

Transcript of Todor Cooklev, Ph.D.
Conducted on March 11, 2024

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
UNITED STATES PATENT AND TRADEMARK OFFICE ----- BEFORE THE PATENT TRIAL AND APPEAL BOARD ----- MICROSOFT CORPORATION AND AFFIRMED NETWORKS, INC., Petitioners, v. LEMKO CORPORATION, Patent Owner. ----- Case No. IPR2023-00531 U.S. Patent No. 7,855,988 Virtual Deposition of TODOR COOKLEV, Ph.D. Monday, March 11, 2024 11:08 a.m. CST Job No.: 528102 Pages: 1 - 97 Reported Stenographically by: Tiffany M. Pietrzyk, CSR RPR CRR	APPEARANCES ON BEHALF OF THE PETITIONERS: MICHAEL R. RUECKHEIM, ESQUIRE TATHAGATA D. GOSWAMI, Ph.D. WINSTON & STRAWN LLP 255 Shoreline Drive Suite 520 Redwood City, California 94065 650.858.6500 ON BEHALF OF THE PATENT OWNER: JEFFREY H. PRICE, ESQUIRE KRAMER LEVIN NAFTALIS & FRANKEL LLP 1177 Avenue of the Americas New York, New York 10036 212.715.9100 ALSO PRESENT: Erin Schuppert, Planet Depos Remote Tech	Virtual deposition of TODOR COOKLEV, Ph.D., pursuant to notice, before Tiffany M. Pietrzyk, a Certified Shorthand Reporter in the States of Illinois, Texas, and California, Registered Professional Reporter, Certified Realtime Reporter, and a Notary Public in and for the State of Illinois.	CONTENTS EXAMINATION OF TODOR COOKLEV, Ph.D. PAGE By Mr. Rueckheim 6 EXHIBITS (Attached to transcript.) DEPOSITION EXHIBITS PAGE Exhibit 1 Abstract entitled "Tutorial: 22 Software-Defined Radio Technology," dated 2007 Exhibit 2 Technical report entitled 86 "3GPP TR 25.912 V7.00," dated 2006-06 PREVIOUSLY MARKED EXHIBITS PAGE Exhibit 2001 Declaration of Todor 9 Cooklev, Ph.D., marked as IPR Exhibit 2001, dated 6/30/23

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2 (5 to 8)

5 1 E X H I B I T S (Cont.) 2 PREVIOUSLY MARKED EXHIBITS PAGE 3 Exhibit 2025 Article entitled, "Review: 75 4 General Packet Radio 5 Service (GPRS): 6 Architecture, Interfaces 7 and Deployment," copyright 8 2001 9 10 11 12 13 14 15 16 17 18 19 20 21 22	7 1 Q. Do you have any papers in front of you? 2 A. I was going to ask for your permission. I 3 have with me a clean, unmarked version copy of my 4 declaration. 5 Q. Is that -- 6 A. I also have the Flore reference, I have a 7 hard copy. And I have a hard copy of the 8 '988 patent and these unmarked copies. 9 Q. The declaration you referred to, does it 10 have an exhibit number marked on the bottom? 11 A. The bottom, it says Exhibit 2021. 12 Q. Okay. And is it titled, "Declaration of 13 Todor Cooklev Ph.D."? 14 A. Yes. 15 Q. And if you scroll to -- looks like page 56, 16 does it include your signature with the date of 17 December 21, 2023? 18 A. Yes. At the bottom it says page 56, but 19 right above it, it says page 52. And this page 20 contains my signature. 21 Q. And is it dated December 21, 2023? 22 A. That's correct.
6 1 P R O C E E D I N G S 2 (Witness sworn.) 3 WHEREUPON: 4 TODOR COOKLEV, Ph.D., 5 called as a witness herein, having been first duly 6 sworn, was examined and testified as follows: 7 EXAMINATION 8 BY MR. RUECKHEIM: 9 Q. Hello, Dr. Cooklev. 10 A. Good morning. 11 Q. Good morning. Can you please state your 12 name for the record? 13 A. My name is Todor Cooklev. 14 Q. Okay. And where are you today? 15 A. I am at the offices of Kramer Levin in 16 New York. 17 Q. Okay. And is anyone in the room with you? 18 A. Yes. Counsel for Kramer Levin. 19 Q. Is that Mr. Price? 20 A. Yes. 21 Q. Is there anyone else? 22 A. No.	8 1 Q. Okay. And you -- do you have anything else 2 in front of you? 3 A. As I said, I have the Flore reference and 4 the '988 patent. 5 Q. Anything else? 6 A. Nothing else. Nothing else. 7 Q. Are you viewing this videoconference through 8 a laptop? 9 A. Yes. 10 Q. What applications do you have open on the 11 laptop? 12 A. I do not have any applications open. No. 13 On -- actually, I have -- I will close -- I have the 14 '988 patent, which I will close. So at the moment, 15 I have no applications open. 16 Q. Okay. And where do you live generally, in 17 New York? 18 A. No. I live in Indiana. 19 Q. Okay. Okay. And you also submitted a 20 declaration with respect to Lemko's preliminary 21 response; correct? 22 A. I think I did, yes.

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9 1 Q. I'm going to put that declaration into the 2 chat. And you should be able to download the 3 declaration. Let me know when you have it open. 4 A. Yes. I downloaded it, and I'm going to 5 open. I'm looking at this declaration. 6 Q. Do you see on the bottom of the first page 7 the declaration has been marked as IPR Exhibit 2001? 8 A. Yes, I do. That's on the title page. 9 (Exhibit 2001, previously marked, ^ is 10 attached to the transcript ^ was retained by 11 counsel.) 12 Q. And do you see on page 45, page 45, also, it 13 says page 48. It's a little confusing. But do you 14 see on page 45, it bears your signature? 15 A. Yes, that's correct. 16 Q. And it shows a date of June 30, 2023? 17 A. That's correct. 18 Q. Okay. I'll probably be referring to either 19 that declaration or your later declaration 20 throughout the deposition. 21 Would it be fair for me to call -- would you 22 understand if I referred to the June -- I already	11 1 depositions you've been involved with, are those 2 somehow identified in your declarations, in either 3 of your declarations? 4 I can give you an example. I'm looking -- 5 okay. 6 A. Yeah, I will take a look. So I will -- I 7 mean, if we -- at the end of my CV, I'm looking at 8 the electronic copy that you just uploaded to the 9 chat, which is the last three pages of -- this is my 10 experience over the last four years or even five 11 years. And so these are the cases that I have 12 worked on over the last five years. And there are 13 some that are not included on this list because they 14 were -- they were not in the last five years. 15 Q. Do you remember roughly the date when you 16 were first deposed as an expert in a patent 17 litigation matter? 18 A. Yes, approximately, I do. 19 Q. And what date was that? 20 A. It was in 2014, so about -- about ten years 21 ago. 22 Q. If you go to -- and we're looking at your
10 1 forgot the date, so strike that. 2 Would it be okay for me to call the June 30, 3 2023, declaration your POPR declaration? 4 Does that make sense? 5 A. It does make sense. I think I will 6 understand that you are referring to my June of last 7 year declaration. 8 Q. Okay. And then will you understand if I 9 refer to your second declaration, your later 10 declaration as your POR declaration? 11 A. I would understand that you are referring to 12 the December declaration. 13 Q. Okay. Have you been deposed before? 14 A. Yes. 15 Q. How many times? 16 A. About 35 times. 17 Q. Okay. Were your litigations identified in 18 your -- litigations you've been involved with 19 identified in either of your declarations? 20 A. Is -- I did not get the entirety of the 21 question. 22 Q. I'm just -- I'm asking whether the	12 1 POPR declaration, IPR Exhibit 2021. The very last 2 page, there's listed an experience you had as an 3 expert for TQ Delta in 2014. 4 Do you see that? 5 A. I -- the hard copy that I have does not 6 include my CV. 7 Q. Oh, I'm referring to the electronic copy 8 that I put into the chat. 9 A. Okay. 10 Q. I'm sorry. 11 A. No, it's not -- the -- my first deposition 12 was not in connection with the engagement for 13 TQ Delta. It was in connection with a different 14 engagement that is not on this list. The TQ Delta 15 is still active, the TQ Delta one. 16 Q. I see. 17 A. That one is no longer -- that finished. 18 Q. Okay. Have you -- I think I was referring 19 to patent litigation matters, so just to be clear, 20 when was the first time you were deposed with 21 respect to a litigation and not an inter partes 22 review matter?

13 1 A. 2014. 2 Q. 2014? 3 And have you been deposed in inter partes 4 review matters before? 5 A. Yes, I have. 6 Q. Okay. When was the first time you were 7 deposed in an inter partes review matter? 8 I assume it was after 2014? 9 A. Yes. After 2014. I do not exactly remember 10 when was the first time, but maybe it's even on this 11 list somewhere. 12 Q. That's okay. We'll get it when needed. 13 And what did you do to prepare for the 14 deposition today? 15 A. I reviewed my declaration, reviewed the 16 Flore reference, the '988 patent, and I had 17 conversations with counsel. 18 Q. Did you speak with anyone else other than 19 legal counsel about today's deposition? 20 A. No, I did not. 21 Q. Is there anything that you would like to 22 change in either of your declarations after	15 1 A. No, I don't think so. 2 Q. Did you review the entire prosecution 3 history for the '988 patent? 4 A. I did not review it specifically in 5 preparation for today, but I did review that when I 6 was working on the declarations. 7 Q. For the purposes of priority, are you 8 assuming a July 14, 2008, priority date for the 9 '988 patent? 10 A. Yes. As I state, for example, in my June 11 declaration, [As read] The '988 patent claims 12 priority to July 14th of 2008. 13 Q. Okay. Are you aware of any evidence 14 indicating an earlier priority date? 15 A. And just for the record, I'm looking at the 16 patent. 17 Sitting here right now, I'm not aware of 18 anything indicating an earlier priority date than 19 July 14th of 2008. 20 Q. If you can turn to paragraph 20 of your POR 21 declaration, IPR Exhibit 2021? 22 A. Yes, I am looking at paragraph 20.
14 1 preparing for today's deposition? 2 A. No. Sitting here right now, I'm -- I'm not 3 aware of anything that I want to change. I did -- 4 there is one -- one or two typos, but I do not 5 have -- did not identify anything that I want to 6 change. 7 Q. Okay. I did not see a list of materials 8 considered in either of your declarations. I may 9 have missed it. 10 But first off, are you aware of a list of 11 materials considered for your declarations? 12 A. Thank you for that question, Counsel. I 13 mean, I can -- I'm hoping that my declarations 14 contain language that -- stating that -- I mean, I 15 am -- the list of materials includes all materials 16 that I specifically refer to in my declarations. 17 Q. Okay. 18 A. Maybe I did not provide a list of materials. 19 I -- I probably should have. 20 Q. Is there anything other than the references 21 identified in your declarations that you remember 22 reviewing and considering?	16 1 Q. And at paragraph 20, you state that you are 2 "readily familiar with the level of ordinary skill 3 in the art as of the priority date of the patent"; 4 correct? 5 A. Yes. 6 Q. And then in paragraph 21, you describe 7 Mr. Proctor's opinion as to the level of ordinary 8 skill in the art; correct? 9 A. Yes. 10 Q. Do you agree with that conclusion as to what 11 the level of ordinary skill in the art is for the 12 '988 patent? 13 A. Yeah. I think it's accurate to say that 14 without specifically agreeing or disagreeing with 15 Mr. Proctor, I'm applying this definition. I'm 16 applying the definition that Mr. Proctor provided 17 for the purpose of my declaration. 18 Q. Do you agree that that opinion as to the 19 level of ordinary skill provided by Mr. Proctor and 20 quoted in paragraph 21 is correct? 21 A. I think there are some -- there are some 22 points that I agree with. I haven't really studied

