

1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD
3 -----:
4 SAMSUNG ELECTRONICS CO., LTD., :
5 SAMSUNG ELECTRONICS AMERICA, :
6 INC., AND APPLE INC., :
7 Petitioner, : Case No.:
8 vs. : IPR2015-01443
9 IXI IP, LLC, :
10 Patent Owner. :
11 -----:

12
13
14 Videotaped Deposition of SAYFE KIAEI, PH.D.
15 Washington, D.C.
16 Tuesday, March 15, 2016
17 9:13 a.m.

18
19
20
21
22 Job No. BO-078404
23 Pages 1 - 185
24 Reported by: Robert M. Jakupciak, RPR

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

Deposition of SAYFE KIAEI, PH.D., held at
the offices of:

Fish & Richardson
1425 K Street, N.W.
Washington, D.C. 20005

Pursuant to Notice, before Robert Michael
Jakupciak, RPR, a Notary Public in and for the
District of Columbia, when were present on behalf of
the respective parties:

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

A P P E A R A N C E S

On behalf of the Petitioner:

INDRANIL MUKERJI, ESQUIRE
Fish & Richardson, P.C.
1425 K Street, N.W.
Washington, D.C. 20005
(202) 626-7762
mukerji@fr.com

and

KEVIN GREENE, ESQUIRE
JEREMY MONALDO, ESQUIRE
Fish & Richardson, P.C.
3200 RBC Plaza
60 South Sixth Street
Minneapolis, Minnesota 55402
(202) 783-5070

1 A P P E A R A N C E S (Cont'd.)

2 On behalf of the Patent Owner:

3 GEORGE S. HAIGHT, ESQUIRE

4 GRIFFIN N. MESMER, ESQUIRE

5 STEVE PEDERSEN, ESQUIRE

6 Pepper Hamilton, LLP

7 125 High Street

8 Boston, Massachusetts 02110

9 (617) 204-5100

10 haightg@pepperlaw.com

11 mesmerg@pepperlaw.com

12

13

14

15

16

17 Also Present: Videographer, David Cooper

18 Won Yoon

19

20

21

22

23

24

1 C O N T E N T S

2 THE WITNESS: SAYFE KIAEI, PH.D.

3 EXAMINATION PAGE NO.

4 By Mr. Haight 7

5

6

7

8 E X H I B I T S

9 EXHIBIT NO. DESCRIPTION PAGE NO.

10 Exhibit 1443-1 Notice of Deposition 14

11 Exhibit 1443-2 Sayfe Kiaei Resume' 15

12 Exhibit 1443-3 Declaration of 21

13 Dr. Sayfe Kiaei

14 Exhibit 1443-4 U.S. Patent 7,925,532 B2 31

15 Exhibit 1443-5 U.S. Patent 6,622,017 B1 118

16 Exhibit 1443-6 IEEE Std 802.11b-1999 121

17 Exhibit 1443-7 Network Working Group 132

18 Memo dated August 1999

19 Exhibit 1443-8 Patent Application No. 146

20 WO 01/76154 A2

21 Exhibit 1443-9 Article from Computer 166

22 Communication Review

23

24 (Exhibits attached to transcript.)

1 P R O C E E D I N G S

2 Whereupon,

3 VIDEOGRAPHER: Here begins video disk 09:11:25
4 number one in the video deposition of Sayfe Kiaei, 09:13:15
5 Ph.D., in the matter of Samsung Electronics Company, 09:13:18
6 LTD and Samsung Electronics America, Inc., and Apple 09:13:25
7 Inc. versus IXI IP, LLC, in the United States Patent 09:13:32
8 and Trademark Office, Before the Patent Trial and 09:13:38
9 Appeal Board, for Case Number IPR2015-01443. 09:13:42

10 Today is Tuesday, March 15, 2016. The 09:13:51
11 time on the video monitor is 9:13:09 a.m. We are 09:13:55
12 now on the record. My name is Dave Cooper. I'm the 09:14:01
13 certified legal video specialist with DTI Court 09:14:05
14 Reporting Services, 21 Church Street, Suite 150, 09:14:08
15 Rockville, Maryland, 20850. 09:14:15

16 This video deposition is taking place at 09:14:16
17 Fish & Richardson, P.C. in the Dupont Conference 09:14:20
18 Room, located at 1425 K Street, Northwest, 09:14:24
19 Washington, D.C., 20005. Would counsel and all 09:14:28
20 present please introduce themselves and who they 09:14:32
21 represent. 09:14:35

22 MR. MUKERJI: Good morning. Indranil 09:14:35
23 Mukerji, Kevin Greene and Won Yoon, of Fish & 09:14:37
24 Richardson, representing Samsung, Apple and the 09:14:40

1 witness here today. 09:14:44

2 MR. HAIGHT: George Haight, of Pepper 09:14:46

3 Hamilton, on behalf of IXI IP. With me from Pepper 09:14:47

4 Hamilton is Griffin Mesmer, and from IXI, Steve 09:14:51

5 Pedersen. 09:14:56

6 VIDEOGRAPHER: The court reporter, Robert 09:14:58

7 Jakupciak, of DTI Court Reporting Services, will now 09:15:00

8 swear in the witness. 09:15:03

9 Whereupon, 09:15:04

10 SAYFE KIAEI, PH.D, 09:15:04

11 called as a witness, and having been first duly 09:15:04

12 sworn, was examined and testified as follows: 09:15:05

13 EXAMINATION BY COUNSEL FOR THE PATENT OWNER 09:15:05

14 BY MR. HAIGHT: 09:15:16

15 Q Good morning, Dr. Kiaei. 09:15:21

16 A Good morning, counsel. 09:15:22

17 Q My name is George Haight. I'm here on 09:15:24

18 behalf of IXI. Today I'll be taking your 09:15:27

19 deposition. Have you had your deposition taken 09:15:31

20 before? 09:15:33

21 A Yes, I have, counsel. 09:15:34

22 Q How many times? 09:15:35

23 A I have done it three times before. 09:15:36

24 Q And when was the last time you were 09:15:38

1 deposed?

