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Paper 8
Date: February 14, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNIFIED PATENTS, LLC,
Petitioner,

v.

COMMWORKS SOLUTIONS, LLC,
Patent Owner.

IPR2021-01297
Patent 8,923,846 B2

Before JENNIFER MEYER CHAGNON, KEVIN C. TROCK, and JOHN R. KENNY, *Administrative Patent Judges.*

CHAGNON, *Administrative Patent Judge*.

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

I. INTRODUCTION

Unified Patents, LLC ("Petitioner")[1] filed a Petition requesting *inter partes* review of claims 1–6, 9–13, and 16–20 ("the challenged claims") of U.S. Patent No. 8,923,846 B2 (Ex. 1001, "the '846 patent"). Paper 1 ("Pet."). CommWorks Solutions, LLC ("Patent Owner")[2] filed a Preliminary Response. Paper 7 ("Prelim. Resp.").

We have authority to determine whether to institute an *inter partes* review under 35 U.S.C. § 314, which provides that an *inter partes* review may be instituted only upon a showing that "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). Moreover, if the Board institutes a trial, the Board will institute on all challenges raised in the petition. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355–56 (2018) ("*SAS*") (holding that a decision to institute under 35 U.S.C. § 314 may not institute review on fewer than all claims challenged in the petition); *see also* Patent Trial and Appeal Board Consolidated Trial Practice Guide 64 (Nov. 2019), https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf ("CTPG") ("The Board will not institute on fewer than all claims or all challenges in a petition.").

Applying those standards, and upon consideration of the information presented in the Petition and the Preliminary Response, as well as the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing in showing the unpatentability of at least

[1] Petitioner states that Unified Patents, LLC is the real party-in-interest in this proceeding. Pet. 62.
[2] Patent Owner also identifies Brainbox Innovations, LLC as a real party-in-interest to this proceeding. Paper 4, 1.

one of the challenged claims. Accordingly, we institute an *inter partes* review of all challenged claims of the '846 patent, based on all grounds identified in the Petition.

The following findings of fact and conclusions of law are not final, but are made for the sole purpose of determining whether Petitioner meets the threshold for initiating review. Any final decision shall be based on the full trial record, including any response timely filed by Patent Owner. Any arguments not raised by Patent Owner in a timely-filed response may be deemed waived, even if they were presented in the Preliminary Response.

A. Related Proceeding

The parties identify *CommWorks Solutions, LLC v. Comcast Cable Communications, LLC*, Case No. 6:21-cv-00366-ADA (W.D. Tex.) as a related matter involving the '846 patent. Pet. 62; Paper 4, 1.

B. The '846 Patent

The '846 patent, titled "Recovery Techniques in Mobile Networks," was filed on October 21, 2013,[3] and issued on December 30, 2014. Ex. 1001, codes (22), (45), (54). Embodiments of the '846 patent relate to "technique[s] for recovering location information of a subscriber in a mobile network." *Id.* at 1:54–2:16; *see also id.* at code (57) ("A technique for

[3] The '846 patent claims priority, through a series of continuation applications and a divisional application, to application No. 09/802,861, filed on March 12, 2001. Ex. 1001, code (60). The specific priority date of the challenged claims is not at issue in this proceeding, and we need not make any determination in this regard for purposes of this Decision.

protecting location information of a subscriber in a mobile network is disclosed.").

The '846 patent explains that "Mobile IPv6[4] allows a subscriber to move from one link to another without changing its IP address." *Id.* at 3:11–12. "While a subscriber is attached to some foreign link away from home, it is also addressable by one of more care-of-addresses, in addition to its home address." *Id.* at 3:30–32. The '846 patent describes that a "care-of address is an IP address associated with a mobile node while the subscriber is visiting a particular foreign link." *Id.* at 3:30–34. For this to work, "a mobile subscriber registers one of its care-of addresses with a router on its home link, requesting this router to function as the 'home agent.'" *Id.* at 3:49–51. The home agent then "intercept[s] any IPv6 packets addressed to the subscribers' home address (or home addresses) on the home link and tunnels each intercepted packet to the subscribers' primary care-of address." *Id.* at 3:59–62.

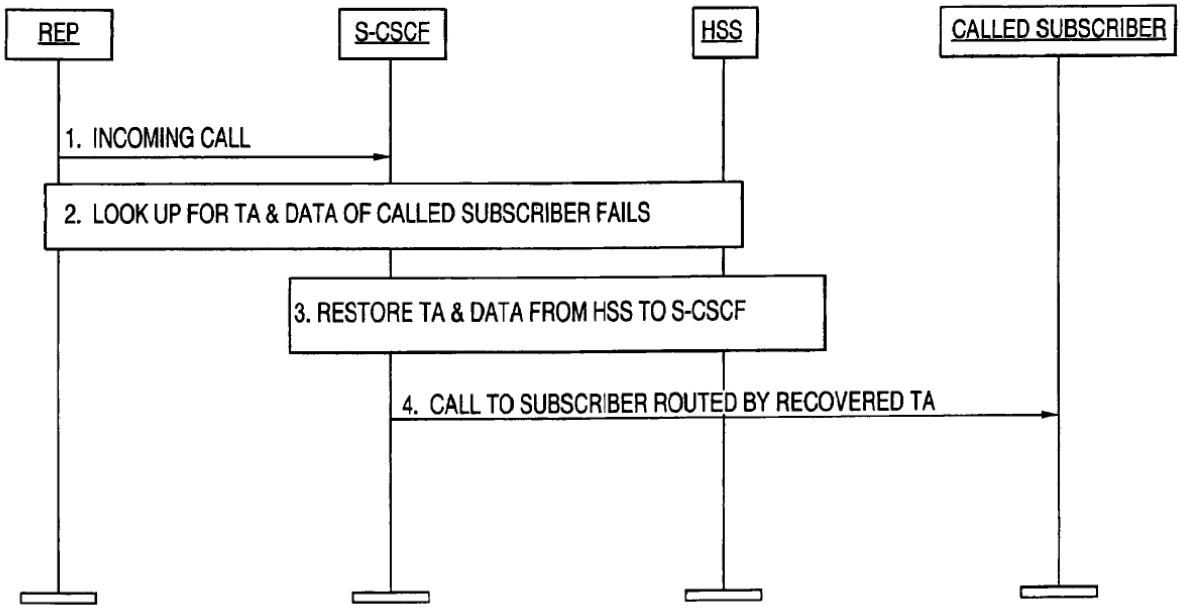
The '846 patent "relates to protecting the Transport Address (TA) which is a current Care of Address of a mobile subscriber is reachable from loss and after Call State Control Function (CSCF) crashes and after reset situations of a network element realizing CSCF functionality." *Id.* at 1:22–27. The '846 patent describes embodiments in the context of a 3G All-IP mobile network. *See id.* at 6:22–26. In a 3G All-IP network, the "S-CSCF [servicing-CSCF] that the subscriber is currently registered to and the TA of the roaming subscriber . . . must be known to and maintained by the network." *Id.* at 2:63–67. Specifically, "[k]eeping the address of the S-CSCF ensures that a call to a subscriber can be routed to the destination