17 1 this from the perspective whether I agree with it. 2 But generally, bachelor's degree in electrical 3 engineering or computer engineering and about two 4 years of industry experience is just points that I 5 think I could agree with. 6 Q. Okay. So sitting here today, there's 7 generally no dispute between the experts as to the 8 level of ordinary skill for the '988 patent. 9 A. I think it -- that's -- for the most part, 10 that's a fair statement. 11 Q. When were you first engaged by Lemko? 12 A. It was clearly sometime before my June 13 declaration. At the moment, I don't specifically 14 recall. Maybe it was around April of last year. 15 Q. April of 2023? 16 A. In -- I'll just say that I don't exactly 17 remember, but probably around -- it was -- it was, 18 like, I would say -- was it couple months, two, 19 three months before my first declaration. 20 Q. Before -- have you heard of Lemko before 21 becoming involved in this case? 22 A. No, I had not heard of Lemko.	19 1 but as a general idea, software-defined radio is a 2 term that's used to describe radios in which -- 3 which are implemented primarily in software. 4 Q. What is the software-defined radio forum? 5 A. Well, it's an organization. We can say an 6 industry organization devoted to the development of 7 software-defined radio technology. And promoting 8 the interests of its members and generally the 9 members are various companies in 10 the software-defined radio business. 11 Q. Is Microsoft a member of this forum? 12 A. I do not remember whether Microsoft was or a 13 member of this forum. 14 Q. Are you still participating in the 15 software-defined radio forum, which you note has 16 been renamed as Wireless Innovation Forum? 17 A. I was actively participating in the work of 18 the forum between approximately 2007 and 2012. So 19 during those years, I was, as I said, more actively 20 participating. I contributed to some documents 21 produced by the forum and attended meetings. Since 22 that time, since about 2012, I occasionally I have
18 1 Q. You cite to at least one, looks like a user 2 manual provided by Lemko in your declarations. 3 Have you seen a Lemko product? 4 A. A Lemko product? 5 Q. Correct. 6 A. No, I don't think I have seen a Lemko 7 product. 8 Q. And just for clarity, when I say "product," 9 I'm referring to any type of Lemko hardware or 10 network communication system. 11 With that understanding, have you seen a 12 Lemko product? 13 A. No, I haven't seen a Lemko product. 14 Q. If you can turn to paragraph 14 of your 15 December declaration. 16 A. Yes. 17 Q. In paragraph 14, you refer to 18 software-defined radio, SDR; correct? 19 A. Yes. 20 Q. What is SDR generally? 21 A. So first, I can answer this question without 22 specifically providing definition for this term. So	20 1 reviewed certain documents, but I have not been 2 participating as actively as I was. 3 Q. And do you know if Lemko has ever been a 4 member or participated in the software-defined radio 5 forum? 6 A. I do not know this. 7 Q. Is the goal of the software-defined radio 8 forum to consolidate hardware components into 9 software? 10 MR. PRICE: Objection. Calls for 11 speculation. 12 A. I don't think we can say that that's the 13 goal. Yeah, I don't think that -- that description 14 would be an accurate description of the goal of the 15 software-defined radio forum. 16 Q. You stated earlier that the organization is 17 devoted to the development of software-defined radio 18 technology. 19 Do you remember that? 20 A. I do. 21 Q. Are you stating that the organization is 22 devoted to developing software-defined radio

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21 1 functionality that was traditionally performed in 2 hardware? 3 A. Oh, I was describing what software-defined 4 radio is in general. And in the -- in the 5 software-defined radio forum, in particular, and it 6 was known that in general that is challenging. And 7 so the -- I think the participants in the 8 software-defined radio forum were looking for 9 innovative -- in general, innovative technology in 10 this -- in this field. 11 Q. I am putting into the chat a document. Let 12 me know when you can open it. 13 MR. RUECKHEIM: And this one will be need to 14 be marked as an exhibit, Erin. 15 A. Yes, I was able to download this. 16 Q. Okay. Dr. Cooklev, we are gonna mark this 17 document as IPR Exhibit 1. It's a document that 18 bares the title "Tutorial: Software-Defined Radio 19 Technology." It has your name on the first page and 20 it is roughly two pages long. 21 Do you see this document? 22 ///	23 1 Q. And in this paragraph, the article states 2 that, [As read] Software-defined radio alters 3 traditional hardware radio designs and approaches in 4 three distinct and complementary ways. 5 Correct? 6 A. Yes. That's what -- that's what, here, the 7 extended abstract is saying. 8 Q. And it references "substitute software for 9 hardware processing"; correct? 10 A. Yes. 11 Q. And so going back to the software-defined 12 radio forum, was that a goal of the software-defined 13 radio forum to substitute software for traditional 14 hardware processing for radio systems? 15 MR. PRICE: Objection. 16 A. Well, here, the -- in this tutorial and this 17 extended abstract, I am generally describing what 18 the ideal software-defined radio is. And so but 19 your question, is it the goal of the 20 software-defined radio forum to -- I don't think we 21 can say that item 2 or any one of the three items 22 here, the three ways in which software-defined radio
22 1 (Exhibit 1 was marked for identification 2 and is attached to the transcript.) 3 A. I do. 4 Q. Do you know what this document is? 5 A. I do. 6 Q. What is this document? 7 A. It describes -- this is an extended abstract 8 of software-defined radio technology tutorial. 9 Q. Do you see on the bottom of page 1, it lists 10 a 2007 date? 11 A. Yes. 12 Q. Is that roughly when this article was 13 published? 14 A. Yes. 15 Q. And you were an author of this article with 16 a co-author Mark Cummings; correct? 17 A. That is correct. 18 Q. Can you turn to the second page, last full 19 paragraph -- well, not a full paragraph -- last 20 paragraph on the left-hand side? It starts with 21 "The ideal software radio." 22 A. Last -- oh, I see. Yes.	24 1 approaches the ideal, I don't think that they are 2 goals of the software-defined radio forum. They are 3 more -- more like characteristics, just general 4 characteristics, as I said, of software-defined 5 radio. 6 Q. I guess my more general question is: Before 7 Lemko's inventions, was the concept of substituting 8 hardware for software in radio systems known? 9 A. Well, as a -- as a general characteristic of 10 software-defined radios, I think we can say that, 11 yeah, this -- I mean, as I state in the tutorial 12 here, in 2007, that generally these were known. As 13 general ideas, these three characteristics of 14 software-defined radio were known. 15 Q. Okay. Turning back to your December 16 declaration. 17 A. Yes. 18 Q. Let me find the best paragraph. One second. 19 Well, I guess throughout, you refer to DMA 20 servers and DMA gateways, and you can compare, it 21 looks like paragraphs 33 and 43, if you wanted to 22 see just general uses of the term.

