

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC.,
Petitioner

v.

VOIP-PAL.COM, INC.,
(Alleged) Patent Owner

U.S. PATENT NO. 10,880,721

Case IPR2022-01234

**DECLARATION OF DR. VIJAY MADISETTI IN SUPPORT OF PETITION
FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §312 AND 37 C.F.R. §42.104**

META 1003
META V. VOIP-PAL

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LIST OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 10,880,721 ('721 Patent)
1002	File History of U.S. Patent No. 10,880,721
1003	Declaration of Dr. Vijay Madiseti
1004	Curriculum vitae of Dr. Vijay Madiseti
1005	U.S. Patent No. 7,668,159 ("Buckley")
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1008	U.S. Patent App. Pub. No. 2009/0047922
1009	U.S. Patent No. 8,731,163 ("Bates")
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1012	Claim Construction Order (Dkt. No. 67) in Case No. 6:21-cv-00668-ADA (W.D. Tex.)
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1014	U.S. Patent Pub. No. 2008/0167039
1015	U.S. Patent Pub. No. 2002/0102973
1016	U.S. Patent No. 8,542,815
1017	Exhibit 2016 in <i>Apple, Inc. v. VoIP-Pal.com, Inc.</i> , IPR 2016-01201 (P.T.A.B. Feb. 10, 2017)
1018	Email with attachment from Counsel for Patent Owner Regarding Claim Construction, dated March 2, 2022

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Exhibit No.	Description
1019	“Convergence Technologies for 3G Networks IP, UMTS, EGPRS and ATM”, by Jeffery Bannister et al., Wiley, England (2004)
1020	IETF RFC 3986, <i>available at</i> https://datatracker.ietf.org/doc/html/rfc3986
1021	IETF RFC 2543, <i>available at</i> https://datatracker.ietf.org/doc/html/rfc2543
1022	U.S. Patent No. 7,283,507
1023	Excerpts from Microsoft Computer Dictionary, 5th ed. (2002)
1024	Excerpts from Wireless Encyclopedia, Althos Publishing (2007)
1025	International Patent Publication No. WO 01/89145 A2
1026	Excerpt from the File History of U.S. Patent No. 10,880,721 – “Roaming – Wikipedia” (submitted along with IDS on September 24, 2013)

I. INTRODUCTION

1. I have been retained by Meta Platforms, Inc. (“Meta” or “Petitioner”) to provide my opinion regarding whether claims 1, 2, 6, 9, 14-16, 20, 25, 34, 38-39, 43, 45-46, 49-50, 135-136, and 140 (“Challenged Claims”) of U.S. Patent No. 10,880,721 (EX1001, the “’721 Patent”) would have been obvious to one of ordinary skill in the art, as part of the above-captioned petition of inter partes review (IPR) of the ’721 Patent.
2. I am being compensated for my time at my standard hourly consulting rate of \$600 per hour. My compensation does not depend on the outcome of this litigation or the opinions I form.
3. In forming my opinions expressed in this declaration, I have relied on my extensive knowledge, training, and experience, as well as all of the materials cited herein.

II. QUALIFICATIONS

4. My qualifications and publications can be found in my Curriculum Vitae, which is Exhibit 1004, along with a listing of the cases in which I have testified as an expert at trial or by deposition within the preceding five years. My background and experience qualify me to offer the opinions offered in this Declaration and are described below.

5. In 1984, I received my Bachelor of Technology (Honors) in Electronics and Electrical Communication Engineering at the Indian Institute of Technology (IIT) in Kharagpur, India. In 1989, I obtained my Ph.D. in Electrical Engineering and Computer Science at the University of California, Berkeley. That year, I also received the Demetri Angelakos Outstanding Graduate Student Award from the University of California, Berkeley, and the IEEE/ACM¹ Ira M. Kay Memorial Paper Prize. I authored several papers and proposals during this time, including “Multilevel Range/NEXT Performance in Digital Subscriber Loops”, IEEE Proceedings on Communications, Speech and Vision, Vol 136, Issue 2, April 1989, and “Comparison of Line Codes and Proposal for Modified Duobinary”, Contribution T1D1.3-85- 237, American National Standards Institute, November 1985.
6. In 1989, I joined the faculty at Georgia Tech. My first position was an assistant professor position. I became an associate professor in 1995. In 1997, I was awarded the VHSIC Hardware Description Language (or VHDL) International Best Ph.D. Dissertation Advisor for my contributions in the area of rapid prototyping. I became a full professor in 1998 and have maintained

¹ IEEE is the Institute of Electrical and Electronics Engineers. ACM is the Association for Computing Machinery.

that title ever since. As a faculty member at Georgia Tech, I have been an active contributor in several disciplines, including wireless networks, cellular communications, computer engineering, embedded systems, chip design, software systems, and image and video processing.

7. From 1999-2003, I consulted with a team of engineers to design an integrated Soft Switch & Media Server, the SNX 850/8500, that was being sold and installed in Asia. The SNX 8500 was a one-box solution to VOIP, LAN switching, and iPBX/PBX solutions for enterprise customers, and has been installed as part of BPL Telecom's then offerings in Asia. The PBX modules within SNX 850/8500 supported Analog Phones, Digital Feature Phones, E1/ISDN PRI Trunks, E1 or PRI at the PSTN gateway, VOIP (SIP) soft phones, SS7 interfaces, and operated via a browser-based console. It included a variety of features, such as Automatic Call Back, Busy Override, Do Not Disturb, etc., through support for 16 ISDN BRI circuits.
8. Since 1995, I have authored, co-authored, or edited several books in the areas of communications, signal processing, chip design, and software engineering, including VLSI Digital Signal Processors (1st ed. 1995), Quick-Turnaround ASIC Design in VHDL (1st ed. 1996), The Digital Signal Processing Handbook (2d. ed. 2010), Cloud Computing: A Hands-On Approach (1st ed.

2013), Internet of Things: A Hands-On Approach (1st ed. 2014), and Big Data Science & Analytics (1st ed. 2016).

9. Between 1998 and 2004, my students and I studied different codecs and published IETF draft standards² on audio and video streaming applications over the internet including: V. Madisetti and A. Argyriou: Voice and Video over Mobile IP Networks, IETF Draft, May 20, 2002; and V. Madisetti and A. Argyriou: A Transport Layer Technology for Improving QoS of Networked Multimedia Applications, IETF Draft July 25, 2002.
10. I have served on the paper-reviewing committees for many leading conferences in my field, and I have taken on editorial roles for leading technical journals in fields pertinent to my research. For example, I served as the Editor-in-Chief of the IEEE Press/CRC Press's three-volume Digital Signal Processing Handbook for Edition 1 (1998) and Edition 2 (2010). I have also authored over 100 articles, reports, and other publications pertaining to electrical engineering, and in the areas of communications, communications signal processing, and computer engineering.
11. Throughout my time at Georgia Tech, I have designed several specialized computer and communication systems for tasks such as wireless, audio, video,

² IETF is the Internet Engineering Task Force.

and protocol processing for portable platforms (like cell phones and PDAs). I have also been actively involved in the areas of wireless communication, software engineering, system design methodologies, and software systems.

12. Beyond my work in academia, I have worked in industries relating to speech, audio, and image processing since the early 1980s. I developed efficient algorithms for echo cancellers for speech and voice applications that reduce complexity and improve performance. This work resulted in a peer-reviewed publication called “Dynamically Reduced Complexity Implementation of Echo Cancellers,” IEEE ICASSP 96, Tokyo.
13. From 2000-2001, I designed three Global System for Mobiles multiband mobile phones for a leading telecom equipment manufacturer in Asia.
14. From 2000-2007, I designed and provided optimized mobile speech to one of the leading mobile phone and base station manufacturers in the world. This implementation has been deployed on millions of 3G/4G mobile phones and numerous base stations.
15. During that same time frame, I also designed and provided several VOIP codecs to leading VOIP phone vendors that are now deployed in several generations of enterprise VOIP phone products in the USA and abroad. I designed and provided echo cancellers for VOIP applications.

16. From 2002-2007, I developed wireless baseband and protocol stack software and assembly code for a leading telecommunications handset vendor. The software and code focused on efficient realization of speech codecs and echo-cancellation and optimization of 3G software stack. My work included creating software code and analyzing and revising existing software code.
17. I have also developed speech and video codecs that comply with 3GPP standards.³ I developed software to implement the associated 3GPP standards and developed tests to verify compliance with these standards. I have also developed several speech and VOIP (voice over Internet Protocol) codecs that conform with the ITU (International Telecommunications Union) standards G.723.1, G.729 and Echo Cancellers conforming with the ITU G.168 standards.
18. The software and code I have developed and tested based on the ITU standards are now used by one of the leading suppliers of VOIP/Internet telephones in the world. This software is also part of commercially released soft switches for internet telephony used extensively in Asia.

³ 3GPP stands for 3rd Generation Partnership Project, a collection of standards organizations that develop protocols for mobile telecommunications.

19. In addition to my academic and industrial pursuits, I am also a long-standing member of several professional technical organizations. I was the Technical Program Chair for both the IEEE MASCOTS in 1994 and the IEEE Workshop on Parallel and Distributed Simulation in 1990. More recently, I was elected to the Fellowship of the IEEE because of my contributions to embedded computing systems. Fellows are in the highest tier of membership in the IEEE, a world professional body consisting of over 300,000 electrical and electronics engineers. Only 0.1% of the IEEE membership is elected to the Fellowship each year.
20. I also serve as the official representative from Georgia Tech to the 3GPP/ETSI4 standards organization. As such, I am familiar with the standard processors for speech, audio and video applications in the context of mobile and wireless communications.
21. Through the past twenty years, I have been retained to test various commercial mobile and wireless products to determine if they comply with various technical standards. I have participated in and contributed to activities of Standards Setting Organizations (“SSOs”) such as the IEEE, IETF, ETSI, and

⁴ ETSI stands for European Telecommunications Standards Institute.

others, as part of my work as a teacher and researcher in advanced telecom, wireless, and computer technologies.

22. Over the past three decades, I have studied and designed wireless networking and image and video processing circuits for numerous applications, including digital and video cameras, mobile phones, and networking products for leading commercial firms.

III. UNDERSTANDING OF PATENT LAW

23. I am not an attorney, but I have been provided with an understanding of certain legal principles relevant to my analysis and opinions in this matter.
24. I understand that a person of ordinary skill in the art (a “POSITA”) is a hypothetical person who is presumed to have known the relevant art at the time of the invention, and that the factors that may be considered in determining the level of ordinary skill in the art may include: (a) type of problems encountered in the art; (b) prior art solutions to those problems; (c) rapidity with which innovations are made; (d) sophistication of the technology; and (e) educational level of active workers in the field. In a given case, every factor may not be present, and one or more factors may predominate.
25. I have been informed that patent claims are construed or interpreted from the perspective of a POSITA at the time of the claimed invention. I understand

that the most important evidence to consider in construing the claims is the “intrinsic” evidence. This includes the claim language, the patent’s specification, and the prosecution history (including references cited in the prosecution history). I understand that the POSITA must read the claim terms in the context of the claim and in the context of the entire patent specification. I understand that the patentee may explicitly define a claim term in a way that differs from the plain and ordinary meaning in the art.

26. I further understand that a POSITA may also consider “extrinsic” evidence when interpreting the meaning of claim terms, which are documents and testimony beyond the patent to ensure that a claim is construed consistently with the understanding of those of skill in the art at the time of the claimed invention. I also understand that extrinsic evidence may not be relied on if it deviates from the meaning of the claim provided by the intrinsic evidence.
27. I further understand that inventors may draft their claims as a means or step for performing a specified function, but that they must also disclose in the specification the structure that performs the function, or that claim is indefinite. I also understand that construing a means-plus-function claim requires identifying the claimed function and determining what structure, if any, disclosed in the specification corresponds to the claimed function. I further understand that a term with a computer-implemented function must

have a clearly linked structure in the form of an algorithm. I understand that if I cannot identify such an algorithm, the term lacks a clearly linked structure and is therefore indefinite. I further understand that a general purpose computer cannot be the structure for a computer-implemented function because this amounts to purely functional claiming.

28. I understand that a claim is invalid if it is anticipated or obvious. Anticipation of a claim requires that every element of a claim be disclosed expressly or inherently in a single prior art reference, arranged in the prior art reference as arranged in the claim.
29. It is my understanding that a patent claim is invalid for obviousness if the claimed invention would have been obvious at the time the invention was made to a person having ordinary skill in the art (POSITA).
30. I understand that the following factors are considered in an obviousness analysis: (1) the scope and content of the prior art; (2) the differences between the art and the claims at issue; (3) the level of ordinary skill in the art at the time the invention of the asserted patent was made; and (4) objective evidence of nonobviousness. In order to determine whether claim elements are found in the prior art, it is necessary to compare the properly construed claim language of the patent with the teachings of the prior art.

31. I understand that certain factors—often called “secondary considerations” may support or rebut an assertion of obviousness of a claim. I understand that such secondary considerations include, among other things, commercial success of the alleged invention, skepticism of those having ordinary skill in the art at the time of the alleged invention, unexpected results of the alleged invention, any long-felt but unsolved need in the art that was satisfied by the alleged invention, the failure of others to make the alleged invention, praise of the alleged invention by those having ordinary skill in the art, and copying of the alleged invention by others in the field. I further understand that there must be a nexus—*i.e.*, a connection—between any such secondary considerations and the alleged.
32. I further understand that a claim can be found obvious if it unites old elements with no change to their respective functions, or alters prior art by mere substitution of one element for another known in the field, with that combination yielding predictable results. While it may be helpful to identify a reason for this combination, common sense should guide, and there is no rigid requirement for a teaching, suggestion, or motivation to combine. For example, design incentives and other market forces can prompt variations of a product, either in the same field or different one. If a person having ordinary skill in the relevant art can implement a predictable variation, obviousness can

bar patentability. Similarly, if a technique has been used to improve one device, and a person having ordinary skill in the art would recognize that the technique would improve similar devices in the same way, use of the technique is obvious. I further understand that a claim may be obvious if common sense directs one to combine multiple prior art references or add missing features to reproduce the alleged invention recited in the claims.

33. I also understand that any one or more of the following rationales may support a finding of obviousness:

- Combining prior art elements according to known methods to yield predictable results;
- Simple substitution of one known element for another to obtain predictable results;
- User of known technique to improve similar devices (methods, or products) in the same way;
- Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- "Obvious to try" - choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;
- Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

34. I also understand that it is impermissible to use the claimed invention itself as a blueprint for piecing together elements in the art. In other words, it is impermissible to use hindsight reconstruction to pick and choose among disclosures in the prior art to reconstruct the claimed invention.

IV. OVERVIEW OF OPINION

35. I cite many documents in this declaration in support of my analysis, but my opinion regarding the obviousness of the Challenged Claims is fundamentally based on two references:

- **U.S. Patent No. 7,668,159 (“Buckley”) (EX1005)**, filed on August 3, 2007 and granted on February 23, 2010. I understand that, based on Buckley’s filing date, it is prior art to the ’721 Patent.
- **U.S. Patent No. 6,954,654 (“Ejzak”) (EX1007)**, filed on July 31, 2001 and granted on October 11, 2005. I understand that, based on Buckley’s filing date, it is prior art to the ’721 Patent.
- **U.S. Patent No. 8,731,163 (“Bates”) (EX1009)**, filed on May 9, 2007 and granted on May 20, 2014. I understand that, based on Bates’s filing date, it is prior art to the ’721 Patent.

36. In my opinion, claims 1, 2, 6, 9, 14-16, 20, 25, 34, 38-39, 43, 45-46, 49-50, and 135-136, and 140 of the ’721 Patent would have been obvious to a POSITA before February 4, 2008 as summarized in the following table:

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Ground	Claims	Analysis
I	1, 2, 6, 9, 14-16, 20, 25, 34, 38-39, 43, 46, 49-50, and 135-136	Obvious under §103 over Buckley
II	50 and 140	Obvious under §103 over Buckley in view of Ejzak
III	1, 2, 6, 9, 14-16, 20, 25, 34, 38-39, 43, 45-46, 49-50, and 135-136	Obvious under §103 over Buckley in view of Bates
IV	50 and 140	Obvious under §103 over Buckley in view of Bates and further in view of Ejzak

37. As noted above in the Introduction section, for the present assignment, I was only asked to analyze the obviousness of the Challenged Claims, and the scope of my analysis in this declaration is limited to those Challenged Claims. Accordingly, I do not address herein any other claims in the '721 Patent. No inferences should be drawn from the limited scope of my analysis in this declaration. I have been asked to consider certain other claims in the '721 Patent, and claims in another related patent, and my opinions with respect to those claims are addressed in separate declarations.

V. THE '721 PATENT

A. Priority Date

38. The '721 Patent issued on December 29, 2020, from U.S. Application No. 14/035,806, filed on September 24, 2013. It claims priority to Provisional

Application No. 61/129,898 (filed on July 28, 2008) and PCT Application No. PCT/CA2009/001062 (filed on July 28, 2009).

39. Although the earliest claimed priority date on the face of the '721 Patent is July 28, 2008, I understand that Patent Owner has contended that “the earliest corroborated date of invention for the '721 [P]atent is February 4, 2008.” I have performed my analysis herein assuming that the priority date of the patent is February 4, 2008, although I have not seen any evidence suggesting the invention was in fact conceived at that earlier date, and my opinions herein would not change if the priority date were actually July 28, 2008 (*i.e.*, the earliest priority date appearing on the face of the patent).

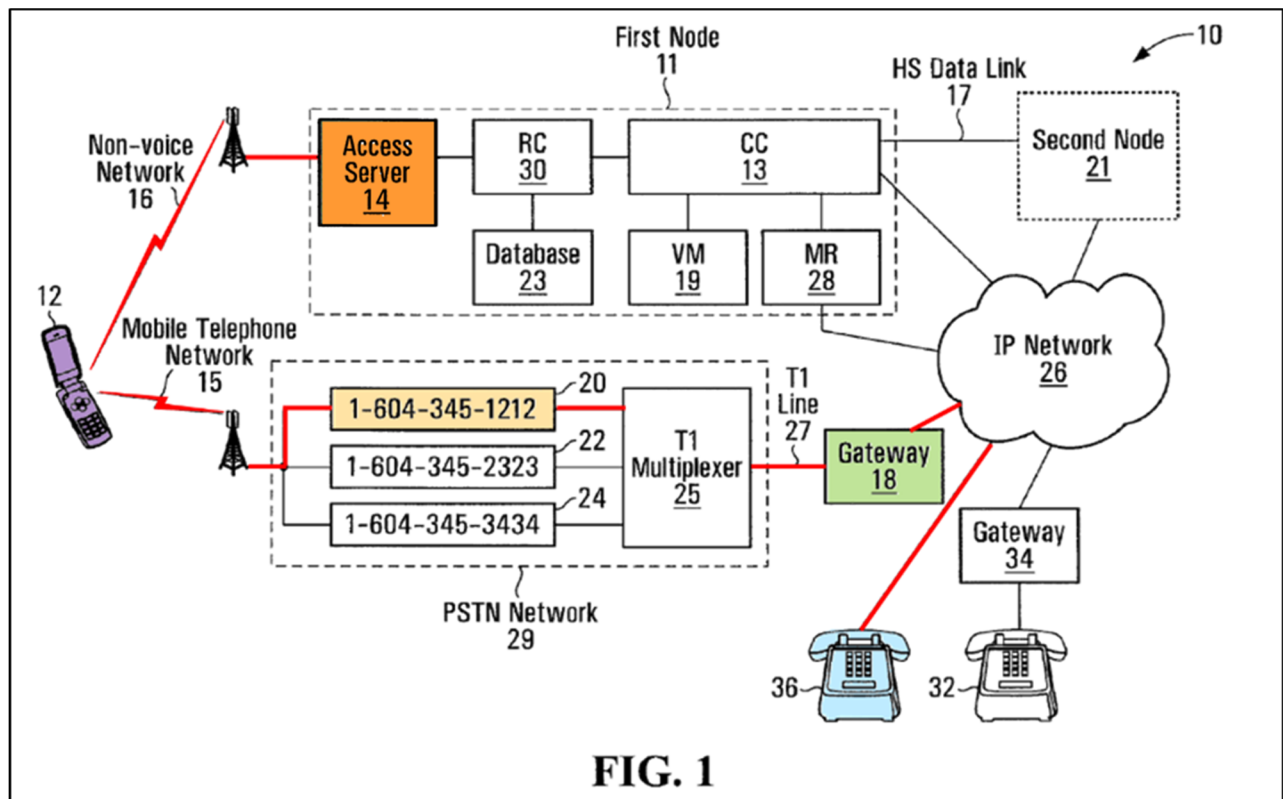
B. Technology Overview

40. Traditional Public Switched Telephone Networks (PSTNs) route telephone calls over circuit-switched telephone networks, which are also called “voice” networks. *See* EX1007, 1:19-22. The '721 Patent uses a sequence of messages sent over a “non-voice” network (such as a packet-switched Internet Protocol (IP) network) to route voice calls over an IP network (aka Voice-over-IP or VoIP). EX1001, 8:36-42, 9:9-16. As background, “circuit-switched” networks involve a particular, dedicated circuit connection to transmit data (in the form of electrical signals) between the caller and callee. “Packet-switched” networks such as the Internet, on the other hand, break data into

small packets that are separately routed over network connections to the recipient, which reassembles the packets once they are received.