[4] Internet Protocol Version 6. *See* Ex. 1001, 4:30–31.

node," and "[k]eeping the current TA of the subscriber ensures that a call made to the subscriber which arrives at the S-CSCF can finally reach the subscriber." *Id.* at 3:66–4:3. But, "the information of the current S-CSCF (stored in the HSS [Home Subscriber Service]) is insufficient to reach the subscriber upon the loss of the subscriber TA." *Id.* at 4:15–17. The '846 patent proposes several options to remedy this problem, including that "[t]he TA of the subscriber should be forwarded to the HSS at registration and downloaded from the HSS to the S-CSCF during recovery." *Id.* at 4:27–29.

Figure 4A of the '846 patent, reproduced below, illustrates an embodiment for "sending subscriber TA to S-CSCF and then forwarding it to HSS at registration" (*id.* at 2:39–40):

FIG. 4A



In the embodiment shown in Figure 4A above, "'a safe copy' of the subscriber's TA is forwarded to the HSS for storage and protection" so that "[t]he TA and other data can then be restored to the S-CSCF upon the earlier loss of data by the S-CSCF." *Id.* at 4:37–42. In particular, in step 1, "[a]n

incoming call from an REP (Remote End-Point) is received by the S-CSCF." *Id.* at 4:43–45. "In step 2, the S-CSCF looks for the subscriber's TA so as to route the call but fails to find the subscriber's TA." *Id.* at 4:45–46. The S-CSCF then initiates restoration of the TA in step 3, and the call is routed to the subscriber using the recovered TA in step 4. *Id.* at 4:46–51.

C. Illustrative Claim

Of the challenged claims, claims 1, 9, and 16 are independent. Claims 2–6 depend from claim 1; claims 10–13 depend from claim 9; and claims 17–20 depend from claim 16. Independent claim 1 of the '846 patent is reproduced below, and is illustrative of the challenged claims.

> 1. A method comprising:
>
> receiving, from a first server at a second server, a transport address and an address of the first server;
>
> receiving, at the second server, a request from the first server to restore the transport address; and
>
> in response to the request from the first server to restore the transport address, communicating the transport address to the first server from the second server.

Ex. 1001, 6:31–38.

D. The Applied References

Petitioner relies on the following references in the asserted grounds. Pet. 8.

Reference	**Issue Date/ Publication Date**	**Exhibit**
U.S. Patent No. 6,788,936 B1 ("Rune")	Sept. 7, 2004[5]	Ex. 1003
European Telecommunications Standards Institute, Digital cellular telecommunications system (Phase 2+); Mobile Application Part (MAP) specification (GSM 09.02) (version 5.3.0) ("ETSI")	Aug. 1996[6]	Ex. 1004
U.S. Patent No. 6,611,516 B1 ("Pirkola")	Aug. 26, 2003[7]	Ex. 1005

Petitioner also relies on the Declaration of Zygmunt J. Haas, Ph.D. (Ex. 1008) to support its positions.

[5] Rune was filed on April 12, 2000, and is prior art to the challenged claims at least under 35 U.S.C. § 102(e). *See* Ex. 1003, code (22); Pet. 11.

[6] Petitioner submits the Declaration of Sylvia D. Hall-Ellis, Ph.D. attesting that ETSI was publicly available as of August 1996. Pet. 14–16 (citing Ex. 1006 ¶¶ 22–31). Petitioner contends ETSI is prior art to the challenged claims at least under 35 U.S.C. §§ 102(a), (b). Pet. 14. As this stage of the proceeding, Patent Owner does not challenge the status of this reference as prior art. *See generally* Prelim. Resp. Based on the record now before us, Petitioner has made a sufficient showing that ETSI qualifies as a prior art printed publication. *See Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 (PTAB Dec. 20, 2019) (precedential).

[7] Pirkola was filed on June 21, 1999, and is prior art to the challenged claims at least under 35 U.S.C. § 102(e). *See* Ex. 1005, code (22); Pet. 35.

E. The Asserted Grounds

Petitioner sets forth its challenges to claims 1–6, 9–13, and 16–20 on the following grounds. Pet. 8.

Claim(s) Challenged	**35 U.S.C. §**	**Reference(s)**
1–5, 9–12, 16–19	103[8]	Rune, ETSI
1, 4–6, 9, 12, 13, 16, 19, 20	103	Pirkola, Rune, ETSI

II. ANALYSIS

A. Legal Standards

"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")). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable under 35 U.S.C. § 103(a) if "the differences between the subject matter sought to be patented 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

[8] Because the application leading to the '846 patent has an earliest effective filing date before March 16, 2013, patentability is governed by the version of 35 U.S.C. §§ 102 and 103 preceding the Leahy-Smith America Invents Act ("AIA"), Pub L. No. 112-29, 125 Stat. 284 (2011).

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 ordinary skill in the art; and (4) objective evidence of nonobviousness.[9] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). An obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418; *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007). However, Petitioner cannot satisfy its burden of proving obviousness by employing "mere conclusory statements." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Instead, Petitioner must articulate a reason why a person of ordinary skill in the art would have combined the prior art references. *In re NuVasive*, 842 F.3d 1376, 1382 (Fed. Cir. 2016).

We analyze the asserted grounds of unpatentability in accordance with these principles to determine whether Petitioner has met its burden to establish a reasonable likelihood of success at trial.

B. Level of Ordinary Skill in the Art

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of the invention. *Graham*, 383 U.S. at 17. Petitioner contends that a person

[9] At this stage of the proceeding, the parties have not asserted or otherwise directed our attention to any objective evidence of non-obviousness.

having ordinary skill in the art would have had "(1) an undergraduate degree in electrical engineering or closely related scientific field, such as computer engineering, or similar post-undergraduate education; and (2) at least two years of experience in mobile telecommunications, with more education substituting for less experience and vice versa." Pet. 5–6 (citing Ex. 1008 ¶¶ 30–32).