25 1 A. You said paragraph 33? 2 Q. Yeah, take a look at paragraph 33. Oh, no, 3 sorry. I gave you the wrong paragraph. 4 If you look at paragraph 43, you use the 5 term "DMA server"; correct? 6 MR. PRICE: Sorry, Counsel. Which 7 declaration? 8 MR. RUECKHEIM: I'm looking at the 9 December 2023 declaration, the second declaration, 10 paragraph 43. 11 A. Yes, this DMA servers I recited in this 12 paragraph. 13 Q. All right. And so you're referring to DMA 14 servers, and you also refer to the claim language of 15 a distributed mobile architecture DMA. 16 Do you see that? 17 A. Well, that's how paragraph 43 begins, that 18 the patent discloses and claims a distributed mobile 19 architecture. 20 Q. What is the difference in your view between 21 the term DMA server and DMA generally? 22 A. Well, I think there is a difference, and the	27 1 does not require distributed DMA server nodes? 2 MR. PRICE: Objection. Mischaracterizes 3 testimony. 4 A. Well, I -- I apologize. The word 5 "distributed" being used twice, maybe the question 6 gets confusing for me. If I may have the question 7 repeated, please? 8 Q. In your opinion, the term "DMA" does not 9 require distributed DMA server nodes within the 10 architecture? 11 MR. PRICE: Same objection. 12 A. I am not sure that I agree. And I don't 13 agree with this because the DMA servers are nodes, 14 and the DMA architecture requires such nodes to be 15 present. 16 Q. In your opinion, the distributed mobile 17 architecture requires DMA server nodes to be 18 distributed throughout the architecture? 19 MR. PRICE: Objection. 20 A. What does it mean in your question the DMA 21 server nodes to be distributed in the architecture? 22 To be physically in different places? Is that
26 1 difference would be clear to a person of skill that 2 DMA refers to the architecture. And DMA servers are 3 nodes in this architecture. 4 Q. Are the -- would a person of ordinary skill 5 believe that DMA servers are distributed within a 6 distributed mobile architecture? 7 A. Well, the DMA servers are nodes in a DMA, in 8 a distributed mobile architecture. 9 Q. Are they distributed within the distributed 10 mobile architecture? 11 A. Well, I'm not sure what you mean by the 12 servers to be distributed in a distributed mobile 13 architecture. The location to be distributed? 14 Q. I'm just asking if, in your opinion, DMA 15 servers, by nature of the term "distributed mobile 16 architecture," are distributed within the DMA? 17 A. Well, the architecture is distributed 18 because -- because it has three characteristics. 19 These three characteristics make the architecture 20 distributed mobile architecture. The servers are 21 just nodes in this architecture. 22 Q. Okay. So in your opinion, the term "DMA"	28 1 what -- or what does it mean? 2 Q. We can go with that. To have different 3 locations. 4 So with that understanding, in your opinion, 5 does the distributed mobile architecture that is 6 claimed require DMA server nodes to be distributed 7 throughout the architecture? 8 A. Well, first, I think that the -- that the 9 language gets confusing because of the word 10 "distributed throughout the architecture." And you 11 are -- it seems to me, you're using the term 12 distributed throughout the architecture to indicate 13 that these DMA servers are just distinct. But yes, 14 they are the -- if the DMA servers, they are 15 distinct servers. So that's what -- I think the 16 fact that they are distinct is -- I mean, that's 17 pretty obvious. 18 Q. You also refer to -- or use the term 19 "DMA infrastructure" in your declaration; correct? 20 If helpful, I see in paragraph 76. 21 A. Yeah. And thank you for pointing me to a 22 paragraph since I wouldn't necessarily remember.

29 1 Yes, I am using the term "DMA 2 infrastructure." 3 Q. Is there a difference between the words 4 "DMA" by itself and then also "DMA infrastructure," 5 or are they referring to the same thing? 6 A. I think in paragraph 76, the DMA 7 infrastructure that this paragraph is talking about 8 is shown in figure 6, which is shown as part of this 9 paragraph. And the -- in here, I say 10 DMA infrastructure because it includes DMA servers, 11 DMA gateways, DMA networks, and a DMA gateway 12 communications network. 13 Q. What is the difference -- well, what does 14 the word "infrastructure" add? 15 Would you also -- well, strike that. 16 Would looking at this figure, looks like 17 figure 6 that's on page 36 of your December 18 declaration, and you have a blue box on this figure. 19 Is the blue box encircling a DMA, a DMA 20 interface, or both? 21 MR. PRICE: Objection. Form. 22 A. Excuse me. What DMA, DMA interface ...	31 1 paragraph 43. So that's the -- just DMA 2 infrastructure is maybe a little more accurate here. 3 But the term "DMA" could mean the same thing. 4 Q. Okay. Is there a difference -- or what is 5 the difference in your mind between the term 6 "DMA server" and "DMA gateway"? 7 A. The -- and I'm looking at the '988 patent as 8 well and at my declaration. So it's one -- one idea 9 is that the DMA servers are connected via 10 peer-to-peer connections. They -- while the DMA 11 gateways are connected using the DMA gateway 12 communications network. Also, the DMA gateways, we 13 see them as connected to other networks. 14 Q. Does the '988 patent disclaim using a 15 peer-to-peer connection between DMA gateways? 16 MR. PRICE: Objection. Calls for a legal 17 conclusion. 18 A. It doesn't -- that's not something that I 19 investigated to be able to tell you on the record 20 right now. 21 Q. Do you see in figure 6 that's shown on 22 page 36 of your December declaration, the component
30 1 Q. Or both. I'm trying to just figure out in 2 your opinion, is there a difference between the 3 terms "DMA" and "DMA interface" with respect to what 4 you show in this figure on page 36 of your 5 declaration? 6 MR. PRICE: Objection. Form. 7 Q. Oh, sorry. Strike that. I used the word 8 "interface." The term is actually "infrastructure." 9 A. Oh. 10 Q. So I'll start over. 11 Using the figure that's on page 36 of your 12 declaration, can you explain to me the difference 13 between the terminology "DMA" and "DMA 14 infrastructure"? 15 A. Well, I'm using here the term "DMA 16 infrastructure." Just to make it clear that by 17 "infrastructure," I am referring to all of the 18 elements in the blue box in figure 6. Now, just the 19 term "DMA" -- just the term "DMA" could also mean 20 the blue box, but it could also mean -- I mean, for 21 example, there is -- a DMA network is shown in 22 figure 4, which I also reproduce it as part of my	32 1 number 606? 2 A. In figure 6, the component 606 is a 3 DMA gateway communications network. 4 Q. Okay. Is it fair to say that the patent is 5 referring to generally the connections between 6 gateways when it refers to a DMAG network? 7 A. I think that's fair. 8 MR. PRICE: Objection. 9 A. I think, like in this figure, this 10 DMAG network between two DMA gateways. 11 Q. If you could turn to the '988 -- you said 12 you have the '988 patent? 13 A. I do. 14 Q. Can you turn to column 9 starting at 15 line 40? 16 A. I'm there. 17 Q. It says, [As read] The DMA gateway 18 network 606 may include a dedicated wired or 19 wireless communication medium or be included within 20 a network carrying other communications. 21 Do you see that? 22 A. Yes.

33 1 Q. Is it fair to say that the patent is 2 generally stating that the gate- -- strike that. 3 Is it fair to say that the patent is 4 generally describing the network between gateways 5 may be a wired or wireless connection or some other 6 network carrying other communications? 7 A. Yeah. The patent specification is saying 8 that the DMA gateway network 606 may include -- it 9 may include wired connections, it may include 10 wireless connections, or be included within a 11 network carrying other communications. 12 MR. RUECKHEIM: Okay. Let's take our first 13 break. 14 THE WITNESS: Thank you. 15 (A short break was had.) 16 BY MR. RUECKHEIM: 17 Q. Dr. Cooklev, welcome back. 18 A. Thank you, Counsel. 19 Q. Did you speak with your counsel regarding 20 the substance of the deposition during the break? 21 A. No, I did not. 22 Q. With respect to this term we were	35 1 December declaration? 2 A. 66, yes. 3 Q. In paragraph 66, you say that [As read] The 4 distributed mobile architecture DMA is a distributed 5 and a decentralized architecture with call-routing 6 functionality on DMA servers. 7 Do you see that? 8 A. Yes. 9 Q. So with respect to the use of the term 10 "decentralized architecture," which of the words 11 "distributed," "mobile," or "architecture" are you 12 saying means "decentralized"? 13 A. I -- I'm sorry. Maybe I lost complete track 14 of the question. But I am -- I am using the term 15 "decentralized" because the routing is distributed 16 and decentralized and, therefore, decentralized. 17 Q. Well, we can agree that the term "mobile" 18 and "decentralized" are not synonyms; correct? 19 A. They are not synonyms. 20 Q. Okay. And the plain and ordinary meaning of 21 the word "mobile" does not mean "decentralized." 22 MR. PRICE: Objection. Form.
34 1 discussing, "DMA," what does mobile architecture 2 mean? 3 A. So mobile architecture is an architecture 4 for mobile telephony. 5 Q. And when you refer to "mobile" in that 6 statement, are you referring to, like, cell phones, 7 UEs? 8 A. Yes. 9 Q. Okay. I notice that on page 19 of your 10 declaration, you include a figure of a DMA server 11 that looks like a briefcase. 12 Do you see that? 13 A. Page 19 of my declaration? 14 Q. December declaration. 15 A. Yes. Yes. That's correct. 16 Q. Okay. And when you -- does the term -- when 17 the term "DMA" -- strike that. 18 Does the mobile architecture in the term 19 "DMA" refer to the DMA servers being mobile? 20 A. I don't think it refers to the servers being 21 mobile. 22 Q. If you could turn to paragraph 66 of your	36 1 A. Yeah. "Mobile" is a different term from 2 "decentralized." 3 Q. In your paragraph 66, it continues by saying 4 that [As read] Each DMA server is connected to other 5 DMA servers through peer-to-peer connections. 6 Do you see that? 7 A. Yes. 8 Q. Is it fair to say that the claims challenged 9 in this case only require one DMA server? 10 MR. PRICE: Objection. 11 A. The claim -- is it fair to say that the 12 claims require only one DMA server? 13 Q. Correct. 14 A. Well, I'd like to take a look at the claims. 15 Q. Please do. And I can -- you have a listing 16 of the challenged claims -- 17 A. Yes, in paragraph 1. I just turned to 18 paragraph 1 of my declaration. 19 Q. Okay. 20 A. The challenged claims are Claims 1, 3 21 through 9, and 20. And correct me if I am wrong. 22 Q. I think that's correct. So if you can tell