41. The '721 Patent's call routing process begins when a mobile telephone (purple⁵ element 12 in Figure 1 below) sends an "access code request message" to an access server (orange element 14) belonging to a telecommunications service provider (such as AT&T). EX1001, 11:51-55. The access code request message includes the intended callee's identifier, such as a telephone number, and the caller's "location identifier." *Id.* 11:66-12-2, 12:20-22. Based on that information in the access code request message, the access server responds with an "access code" in an "access code reply message." *Id.* 12:63-67. The "access code" is a temporary number, such as a local telephone number, used to route the call. *Id.* 13:7-7.

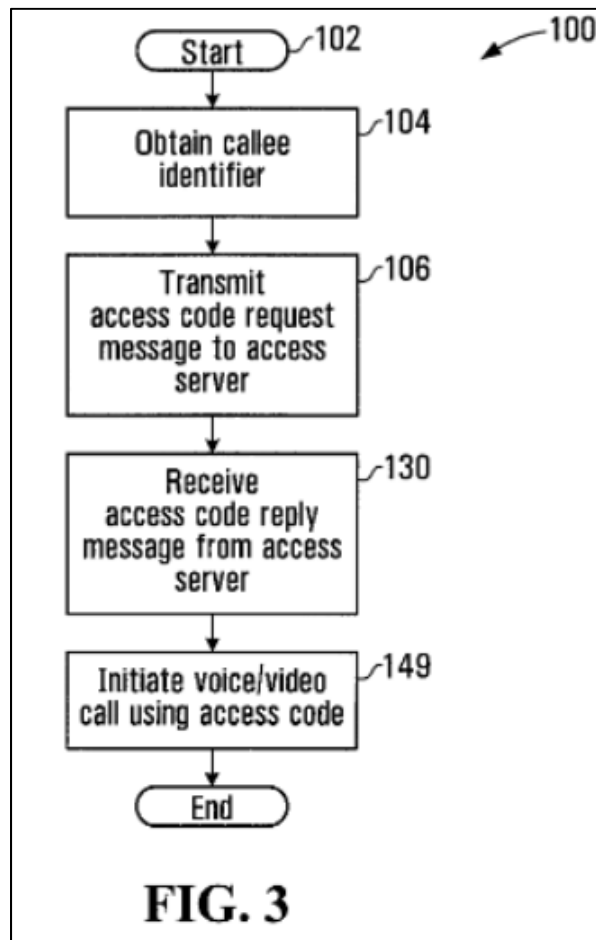
⁵ All emphasis and color is added, unless indicated otherwise.



42. In Figure 1, the “access code” is the temporary telephone number in yellow-highlighted element 20 (*i.e.*, 1-604-345-1212). This temporary number is used to route the call within the phone’s home network towards a gateway (green element 18). The gateway bridges the PSTN (element 29) to an IP Network (element 26), so that calls originating or terminating on the PSTN (element 29) can be routed over IP network (element 26) to a callee’s IP phone (blue element 36). *Id.* 13:49-56. As was well-known in the art, IP networks such as the Internet do not apply long-distance or roaming charges, so routing a call over such networks in the manner described above avoids such charges. *See, e.g.*, EX1011 (prior art), 1:7-19 (“By moving voice traffic to IP networks,

companies may reduce or eliminate certain toll charges associated with transporting calls over [PSTN]”).

43. The access server (element 14) may receive the access code request message “over a non-voice network, such as an internet using WiFi or GPRS technology for example” EX1001, 11:58-59. The mobile telephone’s location identifier (which is included in the access code request message) may be “an IP address of the mobile telephone [] in a wireless IP network, such as the non-voice network...” *Id.* 12:26-29. The server’s access code reply message, which includes the temporary number (access code), may be returned over the non-voice, IP network (element 16). The mobile telephone may then use the access code to initiate a call on the voice network (element 15) that is then routed over the IP Network (element 26).
44. The purported invention is summarized in Figure 3, which depicts the process from the telephone’s perspective as found, for example, in claim 1:



C. Person of Ordinary Skill in the Art

45. In my opinion, a POSITA at the time of the alleged invention described in the Asserted Patent would have had a Bachelor's degree in Computer Science or Electrical Engineering, or an equivalent field, and approximately two years of experience working with networks. Additional education might compensate for less experience, and vice-versa.
46. This level of ordinary skill experience largely aligns with the level of ordinary skill that VoIP-Pal's expert set forth in his declaration in an *inter partes*

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review of U.S. Patent No. 8,542,815. *See* EX1017 ¶ 14 (“[I]t is my opinion that one of ordinary skill in the art as of the priority date would be someone with an undergraduate degree in either Computer Science, Computer Engineering, Electrical Engineering, or a closely related discipline. Furthermore, I believe that such a person would also have 2 years of experience in system-level software development. In my opinion a greater degree of professional experience could serve to replace some degree of formal education. I also believe that some greater degree of formal education could serve to replace some degree of professional work experience.”). The ’721 Patent’s parent patent applications and the ’815 Patent were both originally assigned to Digifonica (International) Limited (as indicated on the face of the patents), share an overlapping named inventor in Johan Emil Viktor Bjorsell, and are in the same field. *Compare* EX1001, 1:15-24 (“1. Field This invention relates generally to telecommunication, and more particularly to methods, systems, apparatuses, and computer readable media for initiating or enabling a call with a mobile telephone to a callee. 2. Description of Related Technologies Mobile telephone service providers often charge significant fees for long distance telephone calls, particularly when the mobile telephone is roaming in another mobile telephone service provider’s network.”), *with* EX1016, 1:11-13 (“1. Field of Invention. This

invention relates to voice over IP communications and methods and apparatus for routing and billing.”).

47. Based on my education and experience, I am familiar with the level of knowledge that one of ordinary skill would have possessed during the relevant period of time. By the of the earliest possible priority date (February 4, 2008), I was at least a person of ordinary skill in the art, and I am familiar with how persons of ordinary skill in the art would have interpreted the ’721 Patent.

VI. CLAIM CONSTRUCTION

A. Agreed Constructions

48. I understand that, in the parallel litigation between the parties, the parties have agreed to the following constructions for certain terms governed by 35 U.S.C. § 112 ¶ 6. I have applied these constructions in my analysis.

Claim Term	Agreed Construction
“means for receiving, from a user of the wireless apparatus, a destination node identifier” (claim 20)	<u>Function</u> : receiving, from a user of the mobile telephone, a destination node identifier <u>Structure</u> : a dialing input, which is a key pad, a voice recognition unit, or a

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	parameter memory with prestored destination node identifiers
“means for transmitting an access code request message to an access server” (claim 20)	<u>Function</u> : transmitting an access code request message to an access server <u>Structure</u> : a network interface
“means for receiving an access code reply message from the access server in response to the access code request message” (claim 20)	<u>Function</u> : receiving an access code reply message from the access server in response to [said/the] access code request message <u>Structure</u> : a network interface
“means for receiving from the wireless [apparatus/device] [the/an] access code request message” (claims 34, 77)	<u>Function</u> : receiving from the mobile telephone [said/an] access code request message <u>Structure</u> : a network interface
“means for transmitting the access code reply message including the access code to the wireless apparatus”	<u>Function</u> : transmitting [said/an/the] access code reply message including

(claims 34, 77)	[said/the] access code to the [mobile telephone/wireless apparatus] <u>Structure</u> : a network interface
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B. “gateway” (Claims 1, 20, 38)

49. I understand that petitioner has contended the plain and ordinary meaning of “gateway” in the ’721 Patent is a “device that connects networks that use different communication protocols.” Gateway is defined in the dictionary as: *“A device that connects networks using different communications protocols so that information can be passed from one to the other.”* EX1023, 8 (Microsoft Computer Dictionary (5th ed. 2002)), *see also* EX1024, 9 (Wireless Encyclopedia (1st ed. 2007)), (“A gateway ... can *adjust the protocols and timing between two dissimilar computer systems or data networks.*”).
50. Every “gateway” disclosed in the ’721 patent specification acts to connect PSTN to IP networks, which use different protocols. *See, e.g.*, EX1001, 23:21-32 (disclosing how gateway’s I/O ports interact with PSTN and IP networks). This relationship is depicted, for example, in FIG. 1 where two gateways (items 18 and 34) connect a PSTN (items 29 and 32) to a different IP network (item 26). Unlike the PSTN telephone (item 32), the VoIP telephone (item 36)

does ***not*** use a gateway because it is “directly in communication with the IP network.” *Id.*, 9:67-10:5 (“A callee identifier associated with one of the channels 20, 22, and 24 may be a telephone number of a ***PSTN telephone 32 that is in communication with the IP network 26 through a gateway 34***, or it may be a telephone number of a ***VoIP telephone 36 that is directly in communication with the IP network 26***, for example.”). Thus, a POSITA would have understood the specification requires gateways to connect IP network calls to the Public Switched Telephone Network (PSTN) because those networks use different protocols. *Id.*, 32:3-6 (“a gateway to the public network usable by the call controller (13) to establish a ‘public system’ call”).

51. During prosecution, the applicant identified WO 01/89145 (“Foti”) as prior art. *See* EX1002, 119-25 (Dec. 23, 2013 IDS). Foti states that “a ***gateway*** provides an ***interface between the circuit-switched network and the packet-switched IP network***,” which as described above, are different protocols. EX1025, 11 (Foti), 1:14-15.

52. I further understand a court in W.D. Tex.⁶ construed the term substantially similarly to mean “[a] device that connects networks and can adjust a protocol of traffic moving between the connected networks.” EX1012.

⁶ Petitioner was not a party in any case where the claims have been construed.

53. I understand that the Patent Owner has contended this term carries only an unspecified “plain and ordinary meaning,” without clarifying what that “plain and ordinary” meaning is. EX1013, 8.

54. In my opinion, the asserted grounds satisfy all of these constructions, as explained below.

C. “means for causing the wireless apparatus to establish communications with the destination node through the communications channel identified by the access code” (Claim 20)

55. In my opinion, this term as performing the function of “causing the wireless apparatus to establish communications with the destination node through the communications channel identified by the access code” and a structure of “a network interface, including switched line channels in a public switched telephone network (PSTN).” EX1001, 9:25-27, 9:50-62, 13:38-48, 23:38-52.

56. I understand that Patent Owner has contended the term should instead be construed to incorporate the structure of “[m]obile telephone 12 having a microprocessor 52 programmed to implement the algorithm illustrated in FIG. 3, which includes block 149 labeled ‘Initiate voice/video call using access code.’ The apparatus 12 includes an I/O port (56) for communication. See FIG. 2.” EX1018.

D. “means for communicating with the routing controller to obtain from the routing controller the access code” (Claim 34)

57. In my opinion, this term as performing the function of “communicating with said routing controller to obtain from said routing controller said access code” and a structure of “an input/output port that transmits the access code request message, as received from the mobile telephone, to the routing controller and receives, from the routing controller, the access code reply message.” EX1001, 14:40-53, 14:58-65.

58. I understand that Patent Owner has contended the term should instead be construed to incorporate the structure of “[a]n I/O port of an access server and/or an I/O port of a routing controller.” EX1018.

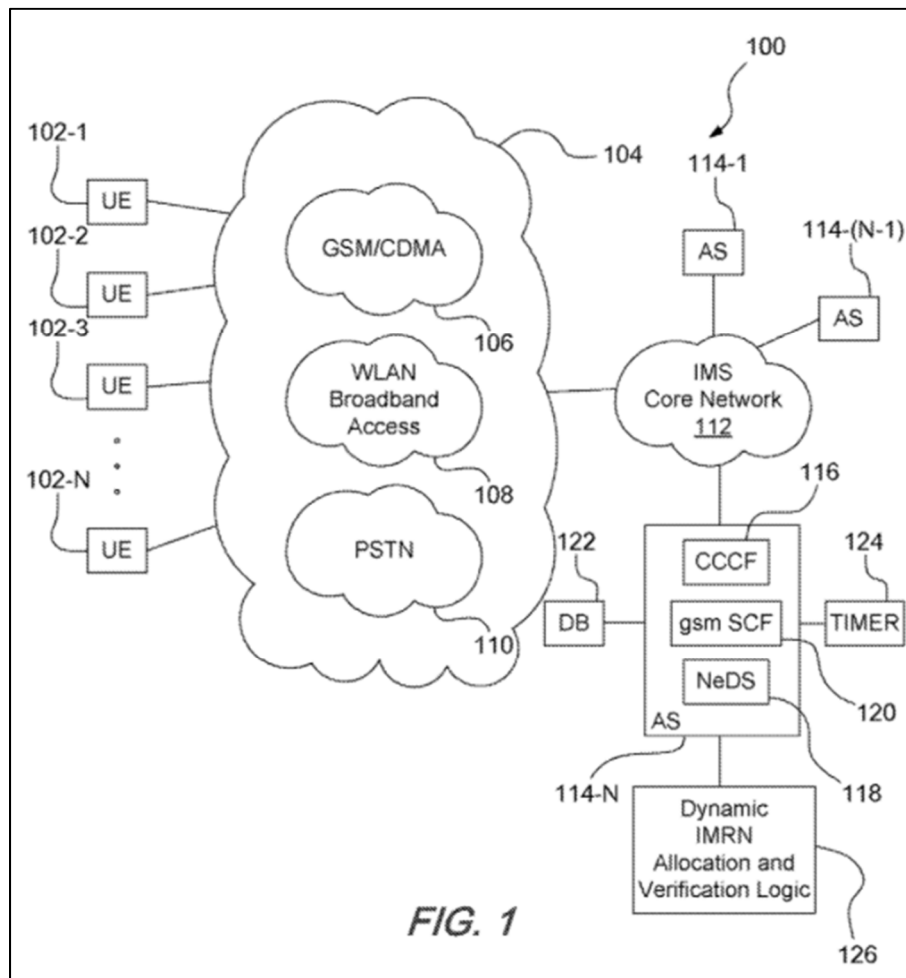
E. Other Terms.

59. No other claim terms require construction for purposes of resolving the issues raised in this Petition. The fact that I do not propose additional constructions for purposes of my analysis herein does not, however, imply that I agree that any other term should be construed according to some unspecified “plain and ordinary” meaning; rather, it means only that no other claim term requires construction for purposes of evaluating the invalidity of the challenged claims in view of the prior art asserted herein.

VII. OVERVIEW OF THE PRIOR ART

A. Buckley

60. Buckley teaches routing PSTN calls over packet-switched networks. *See* EX1005, Abstract. Figure 1 in Buckley depicts example components that may be involved, including: mobile phones (*i.e.* User Equipment (UE) (element 102)); Circuit-Switched (CS) networks (*e.g.* PSTN (element 110)); and Packet-Switched (PS) networks (*e.g.* wireless Local Area Network (WLAN) Broadband Access (element 108) and Internet protocol Multimedia Subsystem (IMS) Core Network (element 112)). *Id.*, 3:19-65. As explained below, Buckley teaches Application Servers (AS) (elements 114-1 to 114-N) and associated network entities that perform access code messaging, temporary access code selection, and call routing in the same way as the '234 Patent's access server. *Id.*, 3:65-4:62.

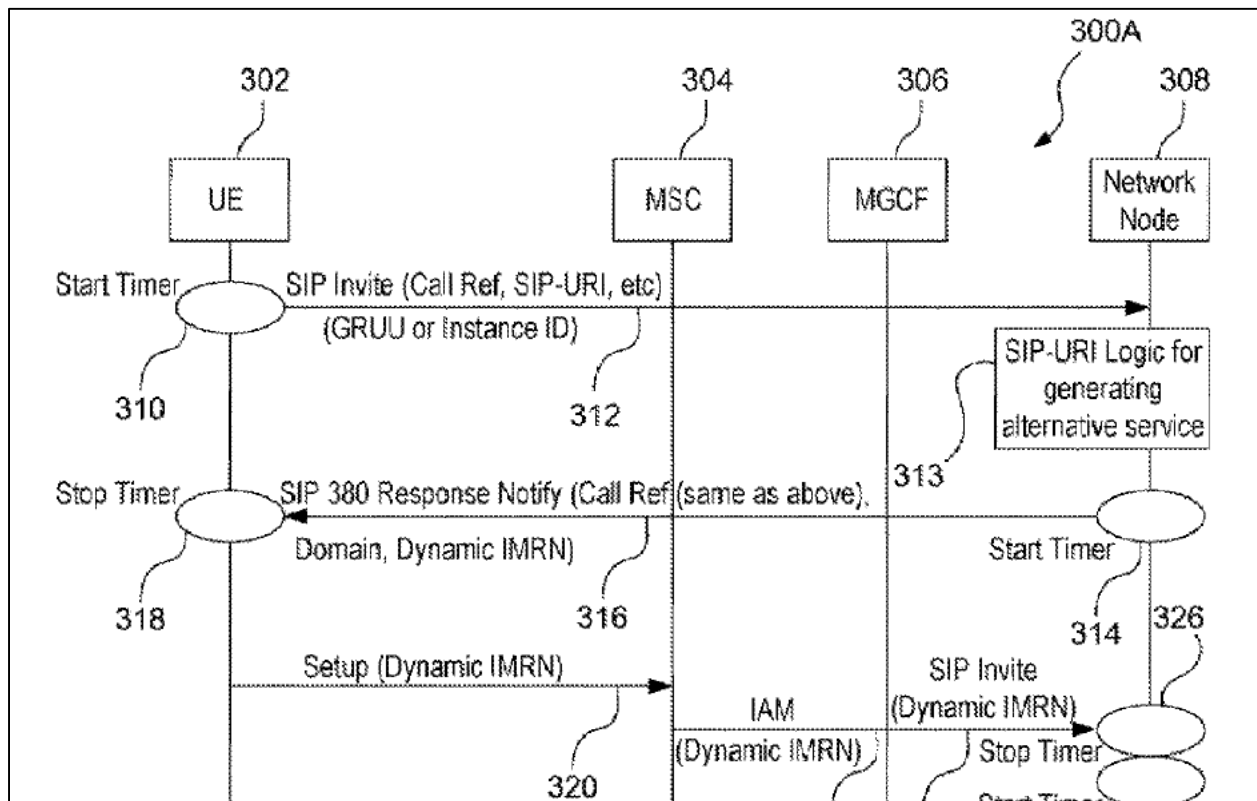


PSTN, GSM/CDMA, and WLAN Broadband are technologies that allow the UE to access the network. The Public Switched Telephone Network (PSTN) is the technology behind telephony systems based on Circuit-Switched networks. GSM/CDMA are 2nd generation cellular technology that allows UE access to the network. WLAN Broadband is another access technology. See EX1019, 11.