At this stage of the proceeding, Patent Owner does not contest Petitioner's definition of a person of ordinary skill in the art. *See generally* Prelim. Resp.

Based on the current record and for the purposes of this Decision, we adopt Petitioner's proposed description of the person of ordinary skill in the art as it is supported by Dr. Haas's testimony and is consistent with the '846 patent and the asserted prior art.

C. Claim Construction

For this *inter partes* review proceeding claim terms

> shall be construed using 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) (2019). Further, "[a]ny prior claim construction determination concerning a term of the claim in a civil action, or a proceeding before the International Trade Commission, that is timely made of record in the *inter partes* review proceeding will be considered." *Id.*

Under the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–19 (Fed. Cir. 2005) (en banc), claim terms are given their ordinary and

customary meaning, as would have been understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record. *See Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1365–66 (Fed. Cir. 2012). Only those claim terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

For purposes of this Decision, we discuss the term "transport address."

Petitioner contends the term "*transport address* should be construed as *the current address, other than its home address, through which the mobile subscriber can be reached*, such as when a mobile subscriber has roamed outside of its home network." Pet. 6; *see* Ex. 1001, 5:14–18 ("The subscriber . . . has provided its' TA, that is, the current address where the subscriber is reachable. Such an address is not the static home address but rather is the Care-of-Address.").

Patent Owner contends that Petitioner's "proposed construction omits that the *transport* address must be an IP address routable within an IP network." Prelim. Resp. 4. Patent Owner proposes "a *transport address* is 'an IP address associated with a mobile node while the subscriber is visiting a particular foreign link.'" *Id.* Patent Owner argues that Petitioner's proposed construction "ignores the '846 patent's definition that explicitly references the 'IP address.'" *Id.* at 5.

As Patent Owner correctly notes, the '846 patent describes that "the Transport Address (TA) . . . is a current Care of Address of a mobile

subscriber." Ex. 1001, 1:23–24; Prelim. Resp. 4. And, the '846 patent further describes that "[a] care-of address is an IP address associated with a mobile node while the subscriber is visiting a particular foreign link." Ex. 1001, 3:32–34; Prelim. Resp. 4.

The '846 patent also describes, however, that the "Care-of Address" is "*part of* the TA [Transport Address]." Ex. 1001, 4:32 (emphasis added); Pet. 7. And, claim 6, which depends from claim 1, further recites "wherein the transport address comprises a care-of-address of a mobile subscriber." Ex. 1001, 6:48–49. Construing transport address to be limited to the care-of-address would render claim 6 superfluous. *See Versa Corp. v. Ag-Bag Int'l Ltd.*, 392 F.3d 1325, 1330 (Fed. Cir. 2004) ("The doctrine of claim differentiation 'create[s] a presumption that each claim in a patent has a different scope.'" (quoting *Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed.Cir.1998))). In other words, although we agree that the proper construction of transport address *encompasses* a care-of-address, we do not agree with Patent Owner that it is necessarily *limited* thereto. *See* Pet. 7 ("Consistent with the specification, this construction encompasses a care-of-address . . . ." (citing Ex. 1008 ¶ 33)); Prelim. Resp. 4–5; *cf. E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369 (Fed. Cir. 2003) ("Interpretation of descriptive statements in a patent's written description is a difficult task, as an inherent tension exists as to whether a statement is a clear lexicographic definition or a description of a preferred embodiment. The problem is to interpret claims 'in view of the specification' without unnecessarily importing limitations from the specification into the claims.").

Patent Owner also argues that Petitioner's proposed construction "ignores the '846 patent's . . . repeated references to the problem—and identified solution—of successfully routing to a subscriber within '3G *All-IP*' networks." Prelim. Resp. 5. The '846 patent, however, expressly indicates that "the example embodiments of the present invention have been described with respect to currently used networks, such as [3G[10]] All-IP mobile networks, and standards for simplicity. It is, of course, understood that *the present invention is not limited thereto*." Ex. 1001, 6:22–27 (emphasis added). At this stage of the proceeding, Patent Owner does not cite persuasive evidence supporting that a person of ordinary skill in the art would understand that the ordinary and customary meaning of "transport address" limits the claims to 3G All-IP networks. Based on the record now before us, we are not persuaded that the claims are clearly limited to 3G All-IP networks. *See In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1369 (Fed. Cir. 2004) ("We have cautioned against reading limitations into a claim from the preferred embodiment described in the specification, even if it is the only embodiment described, absent clear disclaimer in the specification.").

Finally, Patent Owner argues that Petitioner "improperly suggests that language describing a specific embodiment applies to the general use of the term *transport address*." Prelim. Resp. 5. According to Patent Owner, the cited "portion of the '846 patent relates to the three 'assumptions' made only for a specific 'third option' (i.e., embodiment) of the invention." *Id.* at 6.

[10] The patent here reads "313"; this appears to be a typographical or printing error.

Petitioner's proposed construction relies on the following description from the '846 patent:

> The subscriber is in an area assigned to an S-CSCF and has registered with it and has provided its TA, that is, the current address where the subscriber is reachable. Such an address is not the static home address but rather is the Care-of-Address.

Ex. 1001, 5:14–18; Pet. 6. It is not clear from parsing this language, however, that the referenced assumption is the portion that describes the TA as the "current address where the subscriber is reachable"; rather, it is just as plausible that the assumption is that the "subscriber is in an area assigned to an S-CSCF and has registered with it and has provided its TA." Further, describing the TA as the "current address where the subscriber is reachable" is consistent with other portions of the Specification (i.e., not limited to the "third option") that describe the object of the invention generally as "a technique for recovering location information of a subscriber in a mobile network" to "protect[] against loss" of this information, such as the subscriber's TA. *See, e.g.*, Ex. 1001, 1:54–2:3; Pet. 6–7.

At this stage of the proceeding and based on the record now before us, we are not persuaded by Patent Owner's contention that the term "transport address" requires an IP address routable within an IP network. The panel invites the parties to further address the construction of this claim language during the trial.

D. Overview of the Asserted References

1. Rune (Ex. 1003)

Rune is titled "Gateway Location Register Fault Recovery." Ex. 1003, code (54). Rune "relates to mobile communications systems, and

more specifically, to recovery of a gateway location register from a fault." *Id.* at 1:36–38. Figure 1 of Rune is reproduced below.