37 1 me if Claims 1, 3 through 9, or 20 require more than 2 one DMA server. 3 A. Okay. And I will begin with an answer for 4 Claim 1. And then I can go over the other claims. 5 Q. Okay. 6 A. So Claim 1 recites, [As read] receiving at 7 the first distributed mobile architecture, in 8 parentheses DMA gateway, communications information 9 for a communications network accessible by a second 10 DMA gateway, and the communications information 11 indicating one or more devices accessible by one of 12 a DMA server and a legacy communications network. 13 So -- and then it continues on. But the -- 14 so by reciting a DMA gateway and then a second 15 DMA gateway, a person of skill would indicate -- 16 would understand that -- and then it says, 17 "accessible by one of a DMA server in the legacy 18 commune cases network." 19 So the DMA architecture has -- so there are 20 more than one DMA servers in this type of a 21 DMA architecture. I mean, and I think figure 6 22 would be a good figure to understand the type of	39 1 these are devices that are connected and operate 2 similarly. 3 Q. Can peer-to-peer refer to a wired 4 connection? 5 A. Peer-to-peer, does it refer to wired? 6 Q. Correct. 7 A. It could. 8 Q. Can peer-to-peer refer to a wireless 9 connection? 10 A. It could. 11 Q. Can peer-to-peer refer to a connection 12 between devices over the internet? 13 A. In some contexts. 14 Q. In the context -- 15 A. I guess -- I guess in some contexts, it's a 16 possibility. 17 Q. In the context of your use of peer-to-peer 18 in your declaration, can it refer to a connection 19 over the internet? 20 A. For example, the patent specification in 21 column 3, beginning with line 45, says that, 22 [As read] In another embodiment, a distributed
38 1 network that is described by Claim 1. 2 Q. So are you saying that when Lemko's claims 3 recite a distributed mobile architecture, they are 4 necessarily requiring more than one DMA server? 5 A. And just for the record, I'm looking at my 6 declaration. 7 I think my declaration doesn't exactly give 8 an answer to this question. And please correct me 9 if I am -- if I am wrong on this. So it seems to me 10 I haven't thoroughly studied this, but -- whether 11 there are exceptions, but it seems to me that yeah, 12 it requires DMA servers, more than one, connected 13 via peer-to-peer connections. 14 Q. Well, we can agree that the challenged 15 claims in this case do not recite two DMA servers 16 connected in a peer-to-peer fashion; correct? 17 MR. PRICE: Objection. 18 A. No. I don't think I agree with this. 19 Q. When you say peer-to-peer, what are you 20 referring to? What is peer-to-peer? 21 A. Well, as a general idea, not as a definition 22 of the term peer-to-peer, but as a general idea,	40 1 mobile architecture server is coupled to a wireless 2 transceiver. The DMA server includes a first 3 interface adapted to communicate with a private 4 internet protocol network and a second interface 5 adapted to connect with a satellite communications 6 network. So that is an embodiment that is 7 described. 8 Also in column 6, line 56, it says, 9 [As read] The DMA servers 406 can communicate with 10 each other via the IP network 410 and can further 11 transmit calls to each other via the IP network 410. 12 So an Ethernet is an IP network. So it 13 seems to me we should not exclude connections over 14 IP networks. 15 Q. If you could turn to column 9 in the '988 16 patent, around line 13? 17 A. 13? 18 Q. Yes. 19 A. Yes, I'm there. 20 Q. It states, [As read] However, in not all 21 cases will the DMA servers 406 be able to 22 participate as peers in an IP network 410.

41 1 Do you see that? 2 A. Yes, I do. 3 Q. So at least in this example, the patent is 4 discussing a DMA server that is not connected 5 peer-to-peer to another DMA server; correct? 6 MR. PRICE: Objection. 7 A. No, I don't agree with this. 8 Q. Why not? 9 A. Because this sentence describes a case where 10 the -- where one or more of the coverage sites, if 11 we continue reading in from column 9 where, 12 [As read] One or more of the coverage sites 402 are 13 in rural locations or other locations remote from 14 other coverage sites. 15 And so therefore, in cases like these, a DMA 16 server that is in a remote coverage site will be 17 connected to a different DMA gateway. But in all 18 cases, the DMA servers are connected via 19 peer-to-peer connections. 20 Q. Is the example identified in column 9 that 21 we just read referring to a scenario when you have a 22 DMA server in a rural area that is connected to a	43 1 A. Excuse me. DMA gateways required? 2 Q. So I'm just asking you to assume this 3 hypothetical, that you have a system with a DMA 4 gateway that is required for communications between 5 two DMA servers. Okay? 6 A. Okay. 7 Q. And in that scenario, are the -- are either 8 of the DMA servers peer-to-peer connected to the DMA 9 gateway? 10 A. In all cases, DMA servers communicate 11 following the peer-to-peer model. 12 Q. So going back to the hypothetical I asked, I 13 was referring to two DMA servers that are connected 14 to each other through a DMA gateway. And my 15 question was whether the DMA server in that 16 hypothetical has a peer-to-peer connection with the 17 DMA gateway. 18 A. I am not sure that I investigated this to be 19 able to provide an informed opinion. 20 Q. If we could turn to figure 6 in the '988 21 patent. 22 A. Figure 6?
42 1 DMA gateway? 2 A. Well, I think at least the way I understood 3 your question, the answer is in the specification, 4 in column 9, line 17, [As read] Accordingly, 5 embodiments of the present disclosure describe DMA 6 gateways to enable DMA servers to communicate with 7 one another when one or more of the DMA servers 8 cannot participate directly in the IP network. 9 Q. So I'm not sure we're talking about the same 10 thing. I'm just asking generally whether this 11 embodiment in column 9 is referring to a scenario 12 when you have a DMA gateway connected to a DMA 13 server. 14 A. Well, this embodiment describes that DMA 15 servers participate in an IP network 410. And it 16 also describes that when one or more of the DMA 17 servers cannot participate directly in the IP 18 network, then DMA gateways enable DMA servers to 19 communicate with one another. 20 Q. Okay. In the scenario where you have a DMA 21 gateway required for communications between two DMA 22 servers, so just imagine that as a hypothetical.	44 1 Q. Yeah. 2 A. Yes, I am there. 3 Q. Are the two DMA gateways, 602 and 604, shown 4 in figure 6 connected in a peer-to-peer fashion? 5 A. I don't think I investigated this to be able 6 to give you an informed opinion right now. 7 Q. Let me give you one more. 8 With respect to figure 6, is the DMA 9 server 622 connected in a peer-to-peer fashion with 10 DMA server 646? 11 A. Yes. 12 Q. And is that because the connection goes from 13 DMA server 622 to the 602 gateway to the 604 gateway 14 down to the server 646? 15 MR. PRICE: Objection. 16 A. Well, in this figure, the figure shows the 17 DMA server 622 connected to private IP network and 18 then DMA gateway and then another DMA gateway, 19 another private network, and then another DMA 20 server. I mean, that's what the figure shows. But 21 the patent makes clear that the DMA servers are 22 communicating in a peer-to-peer fashion. And the

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45 1 gateways are enabling this to happen. 2 Q. So is it your opinion, then, that a 3 peer-to-peer connection can exist even if there is 4 an intervening gateway between two DMA servers? 5 MR. PRICE: Objection. 6 A. I should maybe explain better my answer. So 7 I make -- I make relevant analysis here in 8 paragraphs 70 through 72 of my declaration. And so 9 regarding figure 6, the DMA server 622, 624, 626, 10 these DMA servers, they communicate via peer-to-peer 11 connections because they are -- they are part of one 12 DMA network. So when I state -- when I say 13 peer-to-peer connections, this is what I mean. 14 Q. Is figure 6 of the '988 patent showing one 15 DMA network or two DMA networks, each with its own 16 DMA gate? 17 A. I think it's showing two DMA networks. 18 Q. In paragraph 67 of your declaration. 19 A. 67? 20 Q. Correct. You refer to peer-to-peer 21 connections between DMA servers in the same DMA 22 network.	47 1 not directly connect to each other; correct? 2 A. That is correct. 3 Q. And a base transceiver station is roughly a 4 cell tower? 5 A. Yes. 6 Q. Okay. And so the BTSes communicate with a 7 BSC, a base station controller; correct? 8 A. Yes. 9 Q. And the base station controller in 10 conventional networks, is that disposed at the same 11 location as the cell tower? 12 A. Typically, no. 13 Q. Okay. Is it disposed somewhere pretty close 14 to the cell tower, or can it vary? 15 A. It depends. 16 Q. Okay. And Lemko's invention also have DMAs 17 that are connected to BTSes; correct? 18 MR. PRICE: Objection. Form. 19 A. In Lemko's invention, DMAs connected to 20 BTSes? 21 Q. Correct. 22 A. No, I don't think so. I mean, connected,
46 1 Do you see that? 2 A. Yes. 3 Q. So going back to figure 6, are you referring 4 to peer-to-peer connections between DMA servers 622, 5 624, and 626 as one DMA network, and then also 6 peer-to-peer connections between 642, 644, and 646 7 in the second DMA network? 8 A. Yes. 9 Q. Okay. So you're not opining that DMA 10 server 622, 624, or 626 in figure 6 have 11 peer-to-peer connections cross the gateways to the 12 DMA servers 642, 644, or 646; correct? 13 A. I'm not providing this opinion. 14 Q. Okay. In paragraph 67, you refer 15 hierarchical legacy networks where BTSes do not 16 directly connect to each other. 17 Do you see that? 18 A. Yes. 19 Q. BTS stands for base station transceiver? 20 A. Base transceiver station, yeah, same thing. 21 Q. So in conventional networks that predate 22 Lemko's patents, the base transceiver stations do	48 1 they -- the DMA server has a wireless transceiver. 2 Q. Is a wireless transceiver an antenna, 3 roughly? 4 A. Well, it includes an antenna. It's more 5 than just an antenna. 6 Q. If you could turn to paragraph 45 in your 7 December declaration, the last sentence. 8 A. 45? I'm there. 9 Q. Okay. The last sentence states that, 10 [As read] The DMA servers are connected to BTSes 11 that provide cellular service to UEs in the area. 12 Do you see that? 13 A. I do. And just let me look at the patent. 14 Q. Sure. 15 A. So -- so, and thank you for pointing me to 16 my paragraph 45, where at the end I cite the patent 17 specification column 6. And I cite column 6, lines 18 46 through 51. I think this is the same column 6, 19 but it's -- I should have included maybe lines 31 20 through about 45. And so what the patent 21 specification in an embodiment that is described 22 here is where a DMA server is connected, so I will