61. The analog telephone was invented around 150 years ago and switched to digital telephony systems around 50 years ago. The Internet and TCP/IP

protocols enabled carrying voice and more advanced services over IP. Session Initiation Protocol (SIP) is the IETF's RFC 2543 (EX1021), which defines establishing VoIP connections. SIP defines a control protocol for creating, modifying, and terminating sessions with one or more users. Buckley's AS uses this well-known Session Initiation Protocol (SIP)⁷ messaging (access code request and reply messages) to assign a temporary IP Multimedia Routing Number (IMRN) (access code) that allows CS-originated calls to be routed over IMS (IP) networks. *Id.* For example, Figure 3A (excerpted below) depicts this process at a high level, which begins when the calling mobile phone (UE, element 302) sends a SIP Invite message (element 312) to the home AS (network node 308). *Id.*, 6:55-63. The AS selects a temporary IMRN from a pool and sends it back to the mobile telephone (UE) in a SIP Response message (element 316). *Id.*, 4:31-40, 7:29-42. The UE then uses the IMRN to initiate a call (element 320) that an AS routes to the callee. *Id.*, 4:15-40, 7:47-64. The SIP messaging includes caller and callee Uniform Resource Indicators (URI) that identify location. *Id.*, 2:62-3:12, 5:18-58, Figures 3A, 3B.

⁷ The '234 Patent also uses SIP messaging. EX1001, *e.g.*, 23:4-24:10, Fig. 14.

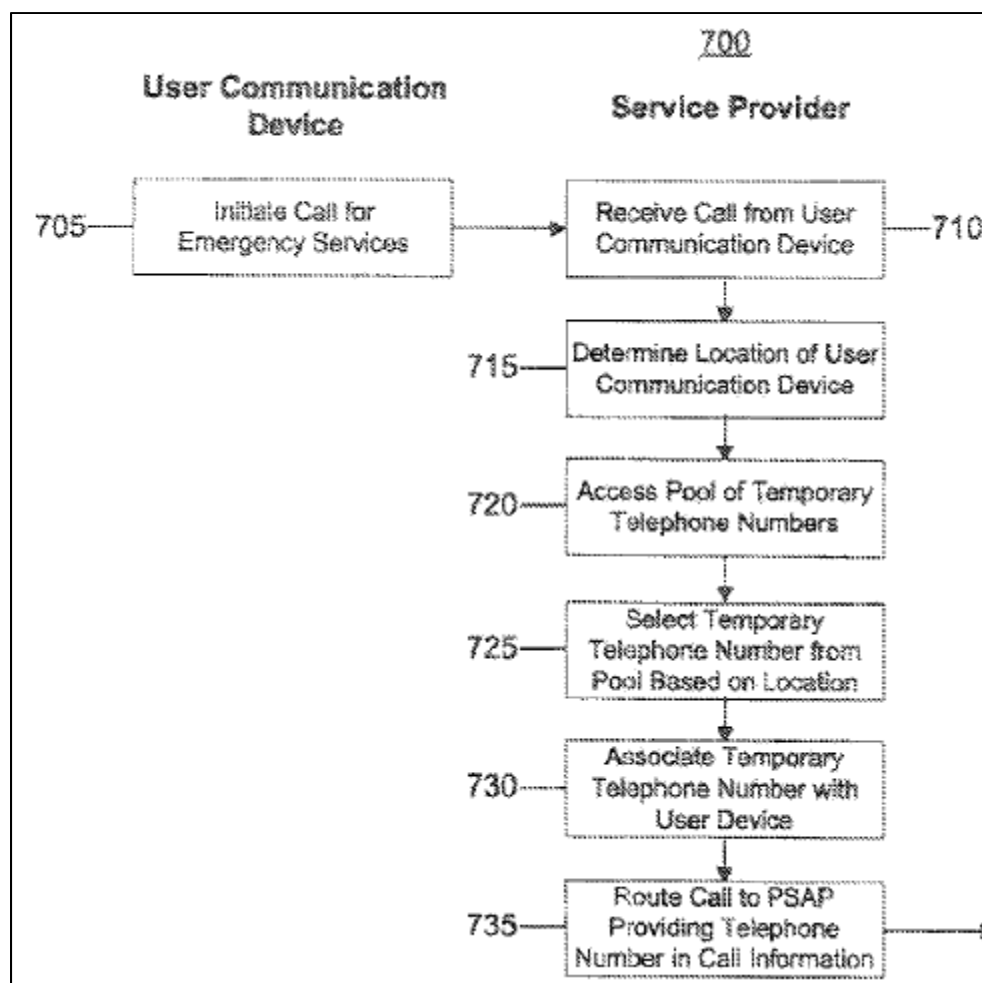


B. Bates

62. Bates teaches a highly similar process of selecting a temporary number for a call. *See* EX1009, Abstract. The temporary number can be used to improve emergency call routing, among other things. *See Id.*, 12:25-31. Bates teaches that routing the call to the appropriate Public Safety Answering Point (PSAP) may require a “circuit-switched voice network, [or] a packet-switched data network,” where “circuit-switched voice networks may include the PSTN, and packet-switched data networks may include networks based on the Internet protocol (IP).” *Id.* 6:32-38. Bates teaches how to improve such call routing decisions by selecting a temporary number for the call from a pool of

temporary numbers, where the selection is based on the geographic location of a call participant. EX1009, Abstract, 12:25-31, Fig. 7.

63. In Figure 7 of Bates, a mobile telephone initiates a call by sending an access code request message to a Service Provider's node. Based on the mobile telephone's location, a temporary number is selected from a pool of numbers that enable a local call to be made and routed.



C. Ejzak

64. Ejzak teaches techniques for use in a communication system having many of the same network entities, and associated functionalities, taught in Buckley. *Compare* EX1005, Figure 3A *with* EX1007 Figure 1 (element 141) and Figure 3 (both including, e.g., IP Multimedia Subsystem (IMS), Mobile Switching Center (MSC), Mobile Gateway Control Functions (MGCF), Interrogating Call State Control Function (I-CSCF), and Serving Call State Control Functions (S-CSCF)). Like Buckley and Bates, Ejzak teaches PSTN and VoIP call interoperability such that calls can traverse packet-switched networks (like an IP network) and circuit-switched networks (like a PSTN). *See* EX1007, 2:36-40. Ejzak further teaches functionality to use access codes, such as E.164 numbers, to identify IP addresses that are used to route calls over IP networks. *Id.*, 8:43-48. It also teaches services to establish emergency service calls, and services that use a mobile phone's location to route call traffic over the least cost⁸ path. *Id.*, 7:28-36, 4:46-60.

⁸ Similar to Ejzak, the '234 Patent uses the term "lowest cost channel" to refer to routes optimized based on a location identifier. EX1001, 12:51-62 ("[T]he location identifier in the location identifier field 119 may be used to determine a local calling area associated with the mobile telephone 12, within which local calling area channels (illustrated as 20, 22, and 24 in FIG. 1) are available to the mobile telephone 12 for the lowest cost to the user. However, it will be appreciated that the location identifier may only approximately identify a local

65. Ejzak further teaches using SIP messaging within this architecture. *Id.*, 8:58-

66 For example, during Ejzak's call messaging and routing process, a callee identifier (such as an E.164 telephone number) is received in a SIP Invite message, and Ejzak's network entities are able to select from, and analyze, sets of attributes associated with that callee identifier. *Id.* Ejzak's servers determine from those attributes whether the callee identifier is associated with a device that can receive calls routed over packet-switched networks (*e.g.*, IMS or IP) or circuit-switched networks (*e.g.*, PSTN). *Id.*

66. Ejzak teaches querying a Domain Name System (DNS) using the callee identifier (E.164 number). *Id.* Ejzak's DNS "provides a standardized database and a standardized protocol to store and retrieve information about domain names from the database." *Id.*, 8:29-36. As such, "[q]ueries are sent to DNS [], which responds with the associated resource records [*e.g.*, IP addresses] for the requested input." *Id.* Thus, the DNS replies with the appropriate IP address, from a set of available IP addresses, to enable communications over an IP network or to route the call to a PSTN gateway for communication over a PSTN. *See id.*, 8:63-9:6. Notably, even if the callee identifier is associated

calling area, and may not necessarily identify the lowest cost channel (illustrated as 20, 22, and 24 in FIG. 1) for the mobile telephone 12.").

with a PSTN, the DNS can respond with attributes for SIP service for that callee, which would include an IP address that enables establishing communications through an IP network. *See id.*, 9:8-12.

67. Ejzak's DNS further includes "the functionality of an ENUM Server," which maps PSTN numbers to IP addresses, and vice-versa, thus rendering them interchangeable for the purpose of identifying IP network communication channels for communication between a caller and callee, including using SIP messaging (as in Buckley). EX1007, 8:29-36, 8:43-48 ("If a telephone number in DNS 165 contains SIP service attributes, the result of an ENUM translation from DNS 165 is a domain name of the SIP server for the user with that telephone number. A subsequent query to DNS 165 with that domain name determines the IP address of the SIP server."). The DNS server thus maps telephone numbers to a set of attributes, any of which can be selected and "used to contact a resource associated with that telephone." 8:36-43. And, the DNS/ENUM functionality allows network entities to map any E.164 number to an IP address that may be used to route a call to that E.164 number over an IP network.

68. Ejzak also teaches using a network entity called a "BGCF" for "call/session control." EX1007, 4:25-29. The BGCF selects the optimal gateway to route a call by determining "which network should be used to provide inter-working

with PSTN,” a determination that the BGCF can make by analyzing “the current location of the calling UE, [and] the location of the PSTN address,” with “the desire to minimize path distance within the PSTN network, and a desire for the least-cost path.” *Id.*, 4:46-60.

VIII. SPECIFIC GROUNDS OF OBVIOUSNESS

A. **Ground I: Claims 1, 2, 6, 9, 14-16, 20, 25, 34, 38-39, 43, 46, 49-50, and 135-136 Are Obvious Over Buckley.**⁹

1. **Claim 1**¹⁰

a. **Element 1[preamble]: “A method of establishing communications between a wireless device and a**

⁹ A POSITA would have understood that all of the disclosures relied upon in my analysis are part of a single embodiment as disclosed by Buckley, albeit a particular mode or implementation of that embodiment. For example, although Buckley states that “[i]n some embodiments, the IMRN may be mapped to all the received SIP call information” (EX1005, 6:1-3), a POSITA would have understood that the same structure and processes are used even where the IMRN is mapped to fewer than “all” the received SIP call information; thus, whether the IMRN is mapped to “all” or less than “all” the received call information represents merely specific implementations of the same overarching embodiment (notwithstanding Buckley’s imprecise use of the term “embodiment”). In each case, my analysis relies on the embodiment of the SIP interaction between the UE and AS node taught by Buckley, as depicted at a high level in Figure 3A (for example). However, to the extent the disclosures I rely on from Buckley are not considered to all be part of the same embodiment, a POSITA would have recognized that the disclosures are minor variations of each other, and that the disclosures are thus all compatible with each other. EX1005, 23:33-38 (“[T]he operation and construction of the embodiments of the present patent application will be apparent from the Detailed Description set forth above. While the exemplary embodiments shown and described may have been characterized as being preferred, it should be readily understood that various changes and modifications could be made therein without departing from the scope of the present disclosure....”). A POSITA would have been motivated to construct the particular embodiment of Buckley analyzed herein in order to efficiently route calls and avoid unnecessary long-distance and roaming charges, as was well-known in the art. *See, e.g.*, EX1014 at Abstract (teaching “a method of providing a local access number”), [0036] (“[T]he subscriber may use the local access number to connect to a chosen long distance service provider.”); EX1001, 1:25-37 (“One known technique for avoiding the long distance charges of mobile telephone service providers is to use a ‘calling card’. A ‘calling card’ may permit the user of the mobile telephone to place a call to a local telephone number....”).

**destination node of a communications network, the
method comprising:”**

69. In my opinion, Buckley teaches establishing communications between a wireless device and a destination node of a communications network.
70. Buckley teaches methods for UEs (User Equipment), in particular “mobile communication device[s] (e.g. cellular phones ...).” EX1005, 3:25-40. Buckley teaches methods wherein these UEs (wireless devices) communicate with a callee’s communication device (destination node), such as a phone, via a communication network. EX1005, e.g., cl. 1 (“A method for use in processing calls in a network environment”), 2:8-9 (“originating a SIP call ... with ... the called party”).

The user may thus avoid the long distance charges of the mobile telephone service provider, which may be higher than the charges for using the ‘calling card’.”). A POSITA also would have had a reasonable expectation of success in constructing the particular embodiment of Buckley analyzed herein because all of the disclosures are applied within the context of the SIP interaction between the UE and AS node as taught in Buckley’s single reference, and Buckley recognizes that any such “changes and modifications” would be “readily understood” by a POSITA. EX1005, 23:33-38.

- ¹⁰ The complete text of the claims’ corresponding portions is available in the claim listing attached hereto as Appendix A.

b. **Element 1[a]: “receiving from a user of the wireless device a destination node identifier associated with the destination node;”**

71. In my opinion, Buckley teaches this element.

72. Buckley teaches that the communication device of a “called party” (destination node) can be “identified with a Uniform Resource Indicator (URI)” (destination node identifier), which is associated with the destination node because the URI identifies the destination node. EX1005, 1:51-53. The “user of the UE device” (user of the wireless device) “either enters the URI via a suitable interface ... or selects it from a list stored in the UE.” EX1005, 5:22-25.

c. **Element 1[b]**

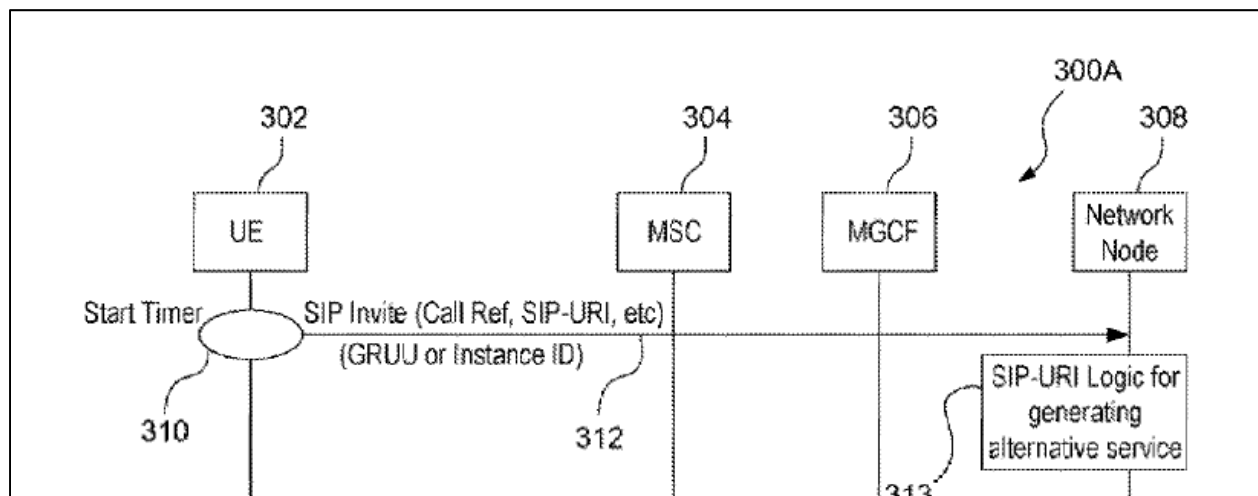
73. In my opinion, Buckley teaches this element.

i. “transmitting an access code request message to an access server,...”

74. As shown, for example, in Figure 3A (annotated below),¹¹ Buckley teaches that when a UE (wireless device) 302 initiates a call, it transmits an SIP Invite

¹¹ References herein to Buckley Figure 3A also include the analogous portions of Figure 3B “wherein certain intermediary nodes in a home network 350 are exemplified.” EX1005 8:22-26.

(access code request) message 312 to a network node 308 called an Application Server (AS) (access server). EX1005 6:58-63 (“A Wireless UE device 302 ... is operable to generate a SIP Invite message 312 towards an application server (AS) node 308 in response to detecting that a SIP call is being initiated from UE device 302”).



75. The SIP Invite message (access code request message) invites (*i.e.*, requests) the AS to provide an IP multimedia routing number (IMRN) (access code, as explained below), which the AS selects from a pool of IMRNs (access codes). EX1005, 8:54-61 (“[W]hen the UE device detects that it needs to invoke CS call origination, it may produce and send a SIP Invite message. [T]he SIP Invite message is set to indicate that the call needs to be set up over CS.”); *id.*, 4:34-37 (AS node capable of “configuring and managing *a pool of IP multimedia routing numbers (IMRNs)* from which a select IMRN may be

dynamically-allocated or otherwise selected for purposes of SIP call routing....”).

76. The IMRN identifies, for example, a telephone number known as an E.164 number. EX1005, 4:47 (“E.164 numbers [] are operable as IMRNs”), 4:63-67 (“E. 164 is indicative of the International Telecommunications Union (ITU) telephone numbering plan....”). The IMRN telephone numbers are access codes because they provide access to call the destination node. EX1001, 2:50 (“The access code may include a telephone number.”). For example, the IMRN is required for the UE to have access to a communication channel set up as a CS-network call. EX1005, 9:61-63 (“[T]he UE shall use the IMRN ... as the E.164 number to set up a CS call”). Moreover, the IMRN telephone number is a code of digits used by the wireless device in place of the original destination node identifier (*i.e.* the URI) to connect to the AS so that the AS can complete the call to the destination node’s original URI; indeed, that is the AS node’s purpose in providing the IMRN. EX1005, 6:38-40 (“[T]he UE sets up a call using the IMRN that terminates on the AS node. The IMRN is then interrogated against the record to retrieve the called party’s URI”).
77. Buckley’s Application *Server* is an access server because it is server that provides access to the callee’s communication device (destination node),

including by providing the IMRN (access code) used to communicate with the callee.

- ii. “...the access code request message including the destination node identifier and a location identifier identifying a geographical location of the wireless device;”

- 78. Buckley’s SIP Invite message (access code request message) includes the called party’s device’s URI (destination node identifier). EX1005, 6:63-65 (“[T]he SIP Invite message 312 includes applicable call information such as [the] called party’s SIP URI....”), 1:51-53 (“called party ... is identified with a Uniform Resource Indicator (URI)”).
- 79. The SIP Invite (access code request message) also includes the UE’s (wireless device’s) geographic location information in the form of a P-Preferred-ID. EX1005, 8:67-9:20. “The P-Preferred-ID is set to the calling line identity (CLI) associated with the user or subscriber of the UE device for identification in the CS network”—in other words, a telephone number. *Id.*, 9:3-6, 9:20 (example “P-Preferred-Identity: <tel: +1-555-1001>”). A POSITA would have recognized that the telephone number includes a geographic location identifier because each of the country, area code, and telephone prefix (*i.e.*, the three digits in a telephone number before the final four digits), are associated with the phone’s geographic location. *See* EX1001, 12:39-42

“([T]he location identifier may include a ... local calling area where the mobile telephone is or may be situated.”). The P-Preferred-ID is thus a geographic location identifier that identifies the geographical location of the caller’s wireless device. *See id.*

80. As a further example, the SIP Invite (access code request message) also includes the UE’s (wireless device’s) geographic location information by including the “calling party’s SIP URI.” EX1005, 5:25-27, 47-53. Buckley teaches that a “typical” form of “the URI (or SIP address)” is in “the form of sip:<username>@<hostname>” (EX1005, 5:25-27, 7:1-2), and provides an example showing that the hostname can be an IP address (EX1005, 9:27: “Contact: sip:alice@**192.0.2.1**”). Indeed, RFC 3261 (EX1010 at 149), which is cited in Buckley (EX1005, 5:29-33), teaches that the host name can contain an IP address. Thus, Buckley teaches that a “typical” calling party’s SIP URI can be in the form of a network address that includes an IP address. A POSITA would have recognized the SIP URI is a geographic location identifier because it “typically” includes an IP address and IP addresses can be translated into geographic locations. EX1009, 9:6-9 (Teaching a “communications service provider may determine a current location of the user communication device based on an IP address the user communication device is using to connect to

the data network.”). In addition, dependent claim 60 depends on claim 51 and clarifies that the location identifier comprises an IP address. EX1001, Cl. 60.

