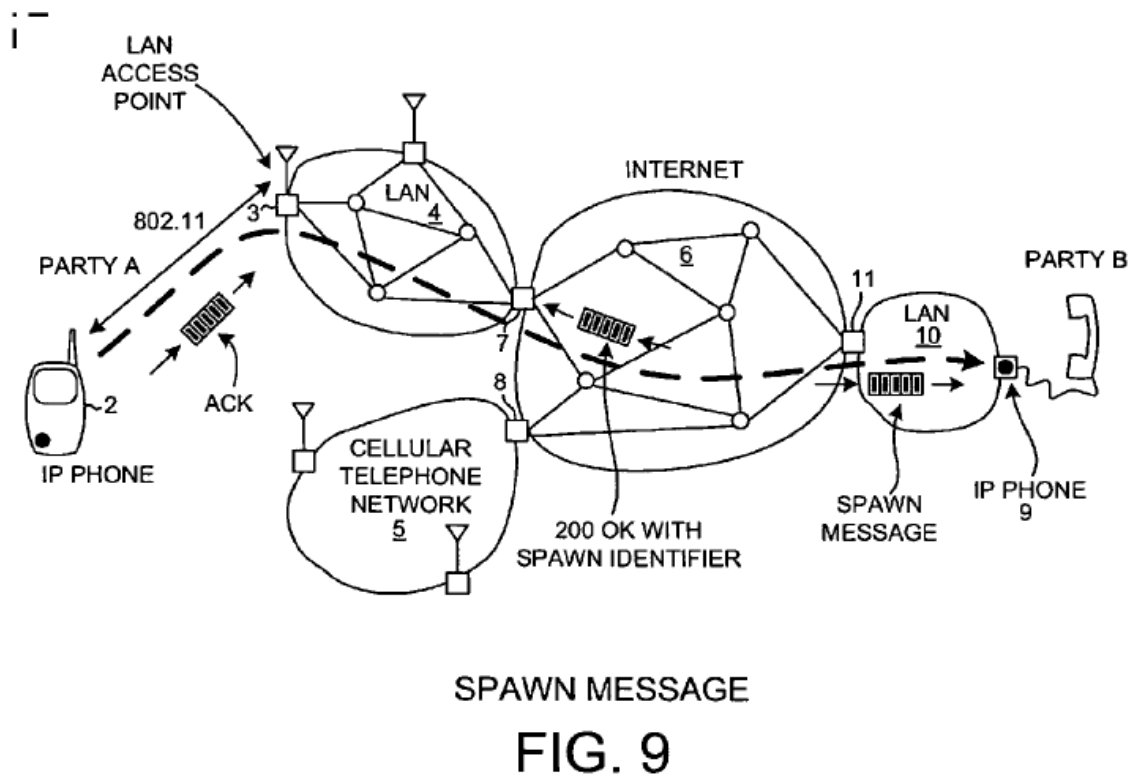


Figure 9 depicts the packet flows between a calling phone and a receiving phone, when calling party 2 sends a SPAWN message across the first path (from Figure 5 above).

The SPAWN message has the following format:

```
SPAWN SIP:BOB@BILOXI.COM SIP/2.0
VIA: SIP/2.0/UDP PC33.ATLANTA2.COM;BRANCH=ADFS
MAX-FORWARDS: 70
TO: BOB <SIP:BOB@BILOX.COM>
```

```
FROM: ALICE
<SIP:ALICE@ATLANTA2.COM>;TAG=876767776
CALL-ID; D7878-0-A2@PC33.ATLANTA2.COM
CSEQ: 314160 SPAWN
CONTACT: SIP:ALICE@PC33.ATLANTA2.COM.
CONTENT-TYPE: APPLICATION/SDP
CONTENT-LENGTH: 142
MASTER VIA:
PC33.ATLANTA1.COM;BRANCH=Z9HG4BK776ASDHDS
MASTER TO: BOB <SIP:BOB@BILOXI.COM>
MASTER FROM: ALICE
<SP:ALICE@ATLANTA1.COM>TAG=1928301774
MASTER CALL-ID:
A84B4C76E66710@PC33.ATLANTA1.COM
MASTER CSEC: 314159 INVITE
MASTER CONTACT: SIP:ALICE@PC33.ATLANTA.COM
```

Ex. 1006, Fig. 7. The “Master” fields are included so that the callee party can identify the SPAWN message as being associated with the first session. *Id.*, at Fig. 7. Receiving party 9 responds with a 200 OK message that contains a SPAWN ID. *Id.* at 8:55–61. This SPAWN ID is used to associate a second session with the first session. *Id.* at 8:61–62. Sending party 2 concludes with an ACK message. *Id.* at 9:1–5.

Both the INVITE and the SPAWN messages are sent on the first path, prior to any network switch. Ex. 1006, 9:1–5. Once the SPAWN message is sent across the first path, an INVITE message is sent on the second path as shown in Figure 10 below.