49 1 just read the --there are four cellular coverage 2 sites, 402, and each sites include an antenna, 404. 3 And in one embodiment, the antenna is connected to a 4 transceiver belonging to a base transceiver station. 5 Q. Okay. So that we're on the same page, 6 Lemko's inventions envision a DMA server, one or 7 more DMA servers being connected to a BTS; correct? 8 A. I think we need to be careful here because 9 the -- it may not be the BTS that was known in the 10 prior art. It may be a transceiver belonging to a 11 BTS. 12 Q. Well, going back to your paragraph 45, I 13 mean, you state, [As read] The DMA servers are 14 connected to BTSes that provide cellular service to 15 UEs in the area. 16 So are you saying that statement is in 17 error? 18 A. And as I said, thank you for bringing this 19 up. 20 No, it is not an error because this 21 statement is the basis for my statement in 22 paragraph 45 is the patent specification in	51 1 Do you see that? 2 A. Yes. 3 Q. Okay. And you have not identified any 4 disclosure of a DMA server including a BTS module; 5 correct? 6 A. So in figure 5, which is the basis for -- 7 here, my opinion in paragraph 45, figure 5 shows the 8 transceiver -- it actually shows three transceivers 9 of base transceiver stations connected to a 10 DMA server. And so this is why the DMA server 11 includes a computer-readable medium here as -- that 12 I show in light blue storing an MSC module that's in 13 red and a BSC module. 14 Q. Okay. But my question was, you have not 15 identified any disclosure of a DMA server including 16 a BTS module. 17 A. But this, the passage from column 6 that 18 describes figure 4 says that "each coverage site ... 19 includes an antenna 404." And the antenna is 20 "connected to a transceiver." And in particular, it 21 recites a "3-sector BTS," or base transceiver 22 system. But this is a nonlimiting embodiment.
50 1 column 6. That is the basis. But in this sense, 2 it's not an error. 3 Q. Okay. And then in the next paragraph, you 4 also discuss connecting a DMA server to a BTS. 5 Do you see that? 6 A. Yes. 7 Q. Okay. So we can agree that Lemko did not 8 invent a way for BTSes to be directly connected to 9 each other; correct? 10 A. No. The DMA servers are. 11 Q. Okay. And Lemko's invention, is it one DMA 12 server per BTS or one or more? 13 MR. PRICE: Objection. 14 A. Excuse me? One or more? 15 Q. DMA servers. 16 A. Well, essentially a DMA server can use the 17 transceiver of a BTS. 18 Q. And in paragraph 45, the last sentence -- 19 sorry, this is on page 19. So the last sentence 20 before you get to page 20, you discuss DMA servers, 21 including a computer-readable medium with MSC module 22 and a BSC module.	52 1 Q. Are you saying that -- let me just break 2 that apart. 3 Are you saying that the embodiment that's 4 illustrated in figure 4 and discussed in the patent 5 at column 6, lines 46 to 62 is a nonlimiting 6 embodiment? 7 A. Well, I think the description begins line 8 31 -- 9 Q. Okay. 10 A. -- of column 6. 11 Q. So are you saying that the language in the 12 patent that's discussing figure 4 that starts at 13 column 6, line 31 to 62, is a nonlimiting 14 embodiment? 15 A. Yes, it's a nonlimiting embodiment. 16 Q. And if you go to column 2, line 19? 17 A. Yes. 18 Q. It says, [As read] Figure 4 is a diagram of 19 a particular illustrative embodiment of a 20 distributed and associative communication system. 21 Do you see that? 22 A. Yes.

53 1 Q. So this section also shows that the 2 discussion of figure 4 is only relating to a 3 nonlimiting embodiment; correct? 4 A. Yes. It further supports my opinion that it 5 is a nonlimiting embodiment. 6 Q. Where it says "distributed and associative," 7 looks kind of similar to the language in your 8 declaration where you said distributed and 9 decentralized. 10 Does associative mean the same thing as 11 decentralized? Or do you know what associative 12 means in this figure 4 language? 13 A. Well, I use decentralized. 14 Q. Do you know -- oh, go ahead. Sorry. 15 A. And I can -- I mean, I can go over the 16 specification regarding decentralized and 17 associative. 18 Q. You think decentralized means associative? 19 A. No. I'm not saying decentralized means 20 associative. 21 Q. Okay. What does "associative" mean? 22 Or even better, what is an associative	55 1 provides further context and provides additional 2 support for this -- for my opinion. 3 Q. So what does the word "associative" mean, 4 then, in column 2, lines 19 and 20? 5 What is it adding to the concept of 6 distributed mobile architecture? 7 A. Well, first in lines 19 through 20, it 8 doesn't say associative DMA. It says, "distributed 9 and associative communication system." 10 Q. Then what does "associative" mean with 11 respect to the communication system? 12 A. Well, it provides further support that the 13 connections are peer-to-peer. 14 MR. RUECKHEIM: Let's take our second break. 15 MR. PRICE: I think we're gonna grab some 16 lunch now if that works for you, so maybe at least 17 30 minutes? 18 MR. RUECKHEIM: Let's go off the record. 19 (A short break was had.) 20 BY MR. RUECKHEIM: 21 Q. Dr. Cooklev, if you could turn to 22 paragraph 74 in your December declaration?
54 1 communication system? 2 A. I think in this context, in particular 3 figure 4, what the patent means for "associative" is 4 a network formed by DMA servers characterized by 5 peer-to-peer connections. That is what associative 6 means in this context. 7 Q. Well, the language we're looking at in 8 column 2, lines 19 to 20, refers to a "distributed 9 and associative communications system." And I 10 thought you told me that in your opinion, that 11 distributed mobile architecture means something 12 along the lines of DMA servers forming a network 13 through peer-to-peer connections. 14 So are you saying you also need the word 15 "associative" to indicate peer-to-peer connections? 16 MR. PRICE: Objection. Misstates testimony. 17 A. Well, I think DMA, the term "DMA," in the 18 context of the '988 patent, indicates that the 19 DMA servers communicate with each other via 20 peer-to-peer connections. And so just the term 21 "DMA" is sufficient. But -- well, in column 2, the 22 description of figure 4, lines 19 through 20,	56 1 A. Yes, I'm there. 2 Q. There, you state that, [As read] In my 3 opinion, distributed mobile architecture, DMA 4 networks, are not legacy communication networks. 5 Do you see that? 6 A. I do. 7 Q. And you're using this for your construction 8 of what DMA is supposed to mean; correct? 9 A. Yes, that is correct. 10 Q. In particular, in paragraph 59 of your 11 declaration, you state that, [As read] Distributed 12 mobile architecture, DMA, should be construed as 13 three different things. 14 And one of them is, that is not a legacy 15 communication network. 16 A. You are correct, Counselor. 17 Q. Are you saying that a distributed mobile 18 architecture is not a legacy communication network? 19 A. Yes. A distributed mobile architecture is 20 not a legacy communications network. 21 Q. Is a -- 22 A. This is one of the three characteristics of

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57 1 a distributed mobile architecture. 2 Q. Is a distributed mobile architecture a 3 network? 4 A. Well, it is a network architecture. So I 5 think we can say yeah, it's a network architecture, 6 and, therefore, it is a network. 7 Q. Okay. And then -- well, going back to the 8 figure on page 36 of your declaration. 9 A. Yes. 10 Q. There, in the blue box, you have -- is that 11 a -- what you've highlighted in blue, is that a 12 network architecture? 13 MR. PRICE: Objection. 14 A. Well, this is an example of a network that 15 follows the DMA as an architecture. 16 Q. Paragraph 74, you state that, [As read] A 17 legacy network includes existing public switch 18 telephone network, PSTN, services, voice over 19 internet protocol, VoIP, systems, wireless 20 communication systems, and other systems. 21 Do you see that? 22 A. Yes.	59 1 Q. As included in your construction that 2 references a legacy network. 3 A. Yeah. These are -- it is my opinion that 4 these are examples of legacy networks in the context 5 of the '988 patent. 6 Q. And you gave the opinion that all of the 7 examples of legacy networks in the '988 patent have 8 one thing in common, that they are not private 9 peer-to-peer networks; correct? 10 A. Yes. 11 Q. Why did you say private peer-to-peer 12 networks? What does "private" add? 13 A. Well, in this -- in this context, in the 14 context of my paragraph 74, a private peer-to-peer 15 network is a network of DMA servers. And it is 16 private because it's not open to -- in general, it's 17 not open to anybody to connect to. 18 Q. So in your opinion, a distributed mobile 19 architecture is private; correct? 20 A. Well, I think we can -- again, in this 21 context, I think we can add this, that the 22 peer-to-peer connections are between DMA servers.
58 1 Q. So is that what the board should consider 2 you mean by legacy communication networks: Existing 3 PSTN services, VoIP systems, wireless communication 4 systems, and other systems? 5 A. Well, I think -- I think we can say yes. 6 Obviously, this is how the inventor is describing 7 legacy networks at the time of the invention. 8 Q. And then if you go to the next sentence in 9 paragraph 74, you recite, [As read] Further examples 10 of legacy networks being a wireless communication 11 network serviced by an MSC, a public internet 12 protocol IP network, an American National Standards 13 Institute 41 network. 14 Do you see that? 15 A. Yes. 16 Q. So the board should consider all of these 17 networks that you've identified in paragraph 74 as 18 excluded by your construction that references a 19 legacy network; correct? 20 MR. PRICE: Objection. 21 A. You said exclude or include? I did not 22 understand.	60 1 And in this sense, it is private. 2 Q. Okay. But we said earlier that a 3 peer-to-peer network can exist over the internet; 4 correct? 5 MR. PRICE: Objection. 6 A. I generally remember that discussion in 7 some -- in some contexts. 8 Q. So in that situation, where you have an 9 alleged DMA server that is communicating with the 10 cloud, is that a private peer-to-peer network? 11 MR. PRICE: Objection. Foundation. 12 A. Well, I did not -- to the extent that 13 question is related to infringement analysis, I did 14 not do any infringement analysis and did not 15 analyze -- so I specifically didn't analyze 16 connections to the cloud. But DMA servers are 17 connected via -- they can be connected via an IP 18 network. 19 Q. And DMA servers connected by an IP network 20 are private peer-to-peer connections? 21 MR. PRICE: Objection. 22 A. Well, it's not the -- it's not the fact that