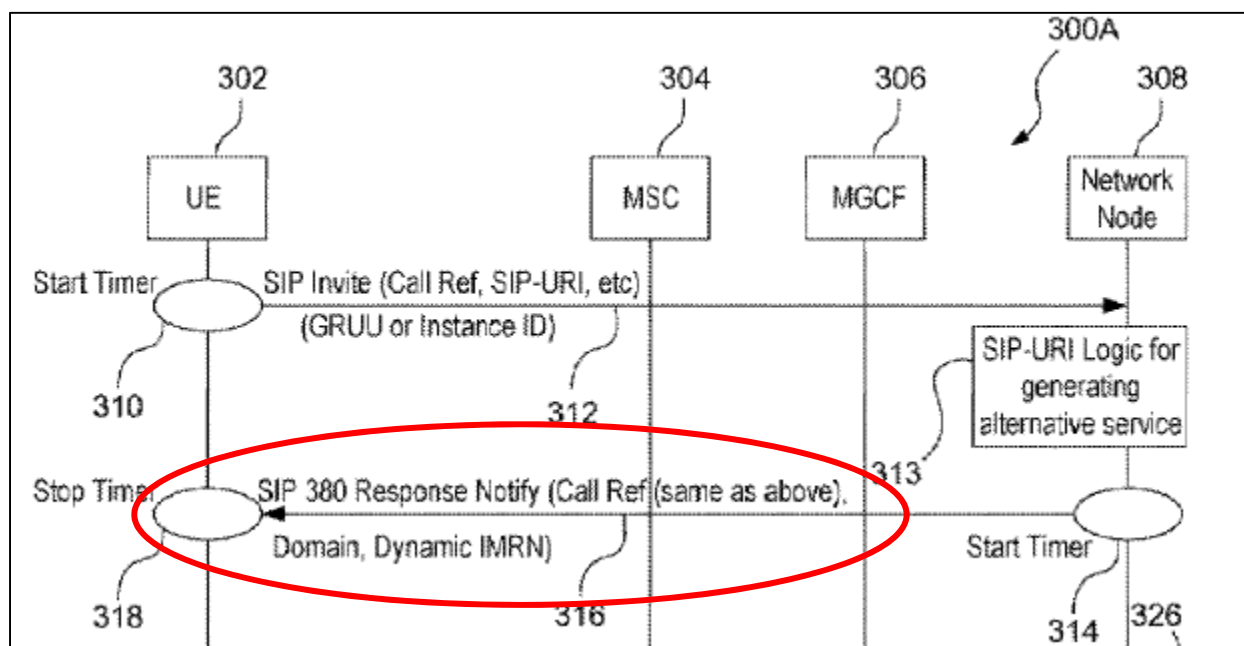
d. **Element 1[c]**

81. In my opinion, Buckley teaches this element.

- i. “receiving an access code reply message from the access server in response to said access code request message, ...”

82. As shown, for example, in Figure 3A below (cropped in relevant part), Buckley teaches that UE 302 (wireless device) receives from AS network node 308 (access server) a SIP Response 316 (access code reply) message in response to the SIP Invite (access code request) 312 message. EX1005, 7:29-34 (“**Responsive to the Invite message 312**, ... AS node 308 disposed in the user’s home IMS network is operable to launch SIP-URI logic 313 for generating and populating a suitable SIP 380 (Alternative Service) Response message (e.g. SIP [] Response message [316]).”¹²)

¹² The “380” in “SIP 380 Response” refers to a defined type of response code (an “Alternative Service”) used when the server may connect the call in a different manner than was requested, whereas the “SIP 380 Response” message in the context of Figure 3A refers to element 316. *See* EX1005, 7:41-42 (“SIP 380 message 316”), 7:49-50 (“SIP 380 Response message 316”):



- ii. “...the access code reply message including an access code based on the location identifier in the access code request message, ...”

83. The SIP Response includes an IMRN (access code) that the UE uses to get access to communicate with the callee. EX1005, 7:36-42 (“[T]he network node (in this example, the IMS AS node) dynamically allocates or otherwise identifies a selected IMRN mapped to the call information or parameters ... and returns it back to UE device 302 via SIP 380 [Response] message 316.”).
84. Buckley teaches that the IMRN is based on the location identifier that was sent in the SIP Invite message (access code request message), which, as discussed above, is the P-Preferred ID and/or caller’s URI. Specifically, Buckley teaches the IMRN can be constructed based on “some relationship(s) to one or more of the parameters received in a message ... from the UE

device” or “may be mapped to ***all the received SIP call information***” in the SIP Invite message. EX1005, 3:4-12, 4:41-49, 6:1-3. And, “all the received SIP call information” would include the the P-Preferred-ID, and additionally, the caller’s SIP URI. *Id.*, 6:63-66 (“[T]he SIP Invite message 312 includes applicable call information such as ... the P-Preferred-Identity”); 5:47-53 (“The call information may include information such as ... [the] calling party’s SIP URI...”). Thus, this mapping to “***all the received SIP call information***” bases the IMRN on the location identifier(s) (P-Preferred ID and/or caller’s URI) in the SIP Invite message (access code request message). And a person of ordinary skill in the art would have found it obvious from Buckley’s disclosure, and the known motivation to complete calls using local numbers to reduce or eliminate long distance or roaming charges, to select an IMRN based on a “relationship” to the location “parameters” received from the UE device.

- iii. “...the access code identifying a communications channel on a gateway through which communications between the wireless device and the destination node can be conducted...”

85. A POSITA would have understood that an E.164 telephone number (used in Buckley as an IMRN (access code) identifies a communications channel on a gateway. Moreover, the ’721 Patent itself confirms that a telephone number

was known to identify a communication channel. *See, e.g.*, EX1001 3:36-39 (“[t]he access code may include a telephone number identifying a channel operably configured to cooperate with an IP network.”).

86. Further, Buckley’s SIP messaging process described above creates a “SIP session” based on the IMRN (E.164 number), and a SIP session is a channel because it establishes the end-to-end communication pathway for the duration of the communication “session.” EX1005, 7:50-56, (“The IMRN is then interrogated against the record to retrieve the called party’s URI for *establishing a SIP session with the called party* between the calling party (UE device) identified by the A-party address and the called party identified by the B-party address”¹³); EX1010 (RFC 3261),¹⁴ 1 (“This document describes Session Initiation Protocol (SIP), an application-layer control (signaling) protocol for creating, modifying, and terminating sessions with one or more participants. These sessions include Internet telephone calls, multimedia distribution, and multimedia conferences. ... *SIP makes use of*

¹³ Buckley occasionally refers to the two parties to a call as the “A-party” and “B-party.” *See, e.g.*, EX1005, 6:41-43.

¹⁴ RFC 3261 is expressly cited in Buckley. EX1005, 5:29-33.

elements called proxy servers to help route requests to the user's current location, authenticate and authorize users for services, *implement provider call-routing policies*, and provide features to users. SIP also provides a registration function that allows users to upload their current locations for use by proxy servers.”). As part of establishing a SIP connection, the Real-Time Transport Protocol (RTP) carries the media stream (e.g., voice and video) along the SIP Channel. *Id.* 7:19-21 (“A cause value in the SIP Invite message will be set appropriately to indicate that a radio bearer channel for the session is to be established over the CS domain.”).

87. The IMRN is used by the wireless device in place of the destination node URI (destination node identifier) to connect to the AS (gateway) such that the AS can complete the call to the original destination node URI; indeed, that is the AS's purpose in providing the IMRN. *See* EX1005, 6:38-40 (“the UE sets up a call using the IMRN that terminates on the AS node. The IMRN is then interrogated against the record to retrieve the called party's URI”).
88. The AS is a gateway because it converts the CS network call setup initiated by the UE (wireless device) to a SIP call setup on a PS network, which requires adjusting traffic between two different networks that use two different protocols (e.g., Internet Protocol (IP) used by the packet-switched network, and PSTN protocol used by the circuit-switched network). EX1005,

6:14-23 (“[A]ppropriate call setup is then initiated by the UE device using the selected IMRN, whereby the accepted IMRN is returned to the AS node since it terminates thereat. Upon receipt of the IMRN at the AS node ... the called party’s SIP URI or Tel URI ... is utilized by the AS node for effectuating the SIP session with the called party by producing and sending a SIP Invite message”). Indeed, teaching the transition of calls initiated on a CS network to a PS network (which use two different protocols) is Buckley’s invention. *See id.*, 1:24-28 (Disclosing “managing call routing in a network environment including a circuit-switched (CS) network and an IP multimedia subsystem (IMS) network, wherein a CS-originated IP call (e.g. based on the Session Initiation Protocol or SIP) is to be routed using the IMS network infrastructure.”); 1:51-57 (“[I]f the called party happens to be an IP-only subscriber and is identified with a Uniform Resource Indicator (URI), the originating UE device may not be able to make the IP-based call since the UE device can effectuate only E.164 number-based calls while operating in the circuit-switched cellular network domain.”).

iv. “...the access code being distinct from the destination node identifier; and,

89. The SIP Response includes an IMRN (access code) that the UE uses to get access to communicate with the destination node. EX1005, 7:36-42 (“[T]he

network node (in this example, the IMS AS node) dynamically allocates or otherwise identifies a selected IMRN mapped to the call information or parameters ... and returns it back to UE device 302 via SIP 380 [Response] message 316.”). The IMRN (access code) is an E.164 number that is different from, and hence at the AS it must be “mapped to,” the destination node’s URI (destination node identifier). EX1005, 4:41-51. For example, Buckley teaches “dynamically allocating or otherwise selecting the E.164 number [IMRN] to a received called party’s URI (e.g. SIP URI or Tel URI) and other received information; and providing the selected E.164 number to the originating UE device via a SIP 380 (Alternative Service) Response message” to provide access to reach the called party. EX1005, 4:52-57.

e. **Element 1[d];**

90. In my opinion, Buckley teaches this element.

- i. “in response to receiving the access code reply message, causing the wireless device to use the access code received in the access code reply message to initiate communications from the wireless device to the destination node through the channel identified by the access code,...”

91. Buckley teaches the UE (wireless device) initiating a call using the IMRN (access code) to identify the destination node, e.g., using “a call setup message 320 that includes the selected IMRN” resulting in messages “towards the AS

node, which then uses the IMRN mapping for establishing the SIP session or call to the called party.” EX1005, 7:50-56, Figure 3A. The call is initiated through the AS, which associates the IMRN to the destination node’s URI (destination node identifier per Element 1[a]). EX1005, 6:37-43 (“Upon correlating the IMRN with the call reference number, the *UE sets up a call using the IMRN* that terminates on the AS node. The IMRN is then interrogated against the record to *retrieve the called party’s URI* for establishing a SIP session with the called party”).

- ii. “...wherein the access code is based on the location identifier transmitted in the access code request message and ...”

92. In my opinion, Buckley teaches this element. *See* Element 1[c]ii.

- iii. “...enables the communications to be established from the wireless device to the destination node through the channel on the gateway identified by the access code.”

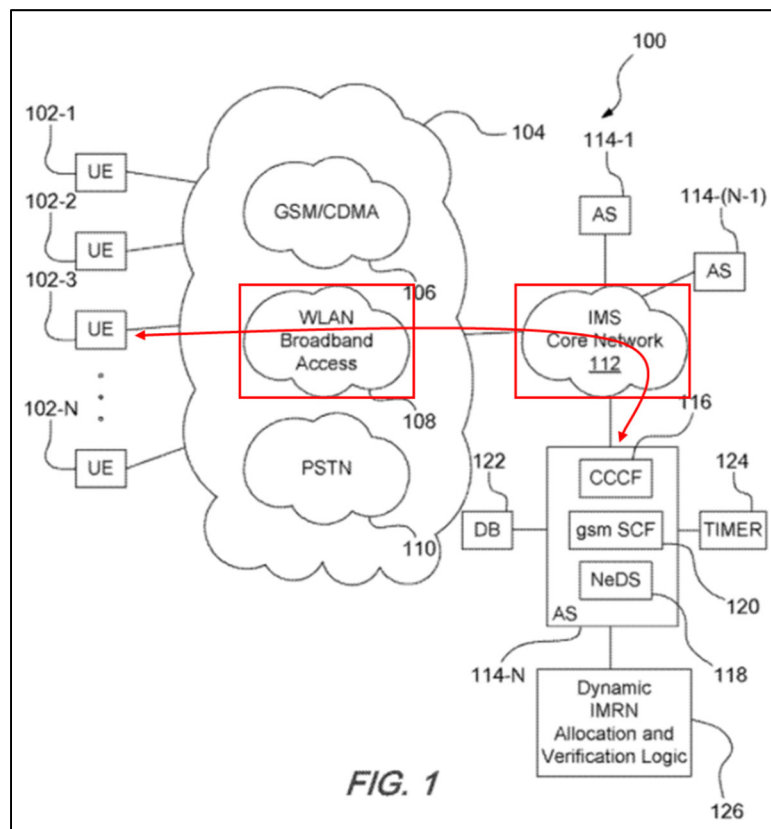
93. In my opinion, Buckley teaches this element. *See* Element 1[c]iii.

2. Claim 2: “The method of claim 1, wherein transmitting comprises transmitting the access code request message to the access server on a non-voice network.”

94. In my opinion, Buckley teaches this claim.

95. For example, Figure 1 depicts a UE (wireless device) connected to an AS (114-N) (access server) via a non-voice, packet switched (PS) network including a WLAN Broadband Access network (108) and the IMS Core

Network (112) as annotated in red. EX1005, 3:23-24 (“[A]ccess space 104 [is] comprised of a number of access technologies available to a plurality of UE devices”), 3:41-43 (“The access space 104 may be comprised of both CS and *PS networks*, which may involve wireless technologies, wireline technologies, broadband access technologies, etc.”).



96. The UE transmits its SIP Invite (access code request message) “to an application server (AS) node in the IMS network” through this WLAN Broadband Access network. *Id.* 14:33-36. PS networks, including the IMS and WLAN Broadband Access networks, are non-voice networks in the ’721 Patent’s parlance because they carry IP data packets, not voice signals.

EX1001 at 11:58-59 (“non-voice network, such as an Internet, using WiFi or GPRS technology for example”).

97. A POSITA would also have found it obvious to transmit the SIP Invite through a non-voice network because the SIP Invite is not a voice signal, so there is no specific need for a voice network to transmit the message, and a non-voice network would more efficiently handle such data communication. The SIP protocol is part of the TCP/IP protocol suite that is the foundation of the Internet and packet switching networks, which are non-voice networks, and thus it would be expected that the SIP Invite would be transmitted through a non-voice network because SIP was specifically designed for non-voice networks. For example, Buckley teaches that it was well-known that for IP networks, “IP is used to transport both bearer traffic [voice traffic] and SIP-based signaling traffic.” EX1005, 3:58-62.

3. Claim 6: “The method of claim 1, wherein the location identifier comprises an Internet Protocol (IP) address of the wireless device in a wireless Internet Protocol (IP) network.”

98. In my opinion, Buckley teaches this claim.
99. As discussed in Element 1[b], Buckley’s SIP Invite message (access code requests message) includes the “calling party’s SIP URI” (location identifier) which “may take on the form of sip: <username>@<*hostname*>.” EX1005,

5:47-53, 5:25-27. A POSITA would have recognized that the hostname can “contain [a] numeric IPv4 or IPv6 address.” EX1010 (RFC 3261)¹⁵, 148. Buckley teaches an exemplary SIP URI of “sip:alice@192.0.2.1,” which includes an IP address as the hostname, namely “192.0.2.1”. EX1005, 9:27. Thus, Buckley teaches transmitting the wireless device’s IP address (as the hostname) when transmitting the location identifier in the SIP invite message.

100. As discussed in Claim 2, Buckley teaches that the SIP Invite is sent through a WLAN Broadband Access network, which includes “wireless local area networks” and a POSITA would have understood this to include a wireless IP network to enable wireless capabilities at “broadband” speeds. EX1005, 3:51.

4. Claim 9: “The method of claim 1, wherein receiving the access code reply message comprises receiving the access code reply message from the access server on a non-voice network.”

101. In my opinion, Buckley teaches this claim.

102. Buckley teaches a UE and AS (access server) connect via a non-voice, packet-switched network. *See* Claim 2.

103. Buckley teaches the IMRN is received after being transmitted from the AS via a packet-based SIP Response (access code reply message) over the IMS

¹⁵ RFC 3261 is cited in relevant part in Buckley. EX1005, 5:29-33.

network (a non-voice PS network in the '721 Patent's parlance). EX1005, 30:23-34 (the mobile communication device "receive[s] a SIP 380 (Alternative Service) Response message from the IMS network"). A POSITA would also have found it obvious that the SIP Response could be received through another type of non-voice network because the SIP Response is not a voice signal, so there is no specific need for a voice network to transmit the message, and a non-voice network would more efficiently handle such data communication, as discussed above in the context of claim 6.

5. Claim 14: "The method of claim 1, wherein receiving the access code reply message comprises receiving, in the access code reply message, a telephone number or an Internet Protocol (IP) address."

104. In my opinion, Buckley teaches this claim. *See* Element 1[b].

105. The IMRN identifies, for example, a telephone number known as an E.164 number. EX1005, 4:47 ("E.164 numbers [] are operable as IMRNs"), 4:63-67 ("E. 164 is indicative of the International Telecommunications Union (ITU) telephone numbering plan....").

6. Claim 15: "The method of claim 14, wherein establishing communications between the wireless device and the destination node comprises engaging a routing controller to route the call on a public switched telephone network (PSTN) or an IP network to the destination node."

106. In my opinion, Buckley teaches this claim.

107. As the '721 Patent describes, “the access server 14 and the routing controller 30 need not be separate, but may, for example, be combined in a single component” and “the routing controller 30 executes a process to facilitate communication between callers and callees.” EX1001, 15:13-20.
108. Buckley teaches a network node (308 in Figs 3A and 3B) where an AS (access server) is “provided with appropriate logic/structure/software/firmware module(s).” EX1005, 4:42-45. A POSITA would have understood that these modules comprise a routing controller operably configured to route a call between the caller and destination node described above with respect to Claim 1 where, for example, an E.164 number is used as an IMRN (access code). EX1005, 4:31-40 (“IP multimedia **routing** numbers (IMRNs) from which a select IMRN may be dynamically-allocated or otherwise selected for purposes of SIP call **routing**”). For example, AS contains modules that: “maintain[] a pool of E.164 numbers that are operable as IMRNs which terminate on the AS node,” select an E.164 number and map it a “called party’s” URI (destination node identifier), “provid[e] the selected E.164 number to the originating UE device,” and “verify[] that the selected E.164 number has not timed out when that selected E.164 number is returned” during CS call set up. *Id.*, 4:46-58. These modules are AS components that route a call to the destination node by, *inter alia*, allocating the IMRN to the called party’s address such that when

the IMRN is returned to the AS via a CS network the call can be established and verifying the IMRN has not timed out. EX1005, 4:52-52 (The modules “allocate[e] or otherwise select[] the E164 number [IMRN] to a received called party’s URI.”); *id.*, 6:16-23 (“[T]he accepted IMRN is returned to the AS node since it terminates thereat. Upon receipt of the IMRN at the AS node ... the called party’s SIP URI or Tel URI ... is utilized by the AS node for effectuating the SIP session with the called party.”), 4:57-60 (The modules “verify[] that the selected E.164 number has not timed out when that selected E.164 number is returned (via conventional CS call setup) to AS 114-N for effectuating a SIP call session with respect to the called party.”); *id.*, 8:2-4 (“If the IMRN has not timed out, the AS node may establish the SIP session based on the IMRN correlation.”); *id.*, 8:45-47 (“Regardless, once the IMRN is received at the AS node 308, appropriate call correlation is made to establish the SIP call between the UE and the called party.”); *id.*, 4:31-40 (“IP multimedia **routing** numbers (IMRNs) from which a select IMRN may be dynamically-allocated or otherwise selected for purposes of SIP call **routing**”).

109. Buckley also teaches that the “IMRN mapping” is used “for establishing the SIP session or call to the called party” and that it was “understood by those skilled in the art” to use further intermediate messaging and “resource

allocation/reservation negotiations” such that a “bearer path is established between the UE device [] and the called party,” which meets, or at least renders obvious, the routing controller and channel functionality in this claim element. *Id.*, 7:53-64.