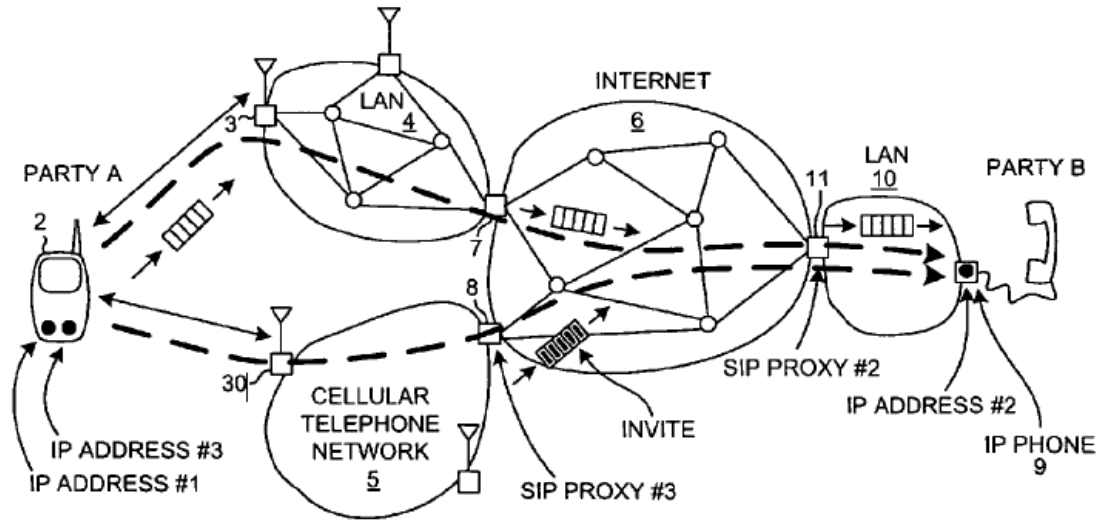


FIG. 10

Figure 10 depicts packet flows between a calling phone and a receiving phone, including two pathways for sending packets. The figure uses the same first path between calling party 2 and receiving/callee party 9 as shown in Figures 5 and 7 above. Figure 10 includes an additional path from calling party 2 through cellular telephone network 5, then through the Internet and the second LAN at receiving party 9's location. *Id.* at 9:10–22.

The INVITE message contains the SPAWN ID from the SPAWN message. Ex. 1006, 9:8–10. The SPAWN ID signals to receiving phone 9 that the second session being created by the second INVITE message is a continuation of the session created by the first INVITE message discussed above. *Id.* at 9:23–32. But for the SPAWN ID, receiving phone 9 would reject the second INVITE message as a duplicate of the already-active first session. *Id.*

At this point, both the first and second paths are active. Then a media handoff control packet is sent, either on the first path or the second path,

which signals the system to stop the media packets on the first path and pick up the media packets on the second path.

The media flow handoff control packet has the following format:

```
SWITCH SIP:BOB@BILOXI.COM SIP/2.0
VIA: SIP/2.0/UDP
PC33.ATLANTA2.COM;BRANCH=ADFD SGFSS
MAX-FORWARDS: 70
TO: BOB <SIP:BOB@BILOXI.COM>
FROM: ALICE <SIP:ALICE@ATLANTA2.COM>;TAG=876198
CALL-ID: D7878-0-A2@PC33.ATLANTA2.COM [sic:
ATLANTA]
CSEQ: 31401 SWITCH
CONTACT: SIP:ALICE@PC33.ATLANTA2.COM.
CONTENT-TYPE: APPLICATION/SDP
CONTENT-LENGTH: 142
SPAWN-ID: ASD14KLJLDK1567E409870
SWITCH-FROM: ALICE <SIP:ALICE@ATLANTA1.COM>
SPAWN-TO: ALICE <SIP:ALICE@ATLANTA2.COM>
```

Ex. 1006, Fig. 14.

In each of the INVITE, SPAWN, and SWITCH messages, the message has a “cseq” number field. Ex. 1006, Figs. 4, 7, 14. This field contains an identifier for the message. *Id.* The two pre-switch messages have the values “314159 INVITE” and “314160 SPAWN.” *Id.* These messages, according to Kottilingal, are sent in succession, and the cseq value is increased by one. *Id.* at 7:64–8:2, 9:1–4, Figs. 5, 9. Both of these messages are sent on the first network connection. *Id.* The message which initiates the switch, on the other hand, has a cseq value of “31401 SWITCH.” *Id.* at Fig. 14. This number is not an increase by one from the previous message, but it appears to adopt an entirely different paradigm, apparently starting over at “01.” This post-switch message is sent on either the first or the

second network connection. *Id.* at 9:54–60. All subsequent data packets are sent on the second network session.

b) Claim 1: Limitation 1.6

Petitioner alleges that claims 1–28 would have been obvious over Kottilingal in view of Politis. Pet. 59–87. As above, we focus our analysis on limitation 1.6 of claim 1, which is substantively similar to the corresponding limitations of claims 8, 15, and 22. Petitioner relies solely on Kottilingal as “disclos[ing] or suggest[ing]” this limitation. Pet. 75–77.