61 1 they're connected via an IP network that makes them 2 private, makes the network private. The network is 3 private because it's formed by the DMA servers. The 4 peer-to-peer connections are between DMA servers. 5 Q. Okay. 6 A. And in this sense, it's private. 7 Q. If you could turn to paragraph 55 in your 8 first declaration, the -- 9 A. Oh, the June declaration? 10 Q. Correct. Paragraph 55. 11 A. Yes, I'm looking at it. 12 Q. In paragraph 55, you discuss Lemko's 13 inventions create a visualized network. 14 Do you see that? 15 A. Yes. 16 Q. Did visualized networks exist before Lemko's 17 inventions? 18 A. Did virtual -- 19 MR. PRICE: Objection. Foundation. 20 A. Did virtualized networks exist before 21 Lemko's invention? 22 Q. Correct.	63 1 virtual SGSN, which are connected via the GN 2 interface to an SGSN. So figure 5 shows that just 3 the GGSN and SGSN data, part of element 152 those 4 are virtual. I don't think the network is virtual. 5 Q. What is a GN interface? 6 A. Excuse me? 7 Q. A GN interface? 8 A. It's one of the interfaces in -- within the 9 cellular core network. 10 Q. Is a GN interface a way to connect gateways 11 across a network? 12 A. Well, that's a slightly more general 13 statement. I think the GN interface is an interface 14 to particular elements of the cellular core network 15 such as, for example, the SGSN. 16 Q. And SGSN is a gateway? 17 A. The SGSN -- well, the acronym is serving 18 GPRS support nodes, so the G is not a gateway but 19 comes from GPRS. So it's a -- it is an important 20 element of the cellular core network. In 21 particular, in connection with the capability for 22 data communication using cellular network at the
62 1 A. I mean, based on what I have seen, I don't 2 think so. That's -- that's -- I think that would be 3 my -- a truthful answer to your question. 4 Q. Can you turn to the Flore reference and 5 figure 5? 6 A. Yes. And I have a hard copy of it here. 7 Yes, I'm looking at it. 8 Q. So Flore's figure 5 refers to a virtual GGSN 9 and a virtual SGSN; correct? 10 A. Yes. 11 Q. And these are virtual network nodes; 12 correct? 13 A. Well, figure 5 shows an inter-AS anchor that 14 includes a virtual GPRS gateway support node and a 15 virtual serving GPRS support node. 16 Q. So Flore discloses a virtual network; 17 correct? 18 MR. PRICE: Objection. 19 A. Virtual network? 20 Q. Correct. 21 A. I don't think so. It's -- I think this 22 element 152 of figure 5 includes virtual GGSN and	64 1 time of the invention. 2 Q. If you turn to page 25 of your December 3 declaration now. 4 A. Page 25? I'm there. 5 Q. And do you see the SGSN in this figure 1 on 6 this page? 7 A. Yeah, which is figure 1 from Flore. 8 Q. Correct. 9 A. Yes. I see figure 1. 10 Q. Given this depiction, does the SGSN act as a 11 gateway for the GPRS network? 12 A. Well, I don't think Flore calls it a 13 gateway. But Flore says that the inter-AS 14 element 152 is connected to the SGSN of the GPRS 15 core network via the GN interface. And which Flore 16 does to minimize the impact to the legacy network. 17 Q. Is a DMA server recited in Lemko's claims a 18 hardware device or software device? 19 A. I think it's primarily software. 20 Q. Are the DMA servers recited in Lemko's 21 claims primarily software that's run on standard 22 off-the-shelf computers?

65 1 A. Well -- 2 MR. PRICE: Objection. 3 A. -- standard off the shelf? I mean, I think 4 we're getting into something that I did not 5 specifically analyze to be able to answer your 6 question. 7 Q. If you look at paragraph 56 of your June 8 declaration. 9 A. Yes, I'm looking at paragraph 56. 10 Q. There you state that Lemko's DMA inventions 11 implement certain functionality on to a 12 computer-readable medium running on a standard 13 server. 14 Do you see that? 15 A. Yes. 16 Q. And so is it your opinion that Lemko's 17 invention is DMA server software that can be loaded 18 on to a standard off-the-shelf computer? 19 MR. PRICE: Objection. 20 Q. I guess strike that. 21 I'm wondering what you meant by "standard 22 server."	67 1 new functionality there. 2 Q. Does Lemko's HLR contain more or less 3 information than stored at the HLR of conventional 4 systems? 5 A. Whether it's more or less information, you 6 know, I find your information -- your question -- 7 excuse me -- more related to infringement. 8 Q. Well, my question for you is looking at this 9 figure that's included on page 24 of your June 10 declaration, it looks like you're saying to some 11 degree Lemko's invention is taking a massive amount 12 of storage from conventional networks and an MSC, a 13 BSC, and an HLR, and then putting those on to a disk 14 for a PC. 15 And my question to you is: Does the patent 16 itself describe how this massive amount of storage 17 is gonna be reduced and put on to a PC? 18 MR. PRICE: Objection. 19 A. So I'm trying to summarize, what is the 20 question? Does the patent summarize or explain how 21 the amount of storage is reduced? 22 Q. Yeah.
66 1 A. And the basis for my opinion in this 2 paragraph 56 of the June declaration, in my 3 statement reciting a standard server is the figure, 4 so I say, "as Lemko's demonstrative illustration 5 below shows," and this figure of the -- there is 6 like a caption for this figure. It says, "Lemko's 7 DMA is a full featured MSC plus BSC plus HLR running 8 on a PC." And so this is the basis for my standard 9 server language in this paragraph. 10 Q. So generally, Lemko's inventions are to take 11 the programming functionality of an MSC, a BSC, and 12 an HLR and put all of that on to some type of disk 13 and load it on to a PC; correct? 14 MR. PRICE: Objection. 15 A. No. I think it would be incorrect to say 16 this because while it is true that the MSC, the BSC, 17 and HLR are replaced by a disk, that's not -- that's 18 not -- it doesn't accurately describe Lemko's 19 invention. It doesn't just replace them, but now 20 these elements, having been replaced, now there is a 21 new functionality there. I mean, the -- Lemko's HLR 22 is not the same as the standard HLR. So there's a	68 1 Does the patent explain how all of the 2 programming functionality from an MSC, a BSC, and an 3 HLR are somehow put on to a PC that has way less 4 storage capacity? 5 MR. PRICE: Objection. 6 A. I cannot analyze the storage capacity of an 7 MSC and a BSC and -- to be able to answer. 8 Q. Does the patent describe how to convert 9 these, what you characterize as hardware provided 10 features of an MSC, and BSC, and HLR into software 11 that can be loaded on to a PC? 12 A. Does the patent what? 13 Q. Describe what you characterize as hardware 14 provided features of an MSC, BSC, and HLR, does it 15 describe how to change those features into software 16 that can be loaded on to a PC? 17 A. Well, I think the -- I think the patent 18 provides sufficient explanation how to -- how a 19 person of skill would go about implementing the 20 invention. 21 Q. Can you show me where the patent describes 22 converting hardware MSC, BSC, and HLR features into

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69 1 software that can be loaded on it a PC? Or is that 2 something that's just within the ordinary level of 3 skill of the art? 4 A. It's -- it was not within the capabilities 5 of a person of ordinary skill in the art without the 6 '988 patent. It's not something that a person of 7 skill just knew. But with the '988 patent, so the 8 patent gives figure 1, figure 2, figure 3 are 9 different embodiments, illustrative embodiments of a 10 DMA server. 11 Q. None of the embodiments identified in 12 figures 1, 2, and 3 provide any detail as to how to 13 convert an MSC, an HLR, and a BSC into software that 14 can be loaded on to a computer; correct? 15 A. Well, it's -- first, they describe three 16 form factors of a DMA server. Then figure 5 is a 17 block diagram, is a block diagram of a DMA server. 18 And so it includes a number of elements. And some 19 of these elements in figure 5 describes as having -- 20 as having MSC functionality, some having BSC 21 functionality. And given these descriptions, then a 22 person of skill in the art had the capability to	71 1 Q. Okay. Throughout your report you refer to 2 expensive backhaul connections? 3 A. Yes, I do. 4 Q. What are the connections you're referring to 5 as expensive backhaul connections? 6 A. Connections using T1/E1 lines. 7 Q. And are those -- are you referring to 8 connections between BSCs and MSCs? 9 MR. PRICE: Objection. 10 A. Well, I -- here I state that expensive 11 backhaul connections connect BSCs to MSCs. 12 Q. Am I correct that you have not provided an 13 opinion that there are expensive connections -- 14 strike that. 15 Am I correct that you have not opined that 16 there are expensive back hall connections from a 17 network to an SGSN? 18 A. I think the answer is not quite. I think 19 you are not quite correct. And thank you, again, 20 for asking this question. 21 You're not quite correct, because I do say 22 in the footnote on page 13 that T1/E1 systems were
70 1 implement this invention. 2 Q. And am I correct that nothing in figure 5 3 provides any detail as to how to convert an MSC, an 4 HLR, and a BSC into software that can be loaded on 5 to a computer? 6 MR. PRICE: Objection. Asked and answered. 7 A. I don't think you are correct, because based 8 on my understanding of patent law, a patent doesn't 9 need to teach what is known in the field. And 10 preferably doesn't teach what is known. 11 So the patent here provides -- there are 12 even different form factors of a DMA server and then 13 there is a block diagram that's a functional block 14 diagram of a DMA server in figure 5. And -- and I'm 15 not even -- I'm not considering even these figures 16 in isolation. But these figures together with the 17 rest of the patent. And so based on these 18 descriptions, a person of skill in the art at the 19 time knew how to implement this. 20 Q. If you could turn to paragraph 37 of your 21 December declaration. 22 A. 37, yes.	72 1 widely used in telecommunications when 2G 2 technologies, including GSN, were being rolled out 3 and deployed. Now, I did not investigate thoroughly 4 all deployments, but I am here providing evidence 5 that T1/E1 connections were widely used. And I 6 think that -- so for this reason, you are not quite 7 correct. They could be used for -- they were used 8 for connections in the core network, including 9 connections to SGSN. 10 Q. Well, you provided an opinion that T1/E1 11 communication lines were used with respect to 2G 12 systems; correct? 13 A. Yes, I'm providing an opinion that they were 14 used when 2G technologies were being rolled out and 15 deployed. 16 Q. When were 2G technologies being rolled out 17 and deployed? 18 A. In the 1990s. 19 Q. Okay. And then at the time of Lemko's 20 priority date in 2008, the networks were switching 21 to 4G; correct? 22 A. Well, a little bit after that. So at the