110. The AS converts the CS network call setup initiated by the UE with the IMRN to a SIP call setup to route the call to the original destination node on an IP network. EX1005, 6:14-23 (“[A]ppropriate call setup is then initiated by the UE device using the selected IMRN, whereby the accepted IMRN is returned to the AS node since it terminates thereat. Upon receipt of the IMRN at the AS node ... the called party's SIP URI or Tel URI ... is utilized by the AS node for effectuating the SIP session with the called party by producing and sending a SIP Invite message”)

7. Claim 16

- a. **Element 16[preamble]: “The method of claim 1 further comprising:”**

111. In my opinion, Buckley teaches this element. *See* Element 1[preamble].

- b. **Element 16[a]: “receiving at the access server, the access code request message from the wireless device;”**

112. In my opinion, Buckley teaches this element. *See* Element 1[b].

- c. **Element 16[b]: “causing the access server to communicate with a routing controller to obtain from the routing controller the access code, wherein the access code identifies a communications channel**

associated with the location identifier and wherein the access code is useable by the wireless device in a subsequent communication to cause the routing controller to establish a call to the destination node using the communications channel; and”

113. In my opinion, Buckley teaches this element. *See* Claim 15; Element 1[c], [d].
114. Buckley teaches a network node (308 in Figs 3A and 3B) where an AS (access server) is “provided with appropriate logic/structure/software/firmware module(s).” EX1005, 4:42-45. A POSITA would have understood that these modules must communicate with one another to accomplish routing a call between callers and destination nodes as described above with respect to Claim 1 where, *e.g.*, an E.164 number is used as an IMRN (access code). For example, AS contains modules that: “maintain a pool of E.164 numbers that are operable as IMRNs which terminate on the AS node”, select an E.164 number and map it a “called party’s” URI (destination node identifier), “provid[e] the selected E.164 number to the originating UE device”, and “verify[] that the selected E.164 number has not timed out when that selected E.164 number is returned” during CS call set up. *Id.*, 4:46-58. These modules must communicate with one another to, for example, provide the selected E.164 number to the UE. The module that selects the number must communicate the selected number to the module that provides or transmits the number to the UE.

- d. **Element 16[c]: “causing the access server to transmit the access code reply message to the wireless device.”**

115. In my opinion, Buckley teaches this element. *See* Element 1[c].

8. Claim 20

- a. **Element 20[preamble]: “A wireless apparatus comprising:”**

116. In my opinion, Buckley teaches this element. *See* Element 1[preamble].

- b. **Element 20[a]: “means for receiving from a user of the wireless apparatus a destination node identifier associated with a destination node with which the user wishes to communicate;”**

117. In my opinion, Buckley teaches this element.

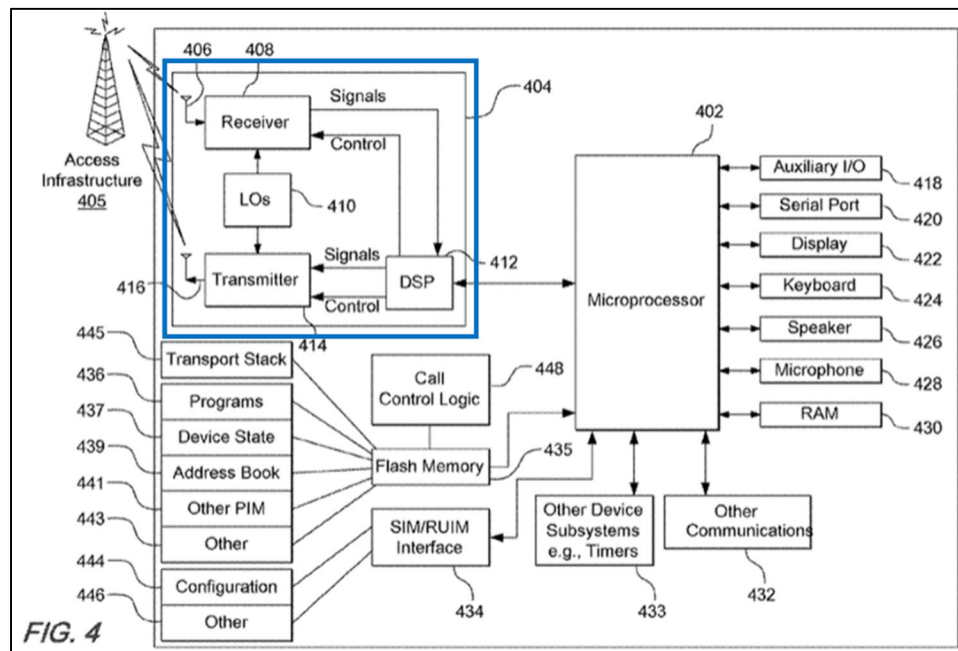
118. Buckley teaches means for receiving, which the parties agree incorporates the structure of a dialing input, which is a keypad, a voice recognition unit, or a parameter memory with pre-stored destination node identifiers. For example, Buckley teaches a keypad. *See* EX1005, 13:65-67 (“[D]isplay 422, **keyboard/keypad 424**, ... are part of the user interface of the mobile communication device”).

119. Buckley teaches the element’s remainder. *See* Element 1[a].

- c. **Element 20[b]: “means for transmitting an access code request message to an access server, the access code request message including the destination node identifier and a location identifier identifying a geographical location of the wireless apparatus;”**

120. In my opinion, Buckley teaches this element.

121. Buckley teaches means for transmitting, which the parties agree incorporates a network interface structure. Figure 4 depicts a “mobile communication device” with a “communication subsystem 404 [that] includes one or more receivers 408 and one or more transmitters 414,” as outlined below in blue. EX1005, 13:23-39. As a POSITA would have recognized, and as the data transmission lightning-bolt shapes indicate, this structure comprises a network interface that communicates with, for example, Access Infrastructure 405 which provides access to the mobile network. The network communication system 404 includes the Receiver 408 and the Transmitter 404, which are the fundamental building blocks of a communication network interface. The network interface may include multiple Transmitters and Receivers and is capable of multi-mode communications, including in the CS domain and IP domain such as IMS. EX1005, 13:35-38.



122. In my opinion, Buckley teaches the element's remainder. *See* Element 1[b].

- d. **Element 20[c]: “means for receiving an access code reply message from the access server in response to the access code request message, the access code reply message including an access code based on the location identifier in the access code request message, the access code identifying a communications channel on a gateway through which communications between the wireless apparatus and the destination node can be conducted, the access code being distinct from the destination node identifier; and”**

123. In my opinion, Buckley teaches this element.

124. Buckley teaches the means for receiving, which the parties agree incorporates a network interface structure. Figure 4 depicts a “mobile communication device” with a “communication subsystem 404 generally includes one or

more receivers 408 and one or more transmitters 414.” EX1005, 13:37-39;

Figure 4. *See* Element 20[b].

125. In my opinion, Buckley teaches the element’s remainder. *See* Element 1[c].

- e. **Element 20[d]: “means for causing the wireless apparatus to establish communications with the destination node through the communications channel identified by the access code in the access code reply message, the access code being based on the location identifier transmitted in the access code request message.”**

126. In my opinion, Buckley teaches this element.

127. Patent Owner contends this element incorporates the structure of a “[m]obile telephone 12 having a microprocessor 52 programmed to implement the algorithm illustrated in FIG. 3, which includes block 149 labeled ‘Initiate voice/video call using access code.’ The apparatus 12 includes an I/O port (56) for communication. *See* FIG. 2.” Buckley’s Figure 4 depicts a “mobile communication device” where a “microprocessor 402 providing for the overall control of an embodiment of UE 302 is operably coupled to a communication subsystem 404”. EX1005, 13:23-35; Figure 4. Buckley also discloses the microprocessor implements the algorithm illustrated in Figure 3 for establishing communications because it is “coupled to a communication subsystem 404 that is capable of multi-mode communications (e.g. CS domain, IP domain such as IMS, etc.)” that transmits an access code request

message, receives an access code reply message, and initiates a call using the IMRN (access code). *Id.*, 13:35-37; Element 20[b]-[c]; Element 1[d]. Part of the “multi-mode communications” includes the “PSTN.” EX1005, Figure 1, 3:53-55 (“[P]art of the access space 104 is the conventional wireline PSTN infrastructure 110”). The access code is based on the location identifier. Element 1[c][ii].

9. Claim 25: “The apparatus of claim 20, wherein the location identifier comprises an Internet Protocol (IP) address of the wireless apparatus in a wireless IP network.”

128. In my opinion, Buckley teaches this element. *See* Claim 6.

10. Claim 34

a. Element 34[preamble]: “A system for enabling roaming by a wireless apparatus, the system comprising the wireless apparatus of claim 20 and further comprising:”

129. In my opinion, Buckley teaches this element. *See* Element 1[preamble].

130. Buckley also teaches roaming with a wireless apparatus. Buckley teaches methods for UEs (User Equipment), in particular “mobile communication device[s] (e.g. cellular phones ...),” that are “untethered,” “capable of operating in multiple modes,” and “can transition from one mode of communications to another mode of communications without loss of continuity.” EX1005, 3:25-40. A POSITA would have understood that an “untethered” UE performing such transitions would commonly be roaming

across different geographic locations, and that Buckley's methods would be applied during such roaming, including because transitioning modes of communications occurs when moving from a home network to another service provider's network, otherwise there would not likely be a need to transition modes of communication. The purpose of mobile telephones was specifically to enable telecommunications more easily while traveling, so a POSITA would have expected the mobile telephone might be roaming at least some of the time by virtue of their expected, intended use case. *See, e.g.*, EX1015 [0029] ("Cellular telephones have enabled mobile station users to roam over large geographic areas while maintaining immediate access to telephony services."). The '721 Patent recognizes that roaming was common and that at least some mobile telephones roamed at least some of the time. EX1001, 1:21-24 ("Mobile telephone service providers *often* charge significant fees for long distance telephone calls, *particularly* when the mobile telephone is roaming in another mobile telephone service provider's network.").

131. Buckley was designed for use across different "wireless technologies such as Global System for Mobile Communications (GSM) networks and Code Division Multiple Access (CDMA) networks," and such networks were operated by a number of different service providers. EX1005, 3:41-53. As shown by the definition of "Roaming" from Wikipedia submitted during the

prosecution of the '721 Patent, the concept of roaming was actually developed in the context of those network types in order to address the issues that arose when a user was outside his or her home GSM network (for example) and in another provider's network. *See* EX1026 ("The term 'roaming' originates from the GSM (Global System for Mobile Communications) sphere; the term 'roaming' can also be applied to the CDMA technology. Traditional GSM Roaming is defined ... as the ability for a cellular customer to automatically make and receive voice calls, send and receive data, or access other services, including home data services, when travelling outside the geographical coverage area of the home network, by means of using a visited network."). Additionally, Buckley "envisaged that the teachings hereof may be extended to *any* 3rd Generation Partnership Project (3GPP)-compliant cellular network," and a POSITA would have understood such networks and 3GPP standards provided for roaming by being in another mobile telephone service provider's network and not the mobile telephone's home network, including because 3GPP is a set of standards that different network providers agree on specifically to ensure interoperability across networks and devices. EX1005, 3:41-53.

132. Buckley also teaches performing its methods in situations where UEs had to "register" with new networks, where the AS was "required" to provide "inter-

operator” functions for UEs to communicate over different service operator networks, and where UEs would communicate with servers in the “user’s *home* IMS network.” EX1005, Fig. 2 (element 202), 2:34-47, 4:1-6, 4:22-25, 8:22-47. A POSITA would have understood that such steps occur when the UE was roaming in another mobile telephone service provider’s network and not in the mobile telephone’s home network, as recited in the preamble.

b. Element 34[a]: “a routing controller;”

133. In my opinion, Buckley teaches this element. *See* Claim 15.

c. Element 34[b]: “the access server, wherein the access server comprises:”

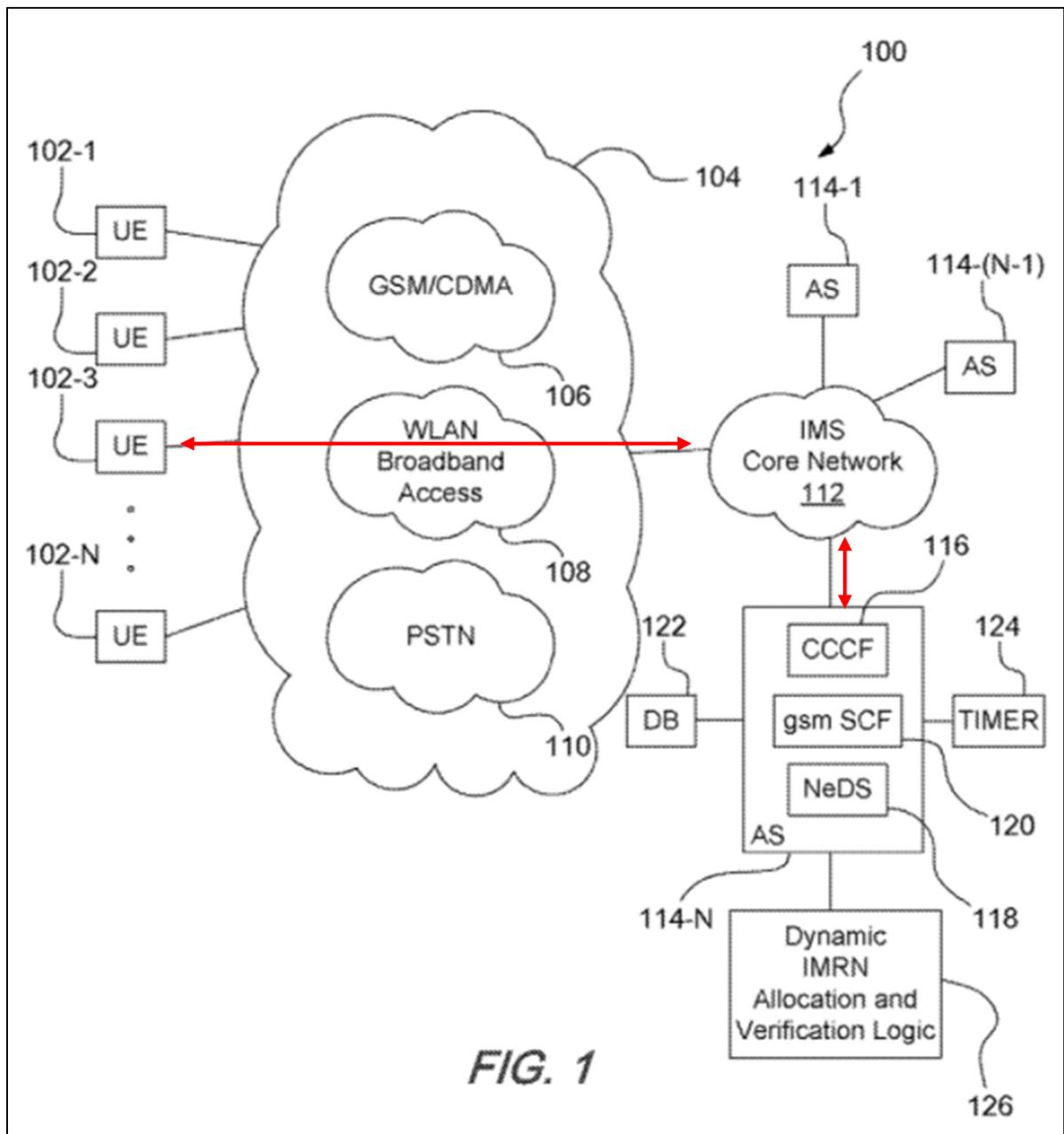
134. In my opinion, Buckley teaches this element. *See* Element 1[b].

d. Element 34[c]: “means for receiving from the wireless apparatus the access code request message;”

135. In my opinion, Buckley teaches this element.

136. Buckley discloses means for receiving, which the parties agree incorporates the structure of “a network interface.” Buckley teaches the application server or AS has a network interface that allows communication with the UE via the IMS core network, as depicted in Figure 1. Figure 1 depicts network “infrastructure,” which a POSITA would have understood to include the hardware and software interfaces necessary to send and receive network messages as described throughout Buckley’s disclosure. EX1005, 1:65-67.;

see also id. 3:56-58 (describing that the networks are “coupled”); *id.*, 4:41-43 (describing that the AS node as “appropriate logic/structure/software/firmware module(s)... .”); *id.*, 6:44-50 (confirming that POSITA would recognize that the message flow “may be mediated through a number of other appropriate network infrastructure elements” as appropriate to the device capabilities, network features, and network protocols being used). A POSITA would have understood the AS depicted in Figure 1 contains a network interface to connect to the “IMS Core Network” and ultimately the UE as annotated in red in FIG.1 below; without such a network interface, it is unclear what the lines in the diagram would be intended to convey or how Buckley would be operable.



137. In my opinion, Buckley discloses the element's remainder. *See* Element 16[a].

- e. **Element 34[d]: “means for communicating with the routing controller to obtain from the routing controller the access code wherein the access code identifies a communications channel associated with the location identifier and wherein the access code is useable by the wireless apparatus to cause the routing controller to**

**establish a call to the destination node using the
communications channel; and”**

138. In my opinion, Buckley teaches this element.
139. Buckley teaches means for communicating, which incorporates the structure of “an input/output [I/O] port that transmits the access code request message, as received from the mobile telephone, to the routing controller and receives, from the routing controller, the access code reply message.” This structure also incorporates the alternative construction of “[a]n I/O port of an access server and/or an I/O port of a routing controller.” “The I/O port 156 includes a non-voice network interface” *See* EX1001, 14:15-16. Buckley teaches the AS contains a routing controller and an I/O port. *See* Claim 15, Element 34[c]. Buckley’s mobile telephone utilizes its own I/O port to send and receive messages with the AS and routing controller. *See* Element 20[b]-[c]; Element 16[b].

**f. Element 34[e]: “means for transmitting the access code
reply message including the access code to the wireless
apparatus.”**

140. In my opinion, Buckley teaches this element.
141. Buckley discloses means for transmitting. *See* Element 34[c] Buckley teaches the element’s remainder. *See* Element 16[c].

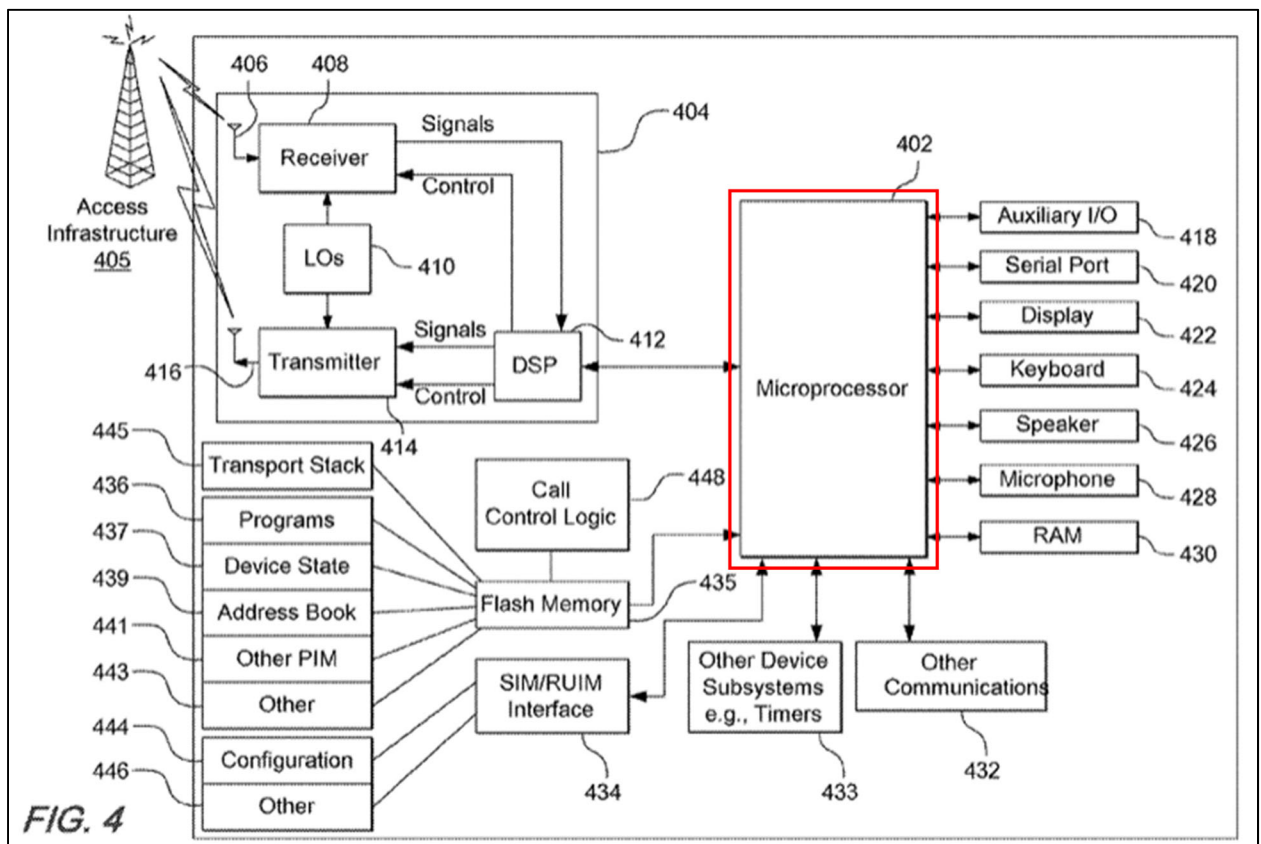
11. Claim 38

- a. **Element 38[preamble]: “A wireless apparatus comprising:”**

142. In my opinion, Buckley teaches this element. *See* Element 20[preamble].

- b. **Element 38[a]: “a processor circuit comprising at least one processor;”**

143. In my opinion, Buckley teaches this element. Buckley teaches a wireless device with “a microprocessor” in FIG 4, as outlined in red. *See* EX1005, Figure 4. A microprocessor is a particular kind of circuit that, as its names implies, processes information.