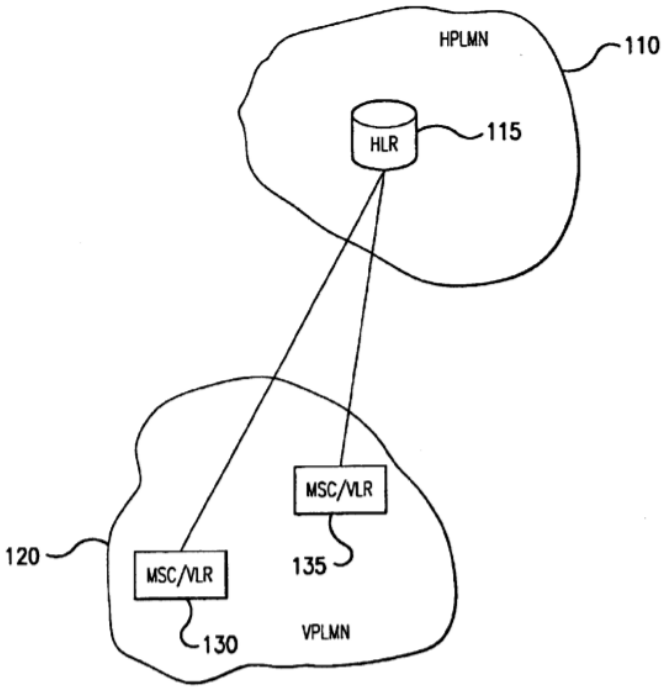


FIG.1

Figure 1, above, "illustrates a wireless communication system in accordance with the Global System for Mobile communication (GSM) standard." *Id.* at 1:39–41. Rune explains that, in the GSM standard, a "mobile subscriber typically has a subscription with a network which is designated as the mobile subscriber's home public land mobile network 110 (HPLMN)." *Id.* at 1:45–48. The HPLMN 110 includes home location register 115 (HLR). *Id.* at 1:48–49. Rune further explains that, when a mobile subscriber is roaming, the "visited public land mobile network 120 (VPLMN) . . . requires certain data regarding the mobile subscriber's subscription." *Id.* at 1:51–54. "The mobile subscriber's profile is transferred from the HLR to a visitor location register (VLR) in the VPLMN," (e.g., MSC/VLR 130 or 135). *Id.*

at 1:56–58; *see id.* at 1:59–2:7. Rune specifies that "[t]he protocol used by GSM/UMTS systems for transferring data between VLRs and HLRs is the mobile applications part (MAP)." *Id.* at 2:39–41.

Figure 5 of Rune is reproduced below.

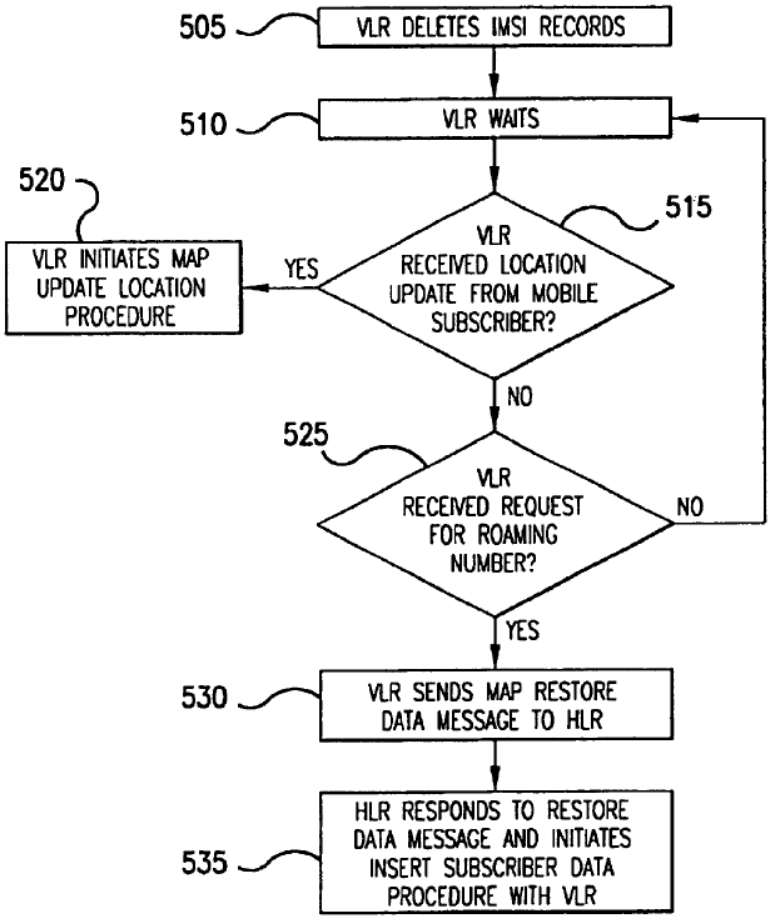


FIG.5

Figure 5, above, illustrates "a conventional method in a GSM system when a VLR is recovering from a fault." *Id.* at 5:31–32. After a fault, in step 505, "the VLR, which does not have a non-volatile backup memory for its dynamic subscriber data, deletes all [International Mobile Subscriber Identity (IMSI)] records which remain in its dynamic memory." *Id.* at

3:11–14. The VLR waits for contact from a mobile subscriber or the HLR, and then "determines whether it has received a location update request from a mobile subscriber," in steps 510 and 515. *Id.* at 3:14–18. If a location update request is received, "the VLR initiates the MAP_UPDATE_LOCATION procedure with the HLR associated with the mobile subscriber in accordance with step 520," in order "to send data associated with a mobile subscriber from an HLR to a VLR." *Id.* at 3:18–25. If no location update request is received, "the VLR determines whether it has received a roaming number request from an HLR in accordance with step 525." *Id.* at 3:30–32. If no roaming request is received, the VLR will again wait for contact; but if a roaming request is received, "the VLR sends a MAP_RESTORE_DATA message, including an indication of the concerned subscriber whose data is being restored, to the HLR indicating that the VLR has experienced a fault in accordance with step 530." *Id.* at 3:38–42. "In response to the MAP_RESTORE_DATA message the HLR initiates the . . . MAP_INSERT_SUBSCRIBER_DATA procedure," which provides subscriber data to the VLR in step 535. *Id.* at 3:42–46.