73 1 time of the priority date of the patent, it was -- 2 if we want to be more accurate, maybe 3.5G was being 3 deployed. 4 Q. Well, if you look at paragraph 54 of your 5 declaration, you actually state that, [As read] In 6 2006 the industry was transitioning from 3G to 4G. 7 Correct? 8 A. Yes. 9 Q. Okay. And I did not see an opinion in your 10 declaration as to the connections used for 3G or 11 4G communication technologies. 12 Did you provide an opinion on that? 13 A. Backhaul connections? 14 Q. Correct. 15 A. Well, as I stated just a moment ago, 16 T1/E1 connections were extensively used. And they 17 were used not only for 2G -- in connection with the 18 deployment of 2G networks, they were also used in 19 connection with the deployment of 3G networks. Now, 20 I did not investigate beyond -- beyond this and 21 exact deployments. 22 MR. RUECKHEIM: Objection. Nonresponsive.	75 1 the MSC. 2 Do you see that? 3 A. Yes. 4 Q. And you say that, [As read] The SGSN is 5 responsible for keeping track of which UEs are 6 registered to which BSCs or NodeBs. 7 Do you see that? 8 A. Yes. 9 Q. How does an SGSN in conventional systems 10 keep track of which UEs -- the UE information? 11 MR. PRICE: Objection. Foundation. 12 A. Maybe we can look at this reference. 13 Q. Which reference is exhibit -- 14 A. Exhibit 2025. 15 Q. 2025. 16 (Exhibit 2025, previously marked, ^ is 17 attached to the transcript ^ was retained by 18 counsel.) 19 MR. RUECKHEIM: Okay. I just put 20 IPR Exhibit 2025 into the chat. 21 A. I'm looking at Exhibit 2025. 22 Q. Okay. And just for the record, Exhibit 2025
74 1 Q. My question was, I did not see an opinion in 2 your declaration as to the connections used for 3 3G or 4G communications. And you haven't provided 4 any opinion as to the backhaul connections for 3G or 5 4G in your report, correct, in your declaration? 6 A. Well, I think I -- like I said, first 4G, I 7 did not investigate that because 4G was deployed 8 after this invention. But the use of 9 T1/E1 connections did not stop immediately when the 10 deployment of 3G started. And so in -- in response 11 to your question, in my declaration, I said that 12 T1/E1 connections were extensively used, and 13 which -- which is -- and I provide evidence that 14 this is true. And it's my opinion that that did not 15 stop immediately when 3G appeared. So that's -- 16 this is what I state about backhaul connections 17 for 3G. 18 MR. RUECKHEIM: Same objection. 19 Q. If you could turn to paragraph 41 of your 20 December declaration. 21 A. Yes, I'm looking at it. 22 Q. You refer to an SGSN performing the role of	76 1 is an article titled, "Review: General Packet Radio 2 Service (GPRS): Architecture, Interfaces and 3 Deployment." It looks like it is copyright 2001. 4 A. Yeah, copyrighted 2001? 5 Q. And my question was, how does the SGSN in 6 GPRS keep track of which UEs -- strike that. 7 How does the SGSN in GPRS keep track of UE 8 information? 9 Does it have an HLR, a VLR, or something 10 different? 11 A. No. They do not contain HLR and VLR. But 12 there is a connection to an HLR and a VLR, which is 13 in figure 1 of this paper. 14 Q. Well, you state in your -- I just lost it. 15 Here it is. In your paragraph 41 of your December 16 declaration, you state that, [As read] The SGSN 17 performs a role of the MSC, and it also is 18 responsible for keeping track of which UEs are 19 registered to which BSCs. 20 So how does the SGSN keep track of which UEs 21 are registered at which BSCs? 22 A. Well, the -- for example, this paper,

77 1 Exhibit 2025, on page 6 of the PDF, that's page 82 2 of the paper, it talks about the serving 3 GPRS support node. And so what -- the serving GPRS 4 node, the information that it has includes the 5 mobile station number, a way to identify the mobile 6 station. Also, what is the state and address of the 7 VLR currently serving the mobile station. So things 8 like that. This is how it keeps track of which UE 9 is registered to which base station controller. 10 Q. And if you turn to paragraph 54 of your 11 December declaration. 12 A. I am looking at it. 13 Q. Take a look at paragraph 54, and tell me 14 whether we agree that at the time of the Flore prior 15 art, conventional systems could transfer voice and 16 data calls from a BSC to an SGSN and complete a call 17 without having to go through an MSC. 18 MR. PRICE: Objection. 19 A. Well, in paragraph 54, I start talking about 20 4G networks which came after, came after both Flore 21 and the '988 patent. And this 4G architecture 22 doesn't have an MSC.	79 1 A. I think a person of skill would have 2 understood that they claim DMA gateway can be 3 implemented in a number of different ways, so the 4 claims -- the challenged claims recite DMA servers 5 and DMA gateway. And so there is a difference. 6 Functionally, there is a difference between these 7 terms. 8 Q. Functionally, there's a difference. 9 But would a person of ordinary skill 10 understand these are two different, physical things? 11 A. I didn't investigate implementation issues 12 to be able to answer. 13 Q. In paragraph 66 of your declaration, you 14 state that, [As read] The DMA requires call routing 15 functionality on DMA servers. 16 Using the same logic, does DMA require call 17 routing functionality on DMA gateways? 18 A. DMA gateways are connected using a DMA -- a 19 gateway communications network while the DMA servers 20 are connected through peer-to-peer connections. 21 Q. But the DMA gateways exist within a DMA; 22 correct?
78 1 Q. Look at the figure on page 19 of your 2 December declaration. 3 A. Yes. 4 Q. Do you see the box labeled "CGW"? 5 A. Yes. 6 Q. Then do you see the box labeled "Media GW"? 7 A. It's called "Media GW," yes. 8 Q. And next to that, there's the "SS7GW"? 9 A. Yes. 10 Q. Those were all gateways; correct? 11 A. I think GW stands for gateway, yes. 12 Q. Are those the DMA gateways as recited in the 13 '988 claims? 14 A. It doesn't seem to me that they are 15 DMA gateways. 16 Q. And why not? 17 A. I did not investigate this question. 18 Q. Well, my general question is, does the 19 claims recite a DMA gateway and a DMA server? 20 And in the context of the '988 patent, is 21 that two things or one thing? Like, two physical 22 things or one combined unit.	80 1 MR. PRICE: Objection. 2 A. The DMA gateways, each DMA gateway is 3 connected to a DMA network. 4 Q. Are DMA gateways nodes in a DMA? 5 A. In a DMA network, yes, because each DMA 6 gateway is connected to a DMA network, and it's a 7 node on the DMA network. 8 Q. And do you have an opinion, one way or the 9 other, whether the DMA gateway nodes are required to 10 have call routing functionality? 11 A. Well, the way -- at least the way I 12 understand your question, the last limitation of 13 Claim 1 says, [As read] Routing the communication 14 from the first DMA gateway to the target device by 15 relaying the communication from the first 16 DMA gateway to the second DMA gateway via the 17 DMA gateway communications network. 18 So this is what the DMA gateways are doing. 19 Q. And you would agree with me that relaying 20 communication -- strike that. 21 Yeah. You would agree with me that relaying 22 communications between two gateways is call routing

81 1 functionality? 2 A. Well, I agree that the claim term says what 3 it says, that routing the communication from the 4 first DMA gateway to the second via the -- by 5 relaying the communication from the first gateway to 6 the second via the communications network, the 7 gateway communications network. 8 Q. Okay. 9 MR. RUECKHEIM: Let's take a break. I know 10 you have a stop at 2. Let's see what I can do to 11 severely shorten my outline. 12 THE WITNESS: Okay. 13 (A short break was had.) 14 BY MR. RUECKHEIM: 15 Q. Welcome back, Dr. Cooklev. 16 If you could look at paragraph 86 of your 17 declaration from December. 18 A. 86? 19 Q. Correct. 20 A. Yes. Looking at it. 21 Q. There, you discuss, [As read] Flore connects 22 different legacy networks and does not purport to	83 1 AS anchor; correct? 2 A. Yeah. That's the idea of Flore. 3 Q. Okay. If you could turn to paragraph 84, so 4 two paragraphs up. 5 A. 84? 6 Q. Correct. 7 A. Yes, I am there. 8 Q. You distinguish Flore because you say that 9 it has -- sorry -- it does not have peer-to-peer 10 connections; correct? 11 A. Flore doesn't have peer-to-peer connections, 12 that's correct. 13 Q. Turn to paragraph 30 in Flore. 14 A. 30. 15 Q. Yep. 16 A. Yes, I am looking at it. 17 Q. Paragraph 30 states that it's E-UTRAN 130 is 18 described in a 3GPP document; correct? 19 A. Yes. 20 Q. And is it an E-UTRAN 3G or 4G technology? 21 A. 4G. 22 Q. 4G.
82 1 provide any modification to the underlying networks. 2 Do you see that? 3 A. Yes. 4 Q. Is it your opinion that providing 5 modifications to legacy networks could make -- 6 strike that. 7 You provided a claim construction opinion in 8 this case that DMA server excludes legacy 9 communication networks; correct? 10 A. Yes. 11 Q. Okay. And, actually, I meant you provided 12 an opinion in this case that DMA excludes legacy 13 communication networks; correct? 14 A. I think that's the same thing as your last 15 question. Yes. 16 Q. Is it your opinion that a modified legacy 17 communication network is outside of that definition? 18 A. Well, this -- there is no such thing as 19 modified legacy network. It's either legacy or it's 20 not. 21 Q. Okay. So Flore does modify the existing 22 communications network by adding an aGW in an	84 1 Okay. So Flore is describing a 4G 2 technology; correct? 3 MR. PRICE: Objection. 4 A. Which one is describing 4G? 5 Q. Flore. 6 A. Flore? Well, this exactly this paragraph 30 7 that we are looking at is describing UTRAN 120. And 8 UTRAN 120 that's 3G and generally UTRAN is 9 synonymous with 3G. 10 Now, E-UTRAN 130 and VoIP packet 150, they 11 are 4G elements. And however at the time of Flore, 12 the standard, the 3GPP standard was not developed. 13 So Flore refers to being described in 3GPP TR 14 25.912. TR is a technical report. That's not a 15 standard. It is for information only during the 16 standard development process. These technical 17 reports are produced so because there wasn't the 18 standard so Flore refers to TR 25.912. 19 Q. Okay. Can we agree that 4G used 20 peer-to-peer connections? 21 A. 4G used? 22 Q. Peer-to-peer.