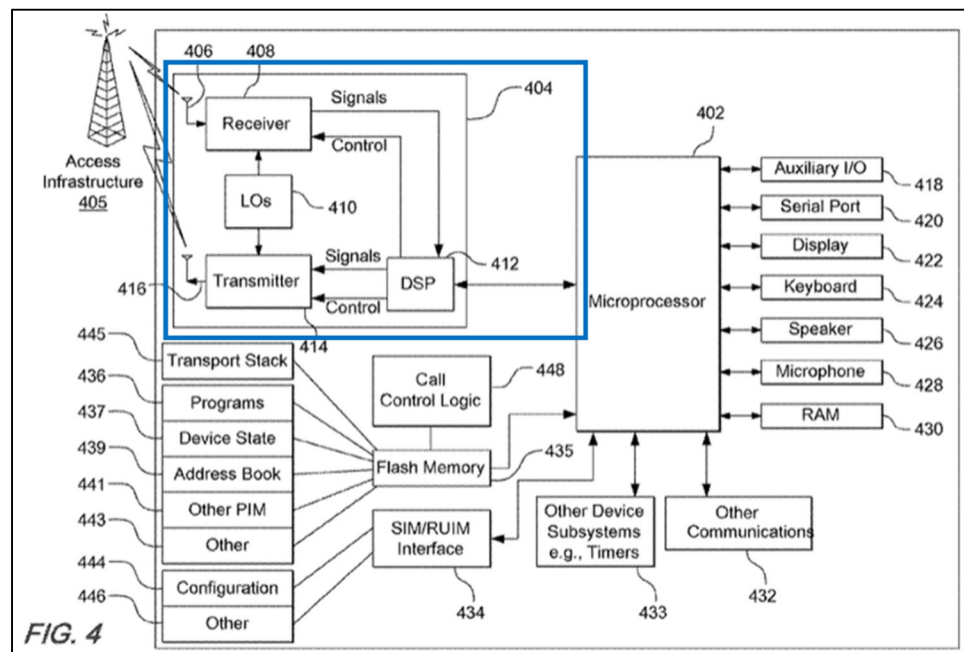


c. **Element 38[b]: “a network interface in communication with the processor circuit; and”**

144. In my opinion, Buckley teaches this element.

145. Buckley teaches a wireless device with a network interface. *See* Claim 20[b].

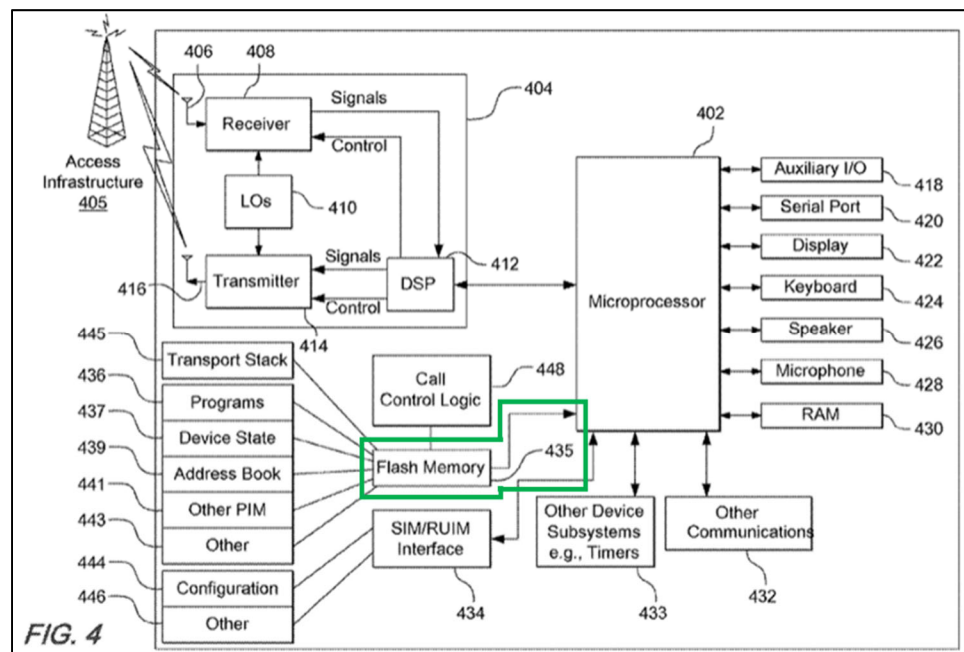
The network interface is in communication with a processor as outlined in blue below in Figure 4. *See* EX1005, Figure 4, 13:33-37 (“A **microprocessor** [] providing for the overall control of an embodiment of UE [] **is operably coupled to a communication subsystem** [] that is capable of multi-mode communications (e.g. CS domain, IP domain such as IMS, etc.)”).



d. **Element 38[c]: “a non-transitory computer readable medium having computer executable codes stored thereon for directing the processor circuit to:”**

146. In my opinion, Buckley teaches this element.

147. Buckley teaches a wireless device with a computer readable medium in communication with a processor as outlined in green in FIG 4 below. See Figure 4, 14:11-14 (“Operating system software and applicable service logic software may be embodied in a persistent storage module (i.e., non-volatile storage) such as Flash memory”).



- e. **Element 38[d]: “receive from a user of the wireless apparatus a destination node identifier associated with a destination node with which the user wishes to communicate;”**

148. In my opinion, Buckley teaches this element. See Element 1[a].

- f. **Element 38[e]: “transmit an access code request message to an access server, the access code request message including the destination node identifier and a**

**location identifier identifying a geographical location
of the wireless apparatus;**

149. In my opinion, Buckley teaches this element. *See* Element 1[b].

- g. **Element 38[f]: “receive an access code reply message from the access server in response to the access code request message, the access code reply message including an access code based on the location identifier in the access code request message, the access code identifying a communications channel on a gateway through which communications between the wireless apparatus and the destination node can be conducted, the access code being distinct from the destination node identifier; and”**

150. In my opinion, Buckley teaches this element. *See* Element 1[c].

- h. **Element 38[g]: “initiate communications from the wireless apparatus, via the network interface, using the access code based on the location identifier, to establish communications between the wireless apparatus and the destination node through the communications channel identified by the access code.”**

151. In my opinion, Buckley teaches this element. *See* Element 1[d].

- 12. **Claim 39: “The apparatus of claim 38, wherein the network interface comprises a non-voice network interface, and wherein the codes for directing the processor circuit to cause the access code request message to be transmitted include codes for directing the processor circuit to cause the access code request message to be transmitted to the access server using the non-voice network interface on a non-voice network.”**

152. In my opinion, Buckley teaches this claim. *See* Claim 2.

153. Moreover, Buckley teaches a wireless device with an IP (non-voice) network interface. *See* EX1005, Figure 4, 13:33-39 (“A microprocessor [] providing for the overall control of an embodiment of UE [] is operably coupled to a communication subsystem [] that is capable of *multi-mode communications* (e.g. CS domain, *IP domain such as IMS*, etc.). The communication subsystem [] generally includes one or more receivers [] and one or more transmitters”). *See* Element 20[b]-[c].

13. Claim 43: “The wireless apparatus of claim 38, wherein the location identifier comprises an Internet Protocol (IP) address of the wireless apparatus in a wireless IP network.”

154. In my opinion, Buckley teaches this claim. *See* Claim 6.

14. Claim 46: “The wireless apparatus of claim 38, wherein the network interface comprises a non-voice network interface, and wherein the codes for directing the processor circuit to receive an access code reply message include codes for directing the processor circuit to cause the access code reply message to be received from the access server using the non-voice network interface on a non-voice network.”

155. In my opinion, Buckley teaches this claim. *See* Claim 9, Claim 39.

15. Claim 49

a. Element 49[preamble]: “A system for enabling roaming by a wireless apparatus, the system comprising the wireless apparatus of claim 38 and further comprising:”

156. In my opinion, Buckley teaches this element. *See* Element 34[preamble], Element 38[preamble].

b. **Element 49[a]: “a routing controller; and”**

157. In my opinion, Buckley teaches this element. *See* Claim 15.

c. **Element 49[b]: “an access server comprising a processor circuit and a computer readable medium in communication with the processor circuit, the computer readable medium encoded with codes for directing the processor circuit of the access server to:”**

158. In my opinion, Buckley teaches this element.

159. Buckley’s AS is an access server. *See* Claim 1[b]. The AS has “one or more processors” (EX1005, Cl. 34) and is “provided with appropriate logic/structure/software/firmware module(s).” *Id.*, 4:42-43. As a POSITA would recognize, a computer readable medium in the form of memory is necessarily required in order to store software and firmware modules capable of performing the logic and operations ascribed to the AS. There must be some place to store the “software/firmware module(s)” that Buckley teaches is provided on the AS, and that is the purpose of memory, which is a computer-readable medium that is encoded with software and firmware codes with “logic/structure” for performing that actions performed by the AS as discussed above.

d. **Element 49[c]: “receive the access code request message from the wireless apparatus;”**

160. In my opinion, Buckley teaches this element. *See* Element 16[a].

- e. **Element 49[d]: “communicate with the routing controller to obtain from the routing controller the access code wherein the access code identifies a communications channel associated with the location identifier and wherein the access code is useable by the wireless apparatus to cause the routing controller to establish a call to the destination node using the communications channel; and”**

161. In my opinion, Buckley teaches this element. *See* Element 16[b].

- f. **Element 49[e]: “transmit the access code reply message to the wireless apparatus.”**

162. In my opinion, Buckley teaches this element. *See* Element 16[c].

16. Claim 50

- a. **Element 50[preamble]: “A non-transitory computer readable medium having stored thereon computer executable codes for directing a processor circuit of a wireless device to establish communications with a destination node on a network, the codes comprising codes for directing the processor circuit to:”**

163. In my opinion, Buckley teaches this element. *See* Element 1[preamble];
Element 38[c].

- b. **Element 50[a]: “cause the wireless device to receive from a user of the wireless device a destination node identifier associated with the destination node;”**

164. In my opinion, Buckley teaches this element. *See* Element 1[a].

- c. **Element 50[b]: “cause the wireless device to transmit an access code request message to an access server, the access code request message including the destination**

node identifier and a location identifier identifying a geographical location of the wireless device;”

165. In my opinion, Buckley teaches this element. *See* Element 1[b].

- d. **Element 50[c]: “cause the wireless device to receive an access code reply message comprising an access code identifying an Internet Protocol (IP) address based on the location identifier in the access code request message, the access code representing a communications channel of a network element in the network through which communications between the wireless device and the destination node can be conducted, the communications channel being associated with the geographical location of the wireless device, the access code being distinct from the destination node identifier; and”**

166. In my opinion, Buckley teaches this element. *See* Element 1[c].

167. Buckley teaches that the IMRN (access code) identifies an IP address of the called party such that the AS (access server) can set up a SIP session (channel) for the call. The IMRN (access code) is mapped to the called party’s URI (destination node identifier), which allows the AS (access server) to translate the IMRN to called party’s URI when the UE sets up the call. EX1005, 6:38-40 (“[T]he UE sets up a call using the IMRN that terminates on the AS node. The IMRN is then interrogated against the record to retrieve the called party’s URI”). The called party’s URI can be a SIP URI, which Buckley teaches “typically” includes an IP network address. *See id.*, 6:63-65 (“[T]he SIP Invite message 312 includes applicable call information such as [the] called party’s

SIP URI....”); 5:25-27 (“As is well known, a typical SIP address may take on the form of sip:<username>@<hostname>....”); 9:27 (Buckley teaches an exemplary SIP URI of “sip:alice@192.0.2.1,” which includes an IP address in the hostname field). In these situations, the AS establishes a SIP session (channel, as discussed in Element 1[c]) using the IMRN to identify the called party’s SIP URI. EX1005, 7:50-56, Figure 3A (“The IMRN is then interrogated against the record to retrieve the called party’s URI for *establishing a SIP session with the called party* (i.e. between the calling party (UE device) ... and the called party....”).

168. Also, it would have been obvious to alternatively use an IP address as the access code (IMRN) (in addition to, or instead of, an E.164 telephone number) because an IMRN is an “IP multimedia routing number” and hence is ordinarily expected to carry an IP address. EX1005, 4:31-38. Buckley teaches that E.164 numbers are just one example of what an IMRN may comprise. EX1005, 15:56 (“a pool of IMRNs, (e.g., the E.164 numbers)”). Moreover, Buckley’s system has as its core an “IP multimedia subsystem (IMS) core network” that “is coupled to the various access networks ... including any CS-based networks.” EX1005, 3:56-58. As was “well known, the IMS standard defined by the 3GPP is designed to allow service providers [to] manage a variety of services that can be delivered via IP over any network type, wherein

IP is used to transport both bearer [voice] traffic and SIP-based signaling traffic.” *Id.*, 3:58-62.

169. Further, Buckley’s UE (wireless device) was preferably able to operate over both PSTN (CS) and IP (PS) networks to “transition from one mode of communications to another mode of communications without loss of continuity.” *Id.*, 3:35-40. “Furthermore, in order to effectuate call control of a SIP call using CS as the voice bearer,” Buckley’s IMS application server element in the home IMS network includes functionality that “tracks all call sessions and related mobile Voice-over-IP (VoIP) bearer traffic, between CS and IMS domains.” EX1005, 4:18-25. It would have been obvious that Buckley’s AS should provide an IMRN (access code) that included, or at least identified, an appropriate IP address to take advantage of Buckley’s UE’s ability to transition from a PSTN (CS) mode to an IP (PS) communication mode to reach the callee over Buckley’s IMS network.

- e. **Element 50[d]: “cause the wireless device to use the access code comprising the Internet Protocol (IP) address based on the location identifier to establish communications between the wireless device and the destination node through the communications channel of the network element identified by the access code.”**

170. In my opinion, Buckley teaches this element. *See* Element 1[d]; 50[c].

- 17. Claim 135: “The method of claim 1 wherein the access code request message is transmitted from the wireless device via a**

**WiFi network and the access code reply message is received
by the wireless device via the WiFi network.”**

171. In my opinion, Buckley teaches this claim. See Claims 2, 9. Specifically, a POSITA would have recognized the “WLAN Broadband Access (108)” network in Figure 1 comprises wireless local area networks which operate on WiFi protocols. *See* EX1005, 3:50-52 (“Reference numeral 108 refers to broadband access networks including wireless local area networks or WLANs.”); EX1022, 2:30-33 (“Wireless local area networks are generally constructed to communicate data pursuant to an operating protocol, such as any of the IEEE 802.11(a), (b), (g), and (n) operating protocols.”). IEEE 802.11 is also known as WiFi.

**18. Claim 136: “The method of claim 1, wherein the destination
node identifier and the location identifier are transmitted at
the same time.”**

172. In my opinion, Buckley teaches this claim.

173. The same SIP Invite Message contains both the destination node’s URI (destination node identifier) and the caller’s URI and P-Preferred-ID (location identifiers). Element 1[b].

19. Claim 140

**a. Element 140[preamble]: “The method of claim 1,
further comprising:”**

174. In my opinion, Buckley teaches this element. *See* Element 1[preamble].

b. Element 140[a]: “(a) receiving, in the access code reply message, an Internet Protocol (IP) address; and”

175. In my opinion, Buckley teaches this element.

176. Buckley teaches, or at least renders obvious, that the IMRN (access code) is an IP address associated with the AS (IP network communication device).

Claim 63. Buckley teaches that the IMRN terminates on the AS that connects the wireless device and the destination node. Element 1[c][iii]. A POSITA would have found it obvious to include an IP address in the access code reply message using Buckley’s system for IMRNs (as the IMRN or in addition to it), as discussed in Claim 50[c], so that a wireless device transitioning to, or initiating, a VoIP call could communicate directly with the AS on the IP network.

c. Element 140[b]: “(b) establishing the communications between the wireless device and the destination node based on the Internet Protocol (IP) address received in the access code reply message.”

177. In my opinion, Buckley teaches this element.

178. The wireless device uses the IMRN to establish communications with the destination node. Element 1[d][iii].

B. Ground II: Claims 50 and 140 Are Obvious Over Buckley in View of Ejzak.

1. Motivation to Combine

179. In my opinion, a POSITA would have been motivated to modify Buckley with Ejzak because both references are in the field of call routing and are directed to the same problem of improving call routing, including specifically across packet-switched and circuit-switched networks. *Compare* EX1005 (Buckley), Abstract (“Methods and apparatus for use in processing Session Initiation Protocol (SIP) calls in a network environment which includes a circuit-switched (CS) network and an Internet Protocol (IP) multimedia subsystem (IMS) network”), *with* EX1007 (Ejzak), 2:35-38 (“[T]he present invention provides a communication system that ... allows for interworking between CS domains and PS domains.”). Further, as described in the background sections above, Buckley and Ejzak rely on a substantially similar network architecture, employing network entities with substantially the same functionality throughout. *Compare* EX1005 (Buckley), Figure 3A *with* EX1007 (Ejzak), Figure 1 (element 141) and Figure 3.
180. A POSITA also would be motivated to combine the references to use Ejzak’s known technique to improve Buckley and to help achieve Buckley’s expressly desired advantages. As background, Ejzak teaches responding to a SIP Invite

message by determining how to route a call that may transition between PS and CS networks. *See* EX1007 (Ejzak), 8:58-9:12. Buckley's preferred embodiment specifically desires that capability of seamless transitions between such two networks. *See* EX1005 (Buckley), 3:35-40 ("Preferably, the UE device is capable of operating in multiple modes in that it can engage in both circuit-switched (CS) as well as packet-switches (PS) communications, and can transition from one mode of communications to another mode of communications without loss of continuity."). A POSITA would thus be motivated to combine Ejzak with Buckley to help achieve such transitions "without loss of continuity" by determining how to route a call that may transition between such networks in accordance with Ejzak's teachings.

181. A POSITA also would have been motivated to modify Buckley to query Ejzak's DNS/ENUM server with an E.164 address to identify a corresponding IP address that enables routing a call over an IP network, because an IP address would help ensure that calls can be completed to VoIP phones, and packet-switched IP networks, that lack direct PSTN access. This further achieves Buckley's goal of "managing call routing in a network environment including a circuit-switched (CS) network and an IP multimedia subsystem network" where a PSTN call may be completed over an IP network or where a particular user device may be operating over only an IP network. EX1005

(Buckley), 1:22-28, 1:51-57. Thus, basic market forces for enhanced reach and operability would prompt enhancing Buckley's design in accordance with Ejzak's teachings.