Rune "anticipate[s] that future versions of the GSM standard, also called Universal Mobile Telecommunications System (UTMS) will incorporate elements of other mobile communications systems." *Id.* at 2:9–12. For example, Rune describes an embodiment that includes a gateway location register (GLR), which "is used to reduce internetwork signaling." *Id.* at 2:12–15, 2:24–25. The GLR can behave transparently by "using an HLR interface towards the VLRs and a VLR interface towards the HLRs." *Id.* at 2:44–46. Rune presents a number of exemplary fault recovery procedures for embodiments that include a GLR, acting in its capacity as an

HLR, a VLR, or both. *See, e.g.*, *id.* at 6:11–10:31. In these procedures, "[n]either the HLRs, nor the VLRs are affected, i.e., their behaviors do not have to be modified in order to cope with the GLR fault recovery procedure." *Id.* at 10:39–42.

2. ETSI (Ex. 1004)

ETSI is titled "Digital cellular telecommunications system (Phase 2+); Mobile Application Part (MAP) specification (GSM 09.02)," and is identified as version 5.3.0 of that specification. Ex. 1004, 1. ETSI states that MAP specifies "the requirements for the signaling system and procedures within the Digital cellular telecommunications system (Phase 2/Phase 2+) at application level." *Id.* at 19. In particular, ETSI notes that it is "necessary to transfer between entities of a Public Land Mobile Network (PLMN) information specific to the PLMN in order to deal with the specific behaviour of roaming mobile stations," and thus "describes the requirements for the signaling system and the procedures needed at the application level in order to fulfil[l] these signalling needs." *Id.* at 21.

ETSI describes the configuration of the GSM network and of specific functions thereof. *See, e.g.*, *id.* at 27 (describing the HLR and VLR); 299 (describing the MAP_UPDATE_LOCATION request); 104, 363–65, 371 (describing VLR fault recovery procedures, including the MAP_RESTORE_DATA and MAP_INSERT_SUBSCRIBER_DATA functions).

3. Pirkola (Ex. 1005)

Pirkola is titled "Short Message Service Support Over a Packet-Switched Telephony Network." Ex. 1005, code (54). Pirkola relates to

"a technique that allows subscribers to roam between an IP-telephony network and a cellular network." *Id.* at 1:21–23. Pirkola observes that in GSM a cellular subscriber can roam, but that "IP-telephony networks presently do not permit roaming or mobility within the IP-telephony network." *Id.* at 2:51–52, 3:25–26. Further, "cellular networks and IP-telephony networks are distinct and incompatible networks and do not allow for roaming between" them. *Id.* at 3:27–29. Accordingly, Pirkola introduces a Mobile IP-Telephony Network (MIPTN) in which a "subscriber registers with a Visited Function where the subscriber is located" and "[t]he Visited Function then sends a message to the subscriber's MIPTN Home Function to provide updated subscriber location information." *Id.* at 3:67–4:4. "When a call is received that is intended for the subscriber, the IP address (or transport address) of the serving MIPTN Visited Function . . . is retrieved from the MIPTN Home Function," and "[a]n IP-telephony call is then set up toward the IP address of the serving MIPTN Visited Function." *Id.* at 4:4–9.

Pirkola describes an embodiment that supports roaming between an MIPTN and a cellular network by using a Gateway Function. *Id.* at 4:10–13. In such case, "the subscriber's Home Function and Visited Function will be located in different types of networks" and "the Gateway Function performs the interworking between the PSTN/cellular message formats and signaling and those in the MIPTN." *Id.* at 4:14–21.

Figure 2 of Pirkola, reproduced below, illustrates a system architecture:

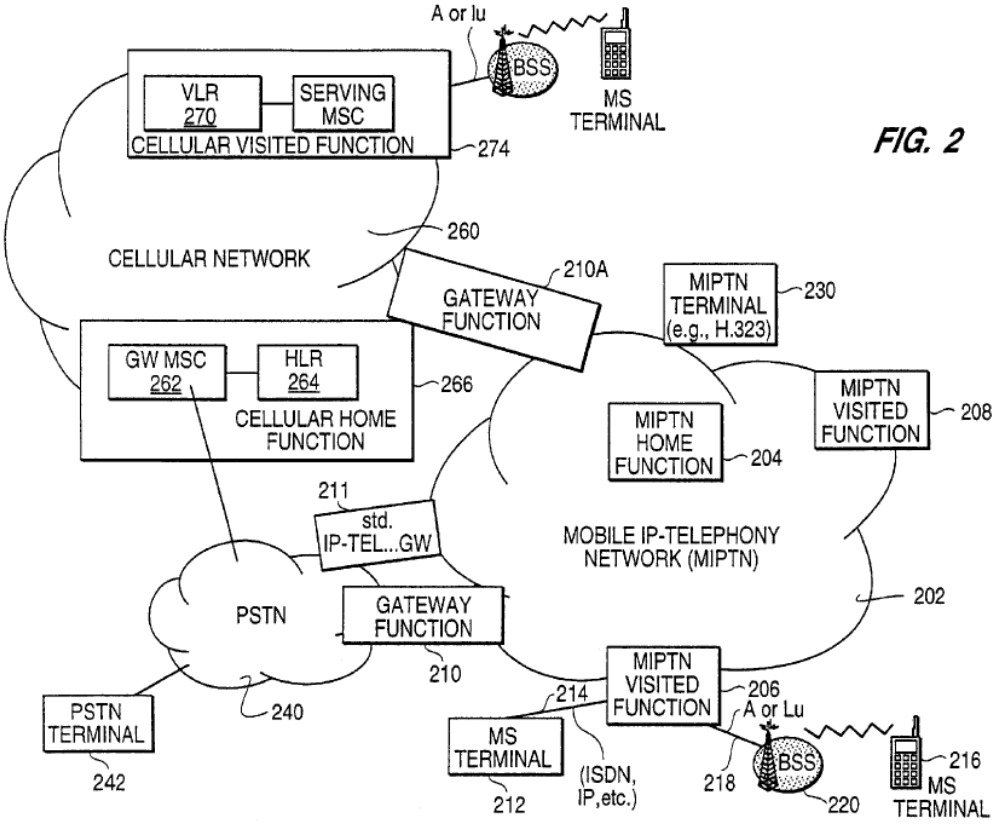


FIG. 2

Figure 2 shows MIPTN 202 and cellular network 260 with interfacing Gateway Function 210A. *Id.* at 7:15–17. The Gateway Function stores "a dynamic correspondence or mapping between a subscriber identification and an address of a Visited Function (in either the cellular network 260 or the MIPTN 202) where the subscriber has roamed (or is located)." *Id.* at 7:23–29.