Petitioner makes two arguments directed at how Kottilingal allegedly discloses that “the SIP signaling sequence of the transmission is maintained after said switching” as recited by limitation 1.6 of claim 1. First, Petitioner contends that the placement of the CSEQ value in the same sequential position in each SIP message shows that the SIP signaling sequence is maintained. Pet. 75–76. Second, Petitioner contends that Kottilingal’s use of sequential “CSEQ” values corresponds to the ’554 Patent’s description of the meaning of this claim element. *Id.* at 76. Neither argument is persuasive.

Petitioner’s first argument is inconsistent with our construction of limitation 1.6. Merely putting a CSEQ value at the same position in two different messages is not what limitation 1.6 requires. Under our construction, this limitation requires that the same rule or paradigm is used to identify that an incoming SIP packet is the next SIP packet in a sequence, regardless of whether that packet is transmitted on the first network path or the one of a plurality of alternative network paths. The position within a message at best perhaps identifies the CSEQ field as the field which contains information used to identify the next SIP packet in a sequence (though Petitioner points to nothing in Kottilingal that teaches what meaning, if any, the position within a message conveys). The position plays no part in

determining what rule or paradigm is used to identify the SIP message, nor what value is assigned to the CSEQ field.¹⁴

Petitioner's second argument is also flawed. Petitioner is correct to observe that the SIP signaling number (i.e. the CSEQ value) does monotonically increase from the SIP INVITE message (CSEQ: 314159) to the SIP SPAWN message (CSEQ: 314160). Pet. 77–78. Petitioner, however, fails to account for the remaining language of limitation 1.6, namely that the signaling sequence is maintained “after said switching from the first network path to the one of the plurality of alternative network paths.” Ex. 1001, 8:27–29. As discussed above, the SIP INVITE and SIP SPAWN messages are both sent *before* the network switch occurs. Therefore, the fact that the CSEQ values monotonically increase between the INVITE and SPAWN messages is not relevant to limitation 1.6. Furthermore, Kottilingal teaches that the message sent that implements the network switch, the SIP SWITCH message (CSEQ: 31401), fails to follow the same rule as the pre-switch messages. The SIP SWITCH message does not monotonically increase from the prior SIP SPAWN message. Instead, it appears to start over at “01.”¹⁵ Thus, Petitioner has not shown sufficiently that Kottilingal uses the same SIP signaling rules or paradigm for the switch message as for the pre-switch messages. Nor has Petitioner shown sufficiently that Kottilingal uses the same SIP signaling scheme as that of the preferred embodiment of the '554 Patent, for the switch message. Petitioner does not identify any disclosure in

¹⁴ Indeed, it is equally if not more likely that the label “CSEQ,” regardless of position, is what identifies this field as the “CSEQ” field.

¹⁵ We assume that the digits “314” represent some sort of prefix, as suggested by Kottilingal's use of the same initial three digits in all of the example SIP packets discussed therein. Kottilingal, Figs. 4, 7, 14 (CSEQ field values 314159, 314160, 31401).

Kottilingal that shows what SIP signaling scheme, if any, is used by the data packets sent after the switch message.

Petitioner does not rely on Politis for this limitation. We find that Petitioner fails to show sufficiently that Kottilingal teaches or suggests limitation 1.6 (or the corresponding limitations of claims 8, 15, and 22), and thus Petitioner fails to show a reasonable likelihood of success in demonstrating unpatentability under Ground 2.

E. The Parties' Fintiv Arguments

We deny institution on the merits, as set forth above. Therefore, we do not reach the parties' arguments regarding discretionary denial pursuant to *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (March 20, 2020) (precedential). *See* Pet. 88–90; Prelim. Resp. 38–49.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has not shown a reasonable likelihood that it would prevail in showing that any of claims 1–28 of the '554 Patent are unpatentable. Accordingly, we decline to institute an *inter partes* review.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314, the Petition is denied, and no *inter partes* review is instituted.

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FOR PETITIONER:

Jessica Kaiser
Tyler Knox
Yuanfeng Gao
Kevin Anderson
Glenn Richeson
Scott Hejny
Nicholas Mathews
kaiser-ptab@perkinscoie.com
knox-ptab@perkinscoie.com
gao-ptab@perkinscoie.com
kpanderson@duanemorris.com
gricheson@bakerlaw.com
shejny@mckoolsmith.com
nmathews@mckoolsmith.com

FOR PATENT OWNER:

Preston Heard
Fabio Marino
Travis Iams
preston.heard@wbd-us.com
fabio.marino@wbd-us.com
travis.iams@wbd-us.com