182. A POSITA would have had a reasonable expectation of success in combining Buckley with Ejzak. Buckley's system takes place in the context of SIP messaging, which Ejzak also employs. EX1005, 2:30-34 ("Methods and apparatus suitable for use in processing ***Session Initiation Protocol (SIP)*** calls in a network environment which includes a circuit-switched (CS) network and an Internet Protocol (IP) multimedia subsystem (IMS) network are described."); EX1007, 3:16-20 ("[T]he present invention is designed to utilize emerging Internet standards and protocols. An example of this is the use of ***Session Initiation Protocol (SIP)*** for IMS signaling for establishing a call."). As Bates expressly recognizes and a POSITA would have understood, SIP is flexible by design and can accommodate the addition of new features. EX1007, 15:30-43 ("SIP has sufficient protocol features and extensibility to allow realization of enhanced features and services. ... It is possible to define new features and provision their availability per subscriber, along with any parameters governing operation of the feature.... SIP option tags allow for independent definition of arbitrary new features, parameters associated with those features, and procedures associated with those features.").

183. Further, Ejzak teaches that its architecture “enables *home control* of all services—whereby the IMS provides feature and service *control from the home network* rather than the serving network—to be available for all circuit-switched services” and Buckley’s preferred messaging protocol expressly requires using the “home IMS network’s AS node.” EX1007, 1:64-67; EX1005, 6:45-46. Buckley further expressly teaches that its “message flow between the UE device and the home IMS network’s AS node may be mediated through a number of other appropriate network infrastructure elements” including a “mobile switching center (MSC) and a media gateway control function (MGCF) element” in the network. EX1005, 6:45-47; 6:51-53. Ejzak provides implementations for such appropriate network infrastructure elements, including an MSC, using an enhanced “interworking MSC (iMSC),” gateway control functions (“MGCF” and “BGCF”) and associated network entities (e.g. DNS) to, e.g., map numbers to IP addresses and route bearer (voice) traffic over an IP network for calls received at an assigned IP network address. EX1007, Figure 1, 1:11-12; 5:14; 4:40; 8:30; 8:36-43. The teachings of Ejzak are thus readily incorporated into Buckley’s network and SIP messaging, which is by its nature sufficiently flexible to accommodate the adoption of features such as Ejzak’s.

184. Additionally, a POSITA would have had a reasonable expectation of success in combining Buckley with Ejzak because Buckley teaches that it would “be further recognized by those skilled in the art that the message flow between the UE device and the home IMS network’s AS node may be mediated through a number of other appropriate network infrastructure elements, and may be implemented in a number of ways depending on the device capabilities as well as the network features and protocols being used.” EX1005, 6:44-50. Buckley thus teaches that a POSITA would have readily understood how to implement the system in a matter that routes the traffic appropriately across the specific types of networks being used; as a result, a POSITA would have understood that Ejzak’s DNS could be readily used to map a E.164 telephone number to an IP address (i.e., for the E.164 access code to identify an IP address) in order to have the bearer traffic (the voice call) traverse an IP network, as taught in both Buckley and Ejzak. EX1005, e.g., 6:50-54 (teaching one “typical” message flow for “CS-originated SIP calls” that could terminate on a VoIP phone).

2. Claim 50¹⁶

a. Element 50[preamble]

185. In my opinion, Buckley in view of Ejzak render this element obvious. *See* Ground I, Element 50[preamble].

b. Element 50[a]

186. In my opinion, Buckley in view of Ejzak render this element obvious. *See* Ground I, Element 50[a].

c. Element 50[b]

187. In my opinion, Buckley in view of Ejzak render this element obvious. *See* Ground I, Element 50[b].

d. Element 50[c]

188. In my opinion, Buckley in view of Ejzak render this element obvious. *See* Ground I, Element 50[c].

189. Ejzak teaches identifying a “replacement” IP address as a possible communications channel through which calls can be conducted, if the server determines that the call is to take place over a packet-switched network. *See* EX1007 8:67-91 (“DNS query resolves the replacement domain name to a set

¹⁶ The complete text of the claims’ corresponding portions is available in the claim listing attached hereto as Appendix A.

of *IP addresses*.”). A POSITA would have recognized that Ejzak’s IP addresses are a possible channel through which the call can be conducted, including because Ejzak teaches that IP addresses can be used to connect to “media *channels*.” EX1007, 5:8-9. Indeed, the purpose of Ejzak assigning an IP address is to complete a call, which requires a communication channel. EX1007, Figure 5. In the combination asserted in this ground, Ejzak’s “replacement” IP address would be included within Buckley’s pool of access codes, intended for use in the event the call is to occur over an IP network. EX1005, 5:5-7 (“[I]t may be desirable to provide for different pools of IMRNs”).

190. Additionally, Ejzak’s system includes a DNS/ENUM service that interchangeably maps E.164 numbers to an appropriate IP address to route the call, and vice versa, including in the event that the call may need to transition from a PSTN to a VoIP call. EX1007, 8:29-36, 8:43-48. Hence, it would have been obvious that each E.164 number in Buckley’s pool of IMRNs (access codes) also “identifies an IP network address as a possible channel through which said call can be conducted” as this claim requires because Ejzak teaches that it was well-known and beneficial to use DNS/ENUM services for that purpose, particularly for networks and devices that provide for both communication modes.

191. It would have been obvious for the access code communicated back to the mobile telephone to be an IP address (as the IMRN or in addition to it), as discussed above, so that a mobile telephone transitioning to, or initiating, a VoIP call could communicate directly with the network entities for the IP network identified by Ejzak's network selection procedures.

e. **Element 50[d]**

192. In my opinion, Buckley in view of Ejzak render this element obvious. *See* Ground I, Element 50[d]; Ground II, 50[c].

3. **Claim 140**

a. **Element 140[preamble]: "The method of claim 1, further comprising:"**

193. In my opinion, Buckley in view of Ejzak render this element obvious. *See* Ground I, Element 140[preamble].

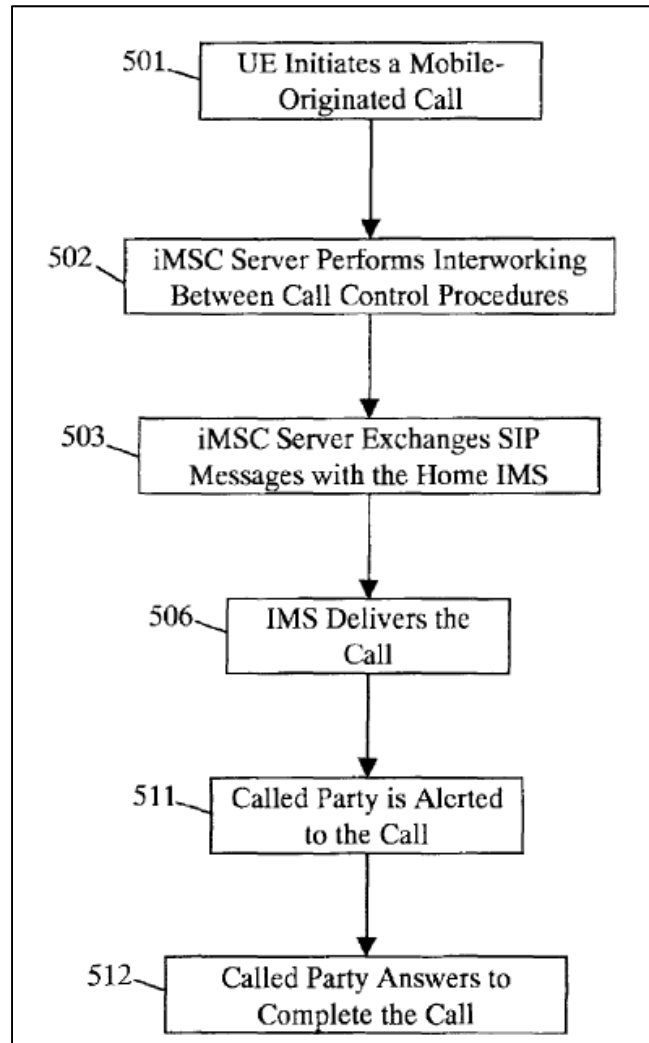
b. **Element 140[a]: "(a) receiving, in the access code reply message, an Internet Protocol (IP) address; and"**

194. In my opinion, Buckley in view of Ejzak render this element obvious. *See* Ground I, Element 140[preamble], Ground II, Element 50[c].

c. **Element 140[b]: "(b) establishing the communications between the wireless device and the destination node based on the Internet Protocol (IP) address received in the access code reply message."**

195. In my opinion, Buckley in view of Ejzak render this element obvious. *See* Ground I, Element 140[preamble].

196. Ejzak also teaches enabling communications between the caller and the callee in response to a call received at the IP network address. For example, “FIG. 5 depicts a flow chart 500 of a mobile unit originating a call with the communication system of the present invention” (EX1007, 13:58-60):



197. As can be seen, the communications are enabled because the called party (*i.e.*, callee) is able to answer the call, in response to a call received at the IP address discussed in Claim 38.

198. Ejzak further teaches that such communications would be established through an IP network. EX1007, 1:55-58 (“The present invention enables an IP Multimedia Subsystem (IMS) to support features and services for mobile units using either circuit-switched or IP Multimedia call control procedures.”). Indeed, establishing the communication through an IP network is one of the reasons that the DNS query would “resolves the replacement domain name to a set of *IP addresses*.” EX1007, 8:67-9:1.

C. Ground III: Claims 1, 2, 6, 9, 14-16, 20, 25, 34, 38-39, 43, 45-46, 49-50, and 135-136 Are Obvious Over Buckley in View of Bates.

1. Motivation to Combine

199. Bates builds upon Buckley’s disclosed transmission of location information, and further informs a POSITA why such location information is important in selecting a temporary number that will optimize call routing and enable a local call. In my opinion, a POSITA would have been motivated to modify Buckley with Bates for a number of reasons.

200. Both references are in the field of call routing and are directed to improving call routing. Both teach methods of routing PSTN and VoIP calls across packet-switched networks and circuit-switched networks. *Compare* EX1005 (Buckley), Abstract (“Methods and apparatus for use in processing Session Initiation Protocol (SIP) calls in a network environment which includes a

circuit-switched (CS) network and an Internet Protocol (IP) multimedia subsystem (IMS) network”), *with* EX1009 (Bates), 14:26-31 (Invention “enabl[es] interoperability of non-traditional communication networks with established, traditional PSTN-based emergency services.”).

201. The similarities between references is substantial, and a POSITA therefore would have had a reasonable expectation of success in combining Buckley with Bates. For example, both references teach selecting temporary telephone numbers to allow calls to be transferred between IP (*i.e.*, packet-switched (PS)) and circuit-switched (CS) (*e.g.*, PSTN) networks. *Compare* EX1005 (Buckley), 4:26-40, *with* EX1009 (Bates), 14:2-8, 26-37. Both references also teach selecting telephone numbers from a pool of numbers that are temporarily assigned in response to a communication request. *Compare* EX1005 (Buckley), 4:46-49, *with* EX1009 (Bates), 1:32-37. Both references also teach receiving a message that contains a user device’s location information and using that received information when selecting a temporary number from the pool. *Compare* EX1005 (Buckley), 3:4-12, 4:41-49, 6:1-3, *with* EX1009 (Bates), 3:42-49, 18:67-19:2, 19:54-55. The analogous overlap can also be seen in comparing, for example, Figure 3A of Buckley with Figure 7 of Bates (particularly elements 705-725).

202. A POSITA also would have had a reasonable expectation of success in combining the references because Buckley expressly contemplates routing emergency calls, and Bates seeks to improve on such routing. For example, Buckley teaches XML code for establishing registration information used for emergency calls.¹⁷ See EX1005 11:28-43 (“<!ELEMENT alternative-service (type, action, ics-mo-address, reason)> <!ELEMENT type (emergency | MO-call)> ... <!ELEMENT action (emergency-registration)>”), 12:8-18 (e.g., “xs:element name=‘emergency-registration’”). A POSITA would therefore have understood that Bates’s techniques and rationale for selecting a geographically-correct telephone number (described in further detail below) could be utilized by Buckley’s system to select a local IMRN E.164 telephone number in the interest of optimizing routing decisions, including ensuring proper routing of emergency calls and avoiding unnecessary long distance and roaming charges. Multiple prior art references from the same inventor (Buckley, and also Andrew Allen) and assignee (Research in Motion) further confirm that a POSITA would have understood from Buckley’s disclosure that Buckley’s system included ensuring proper routing of emergency calls.

¹⁷ IETF RFC 4826 defines “XML Formats for Representing Resource Lists.” IETF RFC 4190 defines “Frameworks for Supporting Emergency Telecommunication Services (ETS) in IP Telephony.”

See EX1006, 11:31-45 (“In other XML coding schemes, various additional elements may also be provided to indicate emergency sessions.... [A] <type> child element, set to ‘emergency’ to indicate that it was an emergency call”); EX1008, [0041]-[0042] (“XML body that includes an <alternative service> element with the <type> child element set to ‘emergency’, the UE shall automatically send an ACK request.... The UE can attempt an emergency call setup in the CS domain according to the procedures described in 3GPP TS 24.008.”), Figure 6 (“emergency-registration”). And Buckley’s SIP system is capable of accounting for Bates’s location information. *See* EX1010 (RFC 3261),¹⁸ 1 (“SIP also provides a registration function that allows users to upload their current locations for use by proxy servers.”).

203. A POSITA also would have had a reasonable expectation of success in combining, and be motivated to combine, Buckley and Bates because they both teach techniques for establishing channels for bi-directional communication. Buckley’s IMRN access code, which may be an E.164 telephone number as discussed above in Ground I, identifies a channel for communication. *See, e.g.*, EX1001, 3:36-39 (“The access code may include a

¹⁸ RFC 3261 is expressly cited in Buckley. EX1005, 5:29-33.

telephone number identifying a channel operably configured to cooperate with an IP network.”). So too does Bates’s geographically-correct telephone number identify a channel for communication. EX1009, 3:43-50, Fig 4 (“Establish the Communication Session Including the Temporary Telephone Number”). Buckley’s and Bates’s techniques for mapping such temporary numbers to call participants identifies the channels on which those participants communicate.

204. A POSITA would also have been motivated to modify Buckley with the teachings of Bates to produce better routing results, including for routing local calls. Buckley teaches the IMRN can be constructed based on “some relationship(s) to one or more of the parameters received in a message ... from the UE device” in the SIP Invite message. EX1005, 3:4-12, 4:41-49. But Buckley does not expressly teach all such “relationship(s)” that a POSITA may use to map the received information to an IMRN. A POSITA would have been motivated to select available and known techniques for creating such relationships and mappings to embody Buckley’s system. Bates provides one such technique that determines a “***geographically-correct telephone number*** (e.g., a telephone number including a 202 area code for a call that was determined to have been made by a user located in the Washington, D.C. area, where the 202 area code indicates that the user placed the call from the

Washington, D.C. area).” EX1009, 3:43-50. A POSITA would thus appreciate that Bates’s “geographically-correct” relationship technique is a known technique that can be used to improve or carry out Buckley’s similar system with predictable results, and was an obvious-to-try option for mapping IMRNs to the “received SIP call information” that yields predictable results (a local call).

205. Bates itself teaches the communication service that selects temporary telephone numbers may do so whenever the server “determine[s] that the type of communication session requested by the user communication device 110 would benefit from having a temporary telephone number.” EX1009, 7:55-64; *Id.* 11:26-31 (“The communications service provider 120 determines whether the type of communication session would benefit from a temporary telephone number (420). In one implementation, the communications service provider 120 may analyze the communication session request to determine whether a temporary telephone number would be beneficial.”). Bates further teaches using a “geographically-correct telephone number” allows “the temporary telephone number [to be] used to ... route the call to the appropriate public safety answering point [(PSAP)] for the location of the user communication device 110,” which is helpful to ensure, for example, that a mobile phone caller with a Los Angeles area code does not get connected to

the Los Angeles 9-1-1 when that caller is traveling in New York. *See* EX1009, 12:28-32. Thus, a POSITA would have been motivated to modify Buckley with Bates to produce better call routing results, including in the emergency services context. Additionally, as discussed above, a POSITA would have known that selecting a “geographically correct” local telephone number can produce a local call that avoids long distance and roaming charges, providing further motivation to modify Buckley with Bates’s techniques to obtain these predictable and desirable results. *See* EX1014, Abstract, [0036]; EX1001, 1:25-37.

2. Claim 1¹⁹

a. Element 1[preamble]

206. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 1[preamble].

b. Element 1[a]

207. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 1[a].

¹⁹ The complete text of the claims’ corresponding portions is available in the claim listing attached hereto as Appendix A.

208. Bates teaches “a request to place a call to a call recipient is received from the user” EX1009, Abstract. Moreover, Bates teaches the “user *places a call* for emergency services (e.g., a *9-1-1 call*).” *Id.*, 3:39-40. The 9-1-1 number is a destination node identifier associated with the destination node, which is emergency services.

c. **Element 1[b]: “transmitting an access code request message to an access server, the access code request message including the destination node identifier and a location identifier identifying a geographical location of the wireless device;”**

209. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 1[b].

210. Bates teaches the service “receive[s] a request from the user communication device [] to establish a communication session with the recipient communication device,” and “the *location key* [(location identifier)] may be included in the request.” EX1009, 11:12-15, 12:7-8. “The location key is an identifier used by the communications service provider 120 to identify a particular location” of the user’s wireless device. *Id.* 9:27-29. That location key may be input by the user for transmission to the service provider’s access server. *Id.*, 8:56-9:1 (“[T]he user provides his or her current location by explicitly providing his or her address (e.g., entering location in a text box provided in a graphical user interface (GUI) of the communications service

provider 120 or orally reciting location in a voice communication). In another implementation, the communications service provider 120 maintains a list of potential locations for the user and the user selects a location from a list provided by the communications service provider....”). Thus, Bates teaches that the access code request message includes a geographical location identifier (Bates’s “location key”) that is separate and distinctive from said destination node identifier (9-1-1, in the asserted combination).

211. The remaining components of this element are taught by Buckley as described above in Ground I, Element 1[b].

- d. **Element 1[c]: “receiving an access code reply message from the access server in response to the access code request message, the access code reply message including an access code based on the location identifier in the access code request message, the access code identifying a communications channel on a gateway through which communications between the wireless device and the destination node can be conducted, the access code being distinct from the destination node identifier; and”**

212. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 1[c].

213. As described above, Buckley teaches receiving an access code reply message from the access server in response to said access code request message. Ground I, Element 1[c]. A POSITA would have found it obvious to for the

access code included in the access code reply message to be selected based on Bates's techniques to select a geographically correct telephone number that would be used by the caller's mobile phone to enable a local call. EX1009, 18:67-19:2 (“[A] communications service provider may ... select a temporary number that corresponds to the location of the user communication device.”); 19:53-55 (“The temporary telephone number is a geographically-correct telephone number”); 3:45-49 (“*geographically-correct telephone number* (e.g., a telephone number including a 202 area code for a call that was determined to have been made by a user located in the Washington, D.C. area, where the 202 area code indicates that the user placed the call from the Washington, D.C. area)”). Either the caller's IP address or P-Preferred-ID as taught by Buckley or the location key as taught by Bates would provide the location information necessary to utilize Bates technique to select a geographically-correct IMRN (access code).