Figure 7 of Pirkola, reproduced below, illustrates a registration of a MIPTN subscriber roaming in a cellular network:

FIG. 7

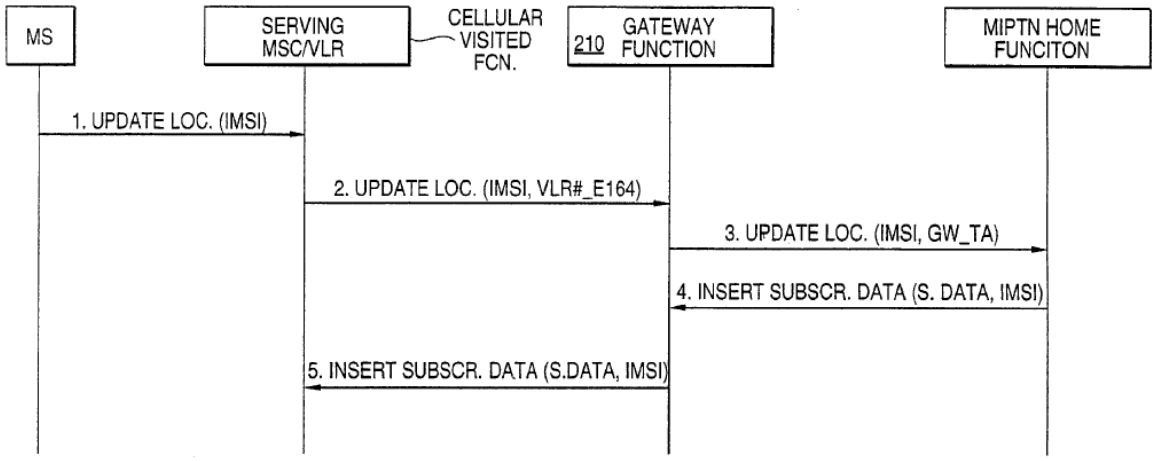


Figure 7 shows, in step 1, that when an MIPTN 202 subscriber roams to cellular network 260, "the subscriber terminal (MS) sends an update location message to the serving MSC 272/VLR 270 in the cellular Visited Function 274 in cellular network 260." *Id.* at 14:19–26. In step 2, serving VLR 270 sends an update location message as a cellular procedure, and in Step 3, Gateway Function 210 receives and translates the message from a cellular procedure to an MIPTN procedure, "which is sent along with the IP address of the Gateway Function 210 (GW_TA) to the subscriber's Home Function." *Id.* at 14:29–47. In step 4, Home Function 204 receives the update location message, stores the IP address (GW_TA), and then issues an insert subscriber data message back to Gateway Function 210, including the subscriber's profile or data and IMSI. *Id.* at 14:55–63. In step 5, Gateway Function 210 sends an insert subscriber data message as a cellular/PTSN procedure to serving VLR 270, which "then stores the subscriber profile corresponding to the IMSI." *Id.* at 14:64–15:3.

E. Asserted Obviousness over Rune and ETSI

Petitioner asserts that claims 1–5, 9–12, and 16–19 would have been obvious over Rune and ETSI. Pet. 11–35. Petitioner supports these assertions with citations to the record and the testimony of Dr. Haas. *See id.* Patent Owner opposes, arguing that the asserted combination does not teach or suggest all the features of the challenged claims. *See* Prelim. Resp. 6–12.

1. Independent Claim 1

a) A method comprising:

Petitioner asserts that Rune teaches a method. Pet. 20 (citing Ex. 1003, 3:10–11). Rune discloses, in Figure 5, "a conventional method in a GSM system when a VLR is recovering from a fault." Ex. 1003, 3:10–11.

Patent Owner does not present arguments regarding this limitation. *See generally* Prelim. Resp.

We determine that, on the record now before us, Petitioner's cited evidence sufficiently supports its contentions regarding the subject matter of the preamble.

b) receiving, from a first server at a second server, a transport address and an address of the first server

Petitioner asserts that the combination of Rune and ETSI teaches this limitation. *See* Pet. 20–26.

Petitioner relies on Rune's wireless GSM network node comprising the VLR/MSC and the node comprising the HLR, as respectively teaching the claimed first and second servers. *See* Pet. 20–22; Ex. 1003, Fig. 1; *see also* Pet. 22 (noting that ETSI also "describ[es] the configuration of a GSM mobile network and the general functions of the HLR and VLR" (citing

Ex. 1004, 27–28)). Relying on the testimony of Dr. Haas, Petitioner contends that a person of ordinary skill in the art "would recognize that the network nodes comprising the location registers, the HLR and VLR (or combined VLR/MSC) were 'servers.'" Pet. 22 (citing Ex. 1008 ¶ 39).

Petitioner contends that, in a GSM network, a MAP_UPDATE_LOCATION request (i.e., a registration request) is sent from the VLR to the HLR. Pet. 22; *see* Ex. 1004, 41 ("When a mobile station [MS] registers for the first time in a VLR, the VLR has to initiate the update location dialogue with the MS's HLR and a preceding dialogue for authentication information retrieval if the authentication information must be retrieved from the HLR.").

As described in ETSI, this MAP_UPDATE_LOCATION request contains certain parameters including *inter alia* an LSMI and the VLR number. Pet. 22–23; *see* Ex. 1004, 299 (listing parameters contained in the MAP_UPDATE_LOCATION request). Petitioner contends that the VLR number corresponds to the claimed address of the first server. Pet. 22–23; *see* Ex. 1004, 299 ("VLR Number, the E.164 address of the VLR, to be used by the HLR when addressing the VLR"). Petitioner contends that the LSMI corresponds to the claimed transport address. Pet. 23; *see* Ex. 1004, 63, ("LMSI . . . refers to a local identify allocated by the VLR to a given subscriber for internal management of data in the VLR"), 299 ("[T]he LMSI . . . is a subscriber identifier local to the VLR, used for fast data base access"). Petitioner, relying on the testimony of Dr. Haas, asserts that a person of ordinary skill in the art "would have recognized that the LMSI was a 'transport address,'" as we have construed it for purposes of this Decision.

Pet. 23–24; Ex. 1008 ¶ 57. *See also* Ex. 1004, 70 (describing that the LMSI can be used by the short message service relay as the destination address).