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85 1 MR. PRICE: Objection. 2 A. Well, but not Flore. And my task here was 3 to -- talking overall, my task was to respond to the 4 declaration submitted by Mr. Proctor, as well as the 5 petition. And I think in the declaration of 6 Mr. Proctor and the petition it was Flore. And I 7 don't think Flore has any peer-to-peer connections. 8 Q. We can agree, though, that 4G used 9 peer-to-peer connections? 10 MR. PRICE: Objection. Foundation. 11 A. That is -- that is -- I have no basis to 12 agree with you on this. 13 Q. Well, do you know one way or the other 14 whether peer-to-peer connections were known prior to 15 Lemko's patents with respect to telephony systems? 16 A. I think in the abstract, the idea of 17 peer-to-peer connections -- I guess the idea of 18 peer-to-peer connections possibly was known. Not in 19 the way that's claimed in the Lemko patents, as I 20 said, but in the abstract just this idea that 21 devices could -- could be connected. Just computer 22 devices could be connected in a peer-to-peer	87 1 whether it's -- whether it is cited. 2 Yeah. Which page? 3 Q. Oh, page 25. 4 A. I'm there. 5 Q. Okay. And do you see on page 25 where it 6 discusses a peer-to-peer communication? 7 A. Yes. 8 Q. Okay. So earlier we were discussing whether 9 4G, whether it was known to have peer-to-peer 10 connections in 4G. 11 After reviewing this document, can we agree 12 that it was known in 4G to have peer-to-peer 13 communications? 14 A. So this document mentions peer-to-peer only 15 on page 25, where it says that there is a protocol 16 architecture for which there are service access 17 points for peer-to-peer communication. Now, I -- 18 for -- for a few reasons, I would not agree with you 19 that this discloses peer-to-peer connections in the 20 sense of the '988 patent. 21 And I should say the first reason is, as I 22 said, I may have seen this document. I did not
86 1 fashion, I think generally something like that maybe 2 it was known. 3 Q. And I just put a document in the chat. You 4 can let me know when you have it open. 5 MR. RUECKHEIM: And we can mark this as IPR 6 exhibit -- I think we might be on IPR Exhibit 2. 7 A. I got it. This is 25.912. 8 (Exhibit 2 was marked for identification 9 and is attached to the transcript.) 10 Q. Yes, exactly. 11 So IPR Exhibit 2 is labeled "3GPP TR 25.912 12 V7.00." 13 Have you seen this document before? 14 A. Not in connection with my work on this case. 15 In general, I might have seen it. 16 Q. Is this the technical report referred to in 17 paragraph 30 of Flore? 18 A. It seems to me yes. 19 Q. If you can turn to -- what page is it -- 20 8 is it? Let's see. It has a page number on the 21 top 25, section 8. 22 A. And if I may, I'm just checking here the --	88 1 specifically study this, and I don't think this 2 is -- again, I don't think it's something that 3 Mr. Proctor has opined on. But putting this aside, 4 so, obviously, in general I would need more time to 5 form an opinion, to study this document and form an 6 opinion. 7 But putting -- even putting this aside, 8 there are service access points for peer-to-peer 9 communication in which are marked with circles at 10 the interface between sublayers. These -- so the 11 peer-to-peer is -- doesn't seem like this is between 12 devices. It is between sublayers. And at least for 13 this reason -- obviously, I am giving you now a 14 quick opinion, but at least for this reason, it's 15 very different peer-to-peer from the '988 patent. 16 And as I said, this confirms my opinion that 17 I just testified a moment ago that the idea of 18 peer-to-peer, in general, was something that was 19 known. Now, outside of the particular context of 20 the challenged claims. 21 Q. Well, you see the title for the figure we're 22 referring to on page 25 says it's the "Layer 2

89 1 Structure for DL in eNB and aGW"? 2 A. Yeah, it says layer 2 structure for down 3 link. 4 Q. And it refers to aGW; correct? 5 A. It refers to evolved NodeB and aGW, yes. 6 Q. Okay. And then in Flore, the E-UTRAN 7 network also has eNodeBs and aGW communications? 8 A. Yes, Flore has evolved NodeBs and aGW. 9 Q. Okay. If you can turn to paragraph 92 of 10 your December declaration. 11 A. Yes. 12 Q. There it looks like you have -- you're 13 discussing the claim term "communication 14 information"; correct? 15 A. Yes. 16 Q. And it looks like you're stating that the 17 claim term requires information about something is 18 received at a first DMA gateway, information that 19 indicates one or more devices accessible by a DMA 20 server and legacy communication network, information 21 about storing a home DMA register, and information 22 about a target device.	91 1 claim limitation. I think -- I think you said it 2 correctly though. 3 Q. Okay. And the claim does not require the 4 communications information to include anything else 5 other than identifying this one or more devices; 6 correct? 7 MR. PRICE: Objection. 8 A. Oh, I think the correct answer is not quite 9 because the claim language says, [As read] one or 10 more devices accessible by one of a DMA server and a 11 legacy communications network, wherein the first DMA 12 gateway and the second DMA gateway participate in a 13 DMA gateway communications network. 14 But then there are -- regarding the 15 communications information, there is more so -- 16 (Indiscernible crosstalk.) 17 A. So the next limitation, storing the 18 communications information, also pertains to that. 19 Q. What does the claim require for the content 20 of the communications information? 21 A. Well, it requires that, [As read] the 22 communications information is indicating one or more
90 1 Do you see that? 2 A. I do. 3 Q. And what does the plain claim language of 4 Claim 1 require for communications information? 5 A. What does the plain language of Claim 1? 6 Q. Correct. 7 A. Let me make sure I understand the question 8 correctly, that the question is: What does Claim 1 9 require regarding communications information? 10 Q. Yes, correct. I might make it easier. 11 Claim 1 recites that the communications 12 information indicating one or more devices 13 accessible by one of a DMA server and a legacy 14 communication network. 15 Do you see that? 16 A. Yes. 17 Q. So the communication information that's 18 recited in Claim 1 has to indicate one or more 19 devices that are accessible by a DMA server and a 20 legacy communication network; correct? 21 A. Well, yes, that's the first limitation, and 22 I'm not going to come up with new language for this	92 1 devices accessible by one of a DMA server and a 2 legacy communications network. 3 And -- well, then in the receiving 4 limitation, [As read] receiving a communication in 5 the first DMA gateway for a target device indicated 6 by the communications information to be served by 7 the second DMA gateway. 8 Q. Am I -- can we agree that the claim does not 9 expressly require the communications information to 10 identify location information? 11 MR. PRICE: Objection. 12 A. Well, I -- I am not sure I can agree with 13 you because in paragraph 98, I state that, [As read] 14 The '988 patent discloses that the communications 15 information includes registered information, such as 16 home location registered information stored in the 17 home DMA register. 18 Q. I'm not talking about what the '988 patent 19 discloses. I'm talking about what it claims. 20 And so in Claim 1 of the '988 patent, is it 21 your opinion that the communications information 22 must include location information?

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93 1 A. No. I understand you are talking about the 2 claims. But based on my understanding how patents 3 should be understood, the claims should be 4 understood in the context of the specification. 5 Q. So your opinions are based on construing 6 communications information to require inclusion of 7 location information. 8 MR. PRICE: Objection. 9 A. I -- I wouldn't say construing 10 communications information. First, as I -- I mean, 11 I can repeat it. At least based on my 12 understanding, the claims should be understood in 13 the context of the specification. And that, as I 14 state in paragraph 97 -- no, one second. In 15 paragraph 92 of my declaration that we were talking 16 about, there are -- there are four -- four 17 requirements towards this communications 18 information. And that's how a person of skill would 19 have understood communications information in the 20 context of the claim. 21 Q. Okay. One more question because I was told 22 you have a hard cutoff at 2 Pacific, which was	95 1 HLR known in the prior art. 2 Q. Okay. 3 MR. RUECKHEIM: No further questions. 4 MR. PRICE: We have no redirect. 5 THE WITNESS: Thank you, Counsel. 6 (Off the record at 4:07 p.m.) 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
94 1 four minutes ago, so I apologize. 2 So final question, Lemko's patents discuss 3 CLRs, HLRs, and VLRs. 4 Are those something Lemko invented, or were 5 they known in conventional prior art systems? 6 A. Although the acronym -- let's say HLR and 7 VLR, the acronym is the same. The HLR in the 8 invented by or described in Lemko's patents is 9 different from the HLR in the prior art. 10 Q. In what way? 11 A. It's different because it's -- the 12 functionality is distributed. And -- and I am 13 just -- if you are looking at my declaration, and so 14 here is what -- in paragraph -- for example, in 15 paragraph 47 of my December declaration, I state 16 that, [As read] The '988 patent discloses that home 17 location register and visitor location register 18 information is exchanged between DMA gateways 19 servicing the different networks. 20 And this continues with paragraph 48. 21 And -- I mean, this is one way in which the HLR that 22 is described in these patents is different from the	96 1 CERTIFICATE OF COURT REPORTER - NOTARY PUBLIC 2 3 I, TIFFANY M. PIETRZYK, Certified Shorthand 4 Reporter No. 084-004371, CSR, RPR, CRR, and a Notary 5 Public within and for the State of Illinois, do 6 hereby certify: 7 That TODOR COOKLEV, Ph.D., the witness whose 8 deposition is hereinbefore set forth, was duly sworn 9 by me before the commencement of such deposition and 10 that such deposition was taken before me and is a 11 true record of the testimony given by such witness. 12 I further certify that the adverse party, 13 LEMKO CORPORATION, was represented by counsel at the 14 deposition. 15 I further certify that the deposition of 16 TODOR COOKLEV, Ph.D. occurred virtually via Zoom 17 videoconference, on Monday March 11, 2024, 18 commencing at 11:08 a.m. CST to 4:07 p.m. CST. 19 I further certify that I am not related to 20 any of the parties to this action by blood or 21 marriage, I am not employed by or an attorney to any 22 of the parties to this action, and that I am in no

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