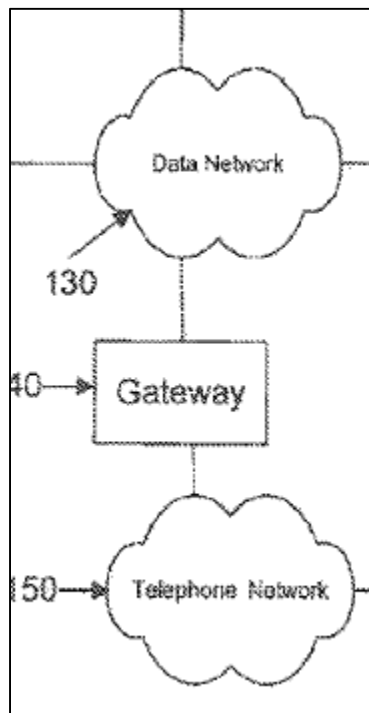
214. Bates's geographically-correct telephone number selection technique, when applied in Buckley's system, yields a number that is different than the emergency number dialed (e.g. 9-1-1) because the geographically-correct telephone number will have a local area code, such as 202 in the Washington, D.C. example. EX1009, 3:43-50. Bates's technique to select a geographically-correct telephone number (access code), when applied to Buckley's system,

includes associating the telephone number with the location identifier (whether Buckley's caller's IP address or P-Preferred-ID or Bates's location key). The purpose of selecting a geographically-correct telephone number in the asserted ground is to choose a number that ensures the caller is placing a local call to local emergency services, and not (for example) placing a call to emergency services in California when the caller is in Washington, D.C., nor needlessly incurring long distance or roaming charges. EX1009 3:54-56 (Teaching the system "routes the call to the appropriate public safety answering point (PSAP) based on the location associated with the temporary telephone number").

215. A POSITA would have understood that the geographically correct telephone number used in Bates identifies a communications channel, similar to how Buckley's telephone number identifies a communications channel, because the telephone number identifies the pathway for end-to-end communications during the communication session. The circuit itself is a channel in a circuit-switched network, where information entered into one end is transmitted directly to the other end, while in a packet-switched network, the purpose of Session ***Initiation*** Protocol is to establish the communication channel via RTP protocol that carries the media stream (*e.g.*, voice and video). EX1001, 3:30-39. Additionally, the '721 Patent confirms that a telephone number identifies

a communication channel. *See, e.g.*, EX1001, 3:36-38 (“[t]he access code may include a telephone number identifying a channel operably configured to cooperate with an IP network.”). Additionally, Bates’s temporary number selection process and system described above is used to “***establish a communication session*** with an emergency services provider” or between “communication device[s]”, and such a “communication session” is a channel. EX1009, 14:26-32, 4:48-61, 11:26-31, 12:17-21 (“The communications service provider 120 establishes the communication session requested by the user communication device 110 including the temporary telephone number in information used to establish the communication session (450).”), 15:28-30.

216. Like Buckley, Bates also teaches a gateway, as shown, for example, in this cropped portion of Figure 1 which illustrates the gateway spanning two different networks (*i.e.*, a packet-switched data network and a circuit-switched telephone network, that as described above in Ground I, would operate on different protocols):



EX1009, 6:21-24 (“[T]he gateway 140 is a PSTN gateway configured to convert communications from data network 130 (e.g. IP packets) to communications suitable for delivery by a PSTN. By enabling communications between data network 130 and telephone network 150, the gateway 140 enables communications between a device connected only to data network 130 and a device connected only to the telephone network 150.”). Buckley’s AS is a gateway because Buckley’s invention helps span different types of network as discussed above in Ground I, and a POSITA would further find it obvious that Buckley’s AS would have the qualities of a gateway as expressly described by Bates in order to bridge different network types. EX1005, 2:30-34 (“Methods and apparatus suitable for use in

processing Session Initiation Protocol (SIP) calls in a network environment which includes a circuit-switched (CS) network and an Internet Protocol (IP) multimedia subsystem (IMS network) are described.”).

217. The remaining elements are taught by Buckley as described above in Ground I, Element 1[c], with Bates’s selection technique applied to Buckley.

e. **Element 1[d]**

218. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 1[d].

3. Claim 2

219. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 2.

4. Claim 6

220. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 6.

221. Bates also teaches the location identifier is an IP address. *See* EX1009, 9:4-9 (“the communications service provider 120 may ***determine a current location*** of the user communication device 110 ***based on an IP address the user communication device*** is using to connect to the data network 130”). Bates also teaches the user communication device may be “a wireless phone” that connects via a “data network [that] may include ... a wired or ***wireless*** data

pathway.” *id.*, 4:22-23, 6:10-13. A POSITA would recognize that when the user communication device is connected to a wireless network, its IP address would be wireless IP network address, because IP addresses are network addresses. EX1005, 19:37-38 (“network address [] identifies [a] network location”).

5. Claim 9

222. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 9.

6. Claim 14

223. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 14.

7. Claim 15

224. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 15.

225. As the '721 Patent describes, “the access server 14 and the routing controller 30 need not be separate, but may, for example, be combined in a single component” and “the routing controller 30 executes a process to facilitate communication between callers and callees”. EX1001, 1513-20.

226. Bates’s “emergency services proxy server” comprises a routing controller because the emergency services proxy server facilitates communication

between a caller and destination node by assigning the “geographically correct telephone number” and establishing a call with the appropriate PSAP (which may be a caller or destination node) while informing the PSAP of the UE’s location. *See* EX1009, 13:61-14:1 (“[T]he emergency services proxy server 524 may be configured to ... relay the request to enhanced emergency service provider 540 including the temporary telephone number”); *Id.*, 3:53-57 (“The traditional emergency services call handling system routes the call to the appropriate public safety answering point (PSAP) based on the location associated with the temporary telephone number and establishes the emergency services call between the user and the PSAP”); *Id.*, 14:13-15 (“the user communication device may be able to receive a return call from the PSAP”); Element 1[b]-[c].

8. Claim 16

a. Element 16[preamble]

227. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 16[preamble].

b. Element 16[a]

228. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 16[a].

c. **Element 16[b]**

229. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 16[b].

d. **Element 16[c]**

230. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 16[c].

9. **Claim 20**

a. **Element 20**

231. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 20[preamble].

b. **Element 20[a]**

232. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 20[a].

c. **Element 20[b]**

233. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 20[preamble]; Ground III, Element 1[b].

d. **Element 11[c]**

234. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 20[preamble]; Ground III, Element 1[c].

e. **Element 11[d]**

235. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 11[d].

10. Claim 25

236. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 25; Ground III, Claim 6.

11. Claim 34

a. **Element 34[preamble]**

237. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 34[preamble].

238. Further, Bates additionally teaches that the mobile phone would be roaming. EX1009, 4:43-47 (“[T]he user communication device 110 may be mobile such that the user communication device 110 may establish a connection with communications service provider 120 at multiple different points in data network 130 located in multiple different geographic areas.”).

b. **Element 34[a]**

239. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 34[a]; Ground III, Claim 15.

c. **Element 34[b]**

240. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 34[b].

d. **Element 34[c]**

241. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 34[c]; Ground III, Element 1[b].

e. **Element 34[d]**

242. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 34[d]; Ground III, Element 1[c]; Claim 15.

f. **Element 34[e]**

243. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 34[e].

12. Claim 38

a. **Element 38[preamble]**

244. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 38[preamble].

b. **Element 38[a]**

245. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 38[a].

c. **Element 38[b]**

246. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 38[b].

d. Element 38[c]

247. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 38[c].

e. Element 38[d]

248. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 38[d].

f. Element 38[e]

249. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 38[e]; Ground III, Element 1[b].

g. Element 38[f]

250. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 38[f]; Ground III, Element 1[c].

h. Element 38[g]

251. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 38[g].

13. Claim 39

252. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 39.

14. Claim 43

253. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 43; Ground III, Claim 9.

15. Claim 45: “The wireless apparatus of claim 38, wherein the location identifier comprises a user-configured identifier of a location associated with the wireless apparatus.”

254. In my opinion, Buckley in view of Bates renders this claim obvious.

255. Bates teaches “the current physical address of the user accessing the communications service provider 120 with the user communication device ... may be *explicitly supplied by the user.*” EX1009, 5:30-34; Ground III, Element 1[b].

16. Claim 46

256. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 46.

17. Claim 49

a. Element 49[preamble]

257. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 49[preamble].

b. Element 49[a]

258. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 49[a]; Ground III, Claim 15.

c. Element 49[b]

259. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 49[b].

d. Element 49[c]

260. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 49[c].

e. Element 49[d]

261. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 49[d]; Ground III, Element 1[b]-[c]; Ground III, Claim 15.

f. Element 49[e]

262. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 49[e].

18. Claim 50

a. Element 50[preamble]

263. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 50[preamble].

b. Element 50[a]

264. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 50[a].

c. Element 50[b]

265. In my opinion, Buckley in view of Bates render this element obvious. *See* Ground I Element 50[b]; Ground III, Element 1[b].

d. Element 50[c]

266. In my opinion, Buckley in view of Bates render this element obvious. *See* Ground I, Element 50[c]; Ground III, Element 1[c].

e. Element 50[d]

267. In my opinion, Buckley in view of Bates render this element obvious. *See* Ground I, Element 50[d].

19. Claim 135

268. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 135.

20. Claim 136

269. In my opinion, Buckley in view of Bates renders this claim obvious. *See* Ground I, Claim 136.

21. Claim 140

a. Element 140[preamble]

270. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 140[preamble].

b. Element 140[a]

271. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 140[a].

c. **Element 140[b]**

272. In my opinion, Buckley in view of Bates renders this element obvious. *See* Ground I, Element 140[b].

D. **Ground IV: Claims 50 and 140 Are Obvious Over Buckley in View of Bates and Further in View of Ejzak.**

1. **Motivation to Combine**

273. In my opinion, a POSITA would have been motivated to combine Buckley with Bates for the reasons described above in Ground III. A POSITA would have been further motivated to combine Buckley with Ejzak for the reasons described above in Ground II. In that ground, Ejzak's DNS/ENUM server provides the ability for any E.164 number (including those used in, and selected from, the pools in Buckley and Bates) to identify an IP address that can be used to route a call. EX1007, 8:29-36; 8:43-48; 8:67-91. Ejzak's also provides the ability to replace an E.164 number from the pool with an IP address used to route the call. *Id.* Ejzak's teachings may therefore be incorporated into the combination of Buckley with Bates in the same way that it can be incorporated into Buckley as described above in Ground II; in other words, Buckley's pool is able to accommodate both techniques, each motivated for the reasons set forth above in Grounds II and III. EX1005, 5:5-6 ("To allow flexibility, it may be desirable to provide for different pools of IMRNs....").

2. Claim 50²⁰

a. Element 50[preamble]

274. In my opinion, Buckley in view of Bates, in further view of Ejzak render this element obvious. See Ground III, Element 50[preamble]; Ground II, Element 50[preamble].

b. Element 50[a]

275. In my opinion, Buckley in view of Bates, in further view of Ejzak render this element obvious. See Ground III, Element 50[a]; Ground II, Element 50[a].

c. Element 50[b]

276. In my opinion, Buckley in view of Bates, in further view of Ejzak render this element obvious. See Ground III, Element 50[b]; Ground II, Element 50[b].

d. Element 50[c]

277. In my opinion, Buckley in view of Bates, in further view of Ejzak render this element obvious. See Ground III, Element 50[c]; Ground II, Element 50[c].

e. Element 50[d]

278. In my opinion, Buckley in view of Bates, in further view of Ejzak render this element obvious. See Ground III, Element 50[d]; Ground II, Element 50[d].

²⁰ The complete text of the claims' corresponding portions is available in the claim listing attached hereto as Appendix A.

3. Claim 140

a. Element 140[preamble]

279. In my opinion, Buckley in view of Bates, in further view of Ejzak render this element obvious. *See* Ground III, Element 140[preamble]; Ground II, Element 140[preamble].

b. Element 140[a]

280. In my opinion, Buckley in view of Bates, in further view of Ejzak render this element obvious. *See* Ground II, Element 140[a]; Ground III, Element 140[a].

c. Element 140[b]

281. In my opinion, Buckley in view of Bates, in further view of Ejzak render this element obvious. *See* Ground II, Element 140[b]; Ground III, Element 140[b].

IX. SECONDARY CONSIDERATIONS

282. I am not aware of any evidence of secondary considerations that would support a finding of non-obviousness. In particular, I am not aware of any commercial success of the alleged invention in the Challenged Claims; skepticism by those having ordinary skill in the art at the time of the alleged invention regarding the possibility, utility, or success of the alleged invention of the Challenged Claims; unexpected results achieved by the alleged invention of the Challenged Claims; any long-felt but unsolved need in the art that was satisfied by the alleged invention of the Challenged Claims; the

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failure of others to make the alleged inventions of the Challenged Claims;
praise of the alleged invention in the Challenged Claims by those having
ordinary skill in the art; or copying of the alleged invention in the Challenged
Claims by others in the field.

X. CONCLUSION

283. Based on my analysis above, it is my opinion that the challenged claims of the
'721 Patent are obvious over Buckley alone, Buckley in view of Ejzak,
Buckley in view of Bates, and Buckley in view of Bates, in further view of
Ejzak.

284. I hereby declare under penalty of perjury under the laws of the United States
of America that the foregoing is true and correct, and that all statements made
of my own knowledge are true and that all statements made on information
and belief are believed to be true. I understand that willful false statements are
punishable by fine or imprisonment or both. See 18 U.S.C. § 1001.

Date: June 30, 2022



Vijay Madiseti

APPENDIX A

No.	Element
1[preamble]	A method of establishing communications between a wireless device and a destination node of a communications network, the method comprising:
1[a]	receiving from a user of the wireless device a destination node identifier associated with the destination node;
1[b]	transmitting an access code request message to an access server, the access code request message including the destination node identifier and a location identifier identifying a geographical location of the wireless device;
1[c]	receiving an access code reply message from the access server in response to the access code request message, the access code reply message including an access code based on the location identifier in the access code request message, the access code identifying a communications channel on a gateway through which communications between the wireless device and the destination node can be conducted, the access code being distinct from the destination node identifier; and
1[d]	in response to receiving the access code reply message, causing the wireless device to use the access code received in the access code reply message to initiate communications from the wireless device to the destination node through the channel identified by the access code, wherein the access code is based on the location identifier transmitted in the access code request message and enables the communications to be established from the wireless device to the destination node through the channel on the gateway identified by the access code.
2	The method of claim 1, wherein transmitting comprises transmitting the access code request message to the access server on a non-voice network.
4	The method of claim 1, wherein transmitting comprises transmitting the access code request message on a voice network.
6	The method of claim 1, wherein the location identifier comprises an Internet Protocol (IP) address of the wireless device in a wireless Internet Protocol (IP) network.
14	The method of claim 1, wherein receiving the access code reply message comprises receiving, in the access code reply message, a telephone number or an Internet Protocol (IP) address.

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15	The method of claim 14, wherein establishing communications between the wireless device and the destination node comprises engaging a routing controller to route the call on a public switched telephone network (PSTN) or an IP network to the destination node.
16[preamble]	The method of claim 1 further comprising:
16[a]	receiving at the access server, the access code request message from the wireless device;
16[b]	causing the access server to communicate with a routing controller to obtain from the routing controller the access code, wherein the access code identifies a communications channel associated with the location identifier and wherein the access code is useable by the wireless device in a subsequent communication to cause the routing controller to establish a call to the destination node using the communications channel; and
16[c]	causing the access server to transmit the access code reply message to the wireless device.
20[preamble]	A wireless apparatus comprising:
20[a]	means for receiving from a user of the wireless apparatus a destination node identifier associated with a destination node with which the user wishes to communicate;
20[b]	means for transmitting an access code request message to an access server, the access code request message including the destination node identifier and a location identifier identifying a geographical location of the wireless apparatus;
20[c]	means for receiving an access code reply message from the access server in response to the access code request message, the access code reply message including an access code based on the location identifier in the access code request message, the access code identifying a communications channel on a gateway through which communications between the wireless apparatus and the destination node can be conducted, the access code being distinct from the destination node identifier; and
20[d]	means for causing the wireless apparatus to establish communications with the destination node through the communications channel identified by the access code in the access code reply message, the access code being based on the location identifier transmitted in the access code request message.

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25	The apparatus of claim 20, wherein the location identifier comprises an Internet Protocol (IP) address of the wireless apparatus in a wireless IP network.
34[preamble]	A system for enabling roaming by a wireless apparatus, the system comprising the wireless apparatus of claim 20 and further comprising:
34[a]	a routing controller;
34[b]	the access server, wherein the access server comprises:
34[c]	means for receiving from the wireless apparatus the access code request message;
34[d]	means for communicating with the routing controller to obtain from the routing controller the access code wherein the access code identifies a communications channel associated with the location identifier and wherein the access code is useable by the wireless apparatus to cause the routing controller to establish a call to the destination node using the communications channel; and
34[e]	means for transmitting the access code reply message including the access code to the wireless apparatus.
38[preamble]	A wireless apparatus comprising:
38[a]	a processor circuit comprising at least one processor;
38[b]	a network interface in communication with the processor circuit; and
38[c]	a non-transitory computer readable medium having computer executable codes stored thereon for directing the processor circuit to:
38[d]	receive from a user of the wireless apparatus a destination node identifier associated with a destination node with which the user wishes to communicate;
38[e]	transmit an access code request message to an access server, the access code request message including the destination node identifier and a location identifier identifying a geographical location of the wireless apparatus;
38[f]	receive an access code reply message from the access server in response to the access code request message, the access code reply message including an access code based on the location identifier in the access code request message, the access code identifying a communications channel on a gateway through which communications between the wireless apparatus and the

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	destination node can be conducted, the access code being distinct from the destination node identifier; and
38[g]	initiate communications from the wireless apparatus, via the network interface, using the access code based on the location identifier, to establish communications between the wireless apparatus and the destination node through the communications channel identified by the access code.
39	The apparatus of claim 38, wherein the network interface comprises a non-voice network interface, and wherein the codes for directing the processor circuit to cause the access code request message to be transmitted include codes for directing the processor circuit to cause the access code request message to be transmitted to the access server using the non-voice network interface on a non-voice network.
43	The wireless apparatus of claim 38, wherein the location identifier comprises an Internet Protocol (IP) address of the wireless apparatus in a wireless IP network.
45	The wireless apparatus of claim 38, wherein the location identifier comprises a user-configured identifier of a location associated with the wireless apparatus.
46	The wireless apparatus of claim 38, wherein the network interface comprises a non-voice network interface, and wherein the codes for directing the processor circuit to receive an access code reply message include codes for directing the processor circuit to cause the access code reply message to be received from the access server using the non-voice network interface on a non-voice network.
49[preamble]	A system for enabling roaming by a wireless apparatus, the system comprising the wireless apparatus of claim 38 and further comprising:
49[a]	a routing controller; and
49[b]	an access server comprising a processor circuit and a computer readable medium in communication with the processor circuit, the computer readable medium encoded with codes for directing the processor circuit of the access server to:
49[c]	receive the access code request message from the wireless apparatus;
49[d]	communicate with the routing controller to obtain from the routing controller the access code wherein the access code

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	identifies a communications channel associated with the location identifier and wherein the access code is useable by the wireless apparatus to cause the routing controller to establish a call to the destination node using the communications channel; and
49[e]	transmit the access code reply message to the wireless apparatus.
50[preamble]	A non-transitory computer readable medium having stored thereon computer executable codes for directing a processor circuit of a wireless device to establish communications with a destination node on a network, the codes comprising codes for directing the processor circuit to:
50[a]	cause the wireless device to receive from a user of the wireless device a destination node identifier associated with the destination node;
50[b]	cause the wireless device to transmit an access code request message to an access server, the access code request message including the destination node identifier and a location identifier identifying a geographical location of the wireless device;
50[c]	cause the wireless device to receive an access code reply message comprising an access code identifying an Internet Protocol (IP) address based on the location identifier in the access code request message, the access code representing a communications channel of a network element in the network through which communications between the wireless device and the destination node can be conducted, the communications channel being associated with the geographical location of the wireless device, the access code being distinct from the destination node identifier; and
50[d]	cause the wireless device to use the access code comprising the Internet Protocol (IP) address based on the location identifier to establish communications between the wireless device and the destination node through the communications channel of the network element identified by the access code.
135	The method of claim 1 wherein the access code request message is transmitted from the wireless device via a WiFi network and the access code reply message is received by the wireless device via the WiFi network.
136	The method of claim 1, wherein the destination node identifier and the location identifier are transmitted at the same time.
140[preamble]	The method of claim 1, further comprising:

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140[a]	(a) receiving, in the access code reply message, an Internet Protocol (IP) address; and
140[b]	(b) establishing the communications between the wireless device and the destination node based on the Internet Protocol (IP) address received in the access code reply message.