Petitioner summarizes its position as to this claim element as follows:

> Thus, Rune in view of ETSI renders obvious *receiving, from a first server at a second server* (e.g., receiving, from a VLR server at an HLR server)*, a transport address* (e.g., an LMSI assigned to a mobile station by the VLR) *and an address of the first server* (e.g., the VLR number).

Pet. 25. Petitioner further contends that:

> a [person of ordinary skill in the art] would have been motivated to combine, and would have had a reasonable expectation of success in combining, ETSI's teachings regarding the initial registration of the mobile device into Rune's system. Indeed, Rune references the concepts discussed in ETSI in its discussion of recovery of an HLR fault, and a [person of ordinary skill in the art] would have known that such concepts would have applied the service protocols consistent with ETSI's teachings.

Id. (citing Ex. 1003, 2:57–3:9; Ex. 1008 ¶¶ 52–56); *see also id.* at 18–19 (discussing motivation to combine in more detail).

Patent Owner does not challenge Petitioner's reasons to combine Rune and ETSI. *See generally* Prelim. Resp. On the record now before us, we find Petitioner's showing sufficient in this regard.

Patent Owner disagrees with Petitioner's assertion that the LMSI teaches the claimed transport address. *See id.* at 6–10. For example, Patent Owner argues that "[n]either Rune nor ETSI consider IP networks as described in the '846 patent and required by the *transport address* of the challenged claims." *Id.* at 8. According to Patent Owner, "[n]one of these 'identification number[s]' [used for addressing a mobile subscriber in a GSM system] are IP addresses or anything like one." *Id.* Patent Owner further asserts that neither Petitioner and Dr. Haas "contend[s] that the LSMI

is an IP address, nor could it function as one." *Id.* at 9. Patent Owner's arguments are premised, however, on a claim construction position that we do not adopt for purposes of this Decision. Accordingly, at this stage of the proceeding, Patent Owner's arguments are not persuasive.[11]

We determine that, on the record now before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

c) receiving, at the second server, a request from the first server to restore the transport address

Petitioner asserts that the combination of Rune and ETSI teaches this limitation. *See* Pet. 26–29. According to Petitioner, "Rune discloses that in the event of a VLR fault, the HLR receives . . . a 'MAP_RESTORE_DATA' message . . . from the VLR to send the mobile subscriber's profile information." Pet. 26–27; *see also* Ex. 1003, 3:10–42 ("FIG. 5 illustrates a conventional method in a GSM system when a VLR is recovering from a fault. . . . If the VLR has received a request for roaming number from an HLR, in accordance with the 'Yes' path out of decision step 525, then the

[11] Petitioner also contends that "[t]o the extent Patent Owner argues that the LMSI is not a *transport address* or that Petitioner's construction is too broad, the LMSI nonetheless suggests a *transport address* to a POSITA, at least because it constitutes an obvious variation of a transport address that serves a similar purpose in an analogous context." Pet. 24–25; Ex. 1008 ¶¶ 57–58. We note Patent Owner's argument that this alternative theory is "conclusory and circular" and that Dr. Haas does not "explain *why* a [person of ordinary skill in the art] would have chose to 'apply' ETSI in the manner claimed." Prelim. Resp. 10–12. As to Petitioner's alternative theory, Patent Owner's arguments may have merit. However, because we agree, on the record now before us and based on the claim construction adopted at this stage of the proceeding, that the LMSI teaches the claimed transport address, we need not address Petitioner's alternative argument for purposes of this Decision.

VLR sends a MAP_RESTORE_DATA message, including an indication of the concerned subscriber whose data is being restored, to the HLR indicating that the VLR has experienced a fault in accordance with step 530.").

Petitioner contends that "ETSI confirms [that the mobile subscriber's profile information] would have included the LMSI (*i.e., to restore the transport address*)." Pet. 26–28; *see also* Ex. 1004, 363–65, 371 (describing VLR fault recovery procedures, including MAP_RESTORE_DATA). ETSI describes that the MAP_RESTORE_DATA service "is invoked by the VLR . . . to update the LMSI in the HLR, if provided, and to request the HLR to send all data to the VLR that are to be stored in the subscriber's . . . record." Ex. 1004, 104.

Petitioner summarizes its position as to this claim element as follows:

> Thus, Rune in view of ETSI renders obvious, *receiving, at the second server* (e.g., the HLR)*, a request from the first server* (e.g., a MAP_RESTORE_DATA request) *to restore the transport address* (e.g., to provide all subscriber data, including to restore the LMSI).

Pet. 29. Petitioner further contends that a person of ordinary skill in the art "would have been motivated to combine, and would have had a reasonable expectation of success in combining, Rune and ETSI's teachings regarding fault recovery of a mobile subscriber." *Id.*; *see also id.* at 18–19 (discussing motivation to combine in more detail).

Patent Owner does not present arguments regarding this limitation, separate from those discussed above regarding the "transport address" limitation. *See generally* Prelim. Resp.

We determine that, on the record now before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

> *d) in response to the request from the first server to restore the transport address, communicating the transport address to the first server from the second server*

Petitioner asserts that the combination of Rune and ETSI teaches this limitation. *See* Pet. 29–32. According to Petitioner, "Rune discloses that, after receiving the MAP_RESTORE_DATA message from the VLR, the HLR responds by initiating a 'MAP_INSERT_SUBSCRIBER_DATA procedure with the VLR to provide subscriber data to the VLR.'" *Id.* at 29 (citing Ex. 1003, 3:36–46; Ex. 1004, 364–65); *see also* Ex. 1003, Fig. 5.

Petitioner contends that "ETSI explains[that] the service for inserting subscriber data includes 'all subscriber data,'" and that a person of ordinary skill in the art "would have understood, the LMSI constitutes 'subscriber data,' and the HLR always includes the LMSI in communications from the HLR to the VLR." Pet. 29–30 (citing Ex. 1004, 373; Ex. 1008 ¶ 50).

Petitioner summarizes its position as to this claim element as follows:

> Thus, Rune in view of ETSI disclose[s], *in response to the request* (e.g., the MAP_RESTORE_DATA request) *from the first server* (e.g., the VLR) *to restore the transport address* (e.g., the LMSI), *communicating the transport address to the first server from the second server* (e.g., in response to the MAP_RESTORE_DATA message the HLR provides the LMSI in subsequent communications, including confirmation messages).

Pet. 32 (some emphasis omitted). Petitioner further contends that a person of ordinary skill in the art "would have been motivated to combine, and would have had a reasonable expectation of success in combining, Rune and ETSI's teachings regarding fault recovery of a mobile subscriber." *Id.*; *see also id.* at 18–19 (discussing motivation to combine in more detail).

Patent Owner does not present arguments regarding this limitation, separate from those discussed above regarding the "transport address" limitation. *See generally* Prelim. Resp.

We determine that, on the record now before us, Petitioner's cited evidence sufficiently supports its contentions regarding this limitation.

e) Conclusion as to Claim 1

For the reasons discussed above, and based on the current record, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on its assertion that claim 1 would have been obvious over the combination of Rune and ETSI.

2. Independent Claims 9 and 16

Independent claims 9 and 16 recite an apparatus and non-transitory computer-readable medium, respectively, for restoring a transport address, but otherwise recite limitations similar to those of claim 1. Petitioner relies on the same teachings of Rune and ETSI for claims 9 and 16 as those discussed above for claim 1. *See* Pet. 19–32.

Patent Owner does not present arguments separate from those discussed above with respect to claim 1. *See generally* Prelim. Resp. Based on the current record, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on its assertion that claims 9 and 16 would have been obvious over the combination of Rune and ETSI.

3. Dependent Claims 2–5, 10–12, and 17–19

Petitioner asserts that the combination of Rune and ETSI teaches each of the additional limitations of dependent claims 2–5, 10–12, and 17–19.

See Pet. 32–35. Petitioner supports these assertions with citations to the record and the testimony of Dr. Haas. *See id.* Patent Owner does not dispute these assertions, or raise arguments separate from those discussed above. *See generally* Prelim. Resp.

As noted above, if trial is instituted it must be instituted on all challenged claims and grounds. *See SAS*, 138 S. Ct. at 1355–56; CTPG, at 64. In light of *SAS*, and our above-described determination that Petitioner has met its burden under 35 U.S.C. § 314(a) as to its challenge of independent claims 1, 9, and 16 as obvious in view of Rune and ETSI, we institute *inter partes* review based on Petitioner's challenge of the dependent claims based on the same combination of references.

F. Asserted Obviousness over Pirkola, Rune, and ETSI

Petitioner asserts that claims 1, 4–6, 9, 12, 13, 16, 19, and 20 would have been obvious over Pirkola, Rune, and ETSI. *See* Pet. 35–55. Petitioner supports these assertions with citations to the record and the testimony of Dr. Haas. *See id.* Patent Owner opposes, arguing that the asserted combination does not teach or suggest all the features of the challenged claims. *See* Prelim. Resp. 12–17.

According to Petitioner, this ground is presented "to the extent that Patent Owner argues for a construction of *transport address* narrower than the intrinsic record or that the that the VLR does not request recovery of a transport address." Pet. 35. As discussed above, we have not adopted Patent Owner's narrower construction for purposes of this Decision. Therefore, we do not need to determine whether Petitioner has established a reasonable likelihood of prevailing on this alternative ground. *See SAS*, 138 S. Ct. at

1355–56; CTPG 64. We, however, provide the following comments and observations as to this ground.

According to Petitioner, "Pirkola specifically discloses using a *transport address* in an integrated GSM/Mobile-IP context and associating it with a mobile subscriber's IMSI record." Pet. 35–36. Petitioner contends that, in Pirkola, "[t]he transport address is stored in a Home Database (HDB) and the Gateway Function, which maintains the mapping between cellular each subscriber's IMSI and transport address." *Id.* at 36 (citing Ex. 1005, 11:40–55, 13:60–14:3, Fig. 2).

Petitioner relies on Pirkola's Gateway Function and MIPTN Home Function, as respectively teaching the claimed first and second servers. *See* Pet. 41–42. Petitioner further relies on "an IP address of the Gateway Function" as the transport address and a "port number" as the address of the first server. *Id.* at 42; *see also id.* at 43 ("The Gateway Function . . . then sends a transport address, which includes an IP address of Gateway Function 210 (i.e., the Gateway Transport address, or GW_TA) and a port number, to the mobile-IP Home Function of the subscriber."); Ex. 1005, 14:37–54, Fig. 7.

According to Petitioner,

> incorporating Rune's teachings (as supplemented by ETSI's disclosure . . .) regarding fault recovery into Pirkola's integrated network system would have simply required the application of known techniques (e.g., recovery of a VLR or gateway function/GLR) to improve similar systems (Pirkola's integrated cellular/Mobile-IP network) in the same way (i.e., to recover lost information, such as a transport address, about a subscriber from a subscriber's Home Function).

Pet. 39; *see also id.* at 38–40 (discussing motivation to combine in more detail).

In response to Petitioner's contentions, Patent Owner argues, *inter alia*,

> Pirkola plainly discloses that the Gateway Function 210 sends *an* IP address to the Home Function 204, but it is not *the* claimed transport address, which is an IP address of the *mobile node subscriber*. Instead, the IP address communicated in Pirkola is "the IP address of the Gateway Function 210 (GW_TA)" itself. Ex. 1005, 14:43–47.
>
> . . .
>
> even assuming that Pirkola did disclose the *transport address* of the challenged claims . . . , Pirkola in combination with Rune does not satisfy the independent claims' limitations of "receiving, at the second server [Home Function 204], a request from the first server [Gateway Function 210] to restore the transport address" and "in response to" that request, "communicating the transport address to the first server from the second server." . . .
>
> we have explained above that the (alleged) transport address stored within Home Function 204 is "the IP address of the Gateway Function 210." So it would make *no sense* for Gateway Function 210 to request *its own IP address* as the transport address; Gateway Function 210 already knows its IP address.

Prelim. Resp. 14–16. Based on the preliminary record, Patent Owner's arguments in this regard may have merit. As indicated above, however, we do not determine at this stage whether Petitioner has shown a reasonable likelihood of success on this ground. We invite the parties to address this issue and any other issues relevant to this ground further at trial.

III. CONCLUSION

For the reasons set forth above, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one claim of the '846 patent. Thus, we institute an *inter partes* review as set

forth in the Order below. Trial shall commence on the entry date of this Decision.

IV. ORDER

Accordingly, it is

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–6, 9–13, and 16–20 of U.S. Patent No. 8,923,846 B2 is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(a), *inter partes* review of the '846 patent is hereby instituted commencing on the entry date of this Decision, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial.

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