09:15:41

2 A It was roughly five, six months ago, the
3 summer, last summer.

09:15:42

09:15:49

4 Q So I'm sure you are familiar with the
5 proceedings, but I would like to go over just a few
6 ground rules as to how today and the next few days
7 will go. Is that okay?

09:15:51

09:15:53

09:15:56

09:15:59

8 A Yes, please. Thank you.

09:16:00

9 Q So today I'll be asking you questions. I
10 will try my best to make sure those answers are
11 clear. If you don't understand any part of my
12 question, please ask and I will try to rephrase or
13 explain. If you do provide an answer, I will assume
14 that you understood the question. Is that fair?

09:16:01

09:16:03

09:16:07

09:16:09

09:16:13

09:16:16

15 A Thank you. Yes, it is.

09:16:18

16 Q From time to time your counsel may object.
17 Unless he specifically asks you not to answer, you
18 should answer the question.

09:16:20

09:16:23

09:16:27

19 We -- today's purpose is not to have a
20 marathon, so if at any time you need to take a break
21 or need to use the rest room, please let me know.

09:16:34

09:16:36

09:16:41

22 All I will ask is that if there is a question

09:16:44

23 pending, that you answer the question before we

09:16:48

24 break. Is that fair?

09:16:50

1 A Yes, it is. Thank you. 09:16:51

2 Q Is there any reason you cannot give 09:16:53
3 truthful and honest testimony here today? 09:16:55

4 A No, there is not, counsel. 09:16:57

5 Q Thank you. You mentioned that you were 09:17:00
6 deposed five or six months ago; is that correct? 09:17:06

7 A Yes. I don't remember the exact date, but 09:17:12
8 it was a few months ago here in D.C. 09:17:15

9 Q Can you briefly describe the nature of 09:17:18
10 that deposition? 09:17:20

11 A In general, the nature of that deposition 09:17:26
12 was an IPR proceeding. 09:17:29

13 Q Yes. And is it fair to say you were the 09:17:32
14 expert witness in that proceeding? 09:17:38

15 A Yes, counsel, I was. 09:17:40

16 Q And can you briefly describe the subject 09:17:42
17 matter of that IPR, or the patents related to that 09:17:45
18 IPR? 09:17:49

19 MR. MUKERJI: Dr. Kiaei, you can answer 09:17:51
20 this question. I'll just caution you I don't know 09:17:52
21 what those depositions were or what you said. Just 09:17:55
22 respect any confidentiality obligations. 09:17:58

23 THE WITNESS: Thank you. 09:18:01

24 MR. MUKERJI: If you hit a point where you 09:18:01

1 feel like you are getting into something 09:18:02

2 confidential, let us know and we can talk. 09:18:04

3 A Thank you. The general subject was on 09:18:08

4 wireless communications. 09:18:11

5 Q Prior to that deposition when was the last 09:18:20

6 time you were deposed? 09:18:23

7 A It was roughly six months before that I 09:18:28

8 believe. I want to say it was around the beginning 09:18:34

9 of 2015. 09:18:38

10 Q Was that for another IPR matter? 09:18:40

11 A No, that was not. That was for a -- I 09:18:44

12 don't know what the exact legal terminology was. It 09:18:52

13 was an arbitration case for IP discussions, 09:18:55

14 licensing discussions. 09:19:00

15 Q And was your role in that arbitration as 09:19:03

16 an expert witness? 09:19:07

17 A Yes. I was a technical expert. 09:19:08

18 Q That technology related to wireless 09:19:12

19 communications? 09:19:15

20 A Yes, it was wireless communications as 09:19:15

21 well, yes. 09:19:18

22 Q I want to talk a little bit about your 09:19:24

23 preparation for this deposition today. I don't want 09:19:27

24 to get into the specifics of conversations you had 09:19:30

1 with your counsel. Obviously, that is privileged. 09:19:32

2 But there are a few questions I want to ask just 09:19:35

3 about how you went about preparing for this 09:19:37

4 deposition. 09:19:39

5 Did you meet with counsel in preparation 09:19:41

6 for today's deposition? 09:19:47

7 A For today's deposition? 09:19:50

8 Q Yes. 09:19:51

9 A Yes. I did meet with counsel for 09:19:52

10 preparing for today's deposition. 09:19:54

11 Q When did that meeting occur? 09:19:56

12 A I have been meeting them for the past two, 09:20:01

13 three days. 09:20:04

14 Q How long would you say that -- well, let 09:20:13

15 me ask a different question. Who was present at 09:20:16

16 those meetings, if you can recall? 09:20:18

17 A Primarily the counsels by Fish & 09:20:23

18 Richardson who are present here. 09:20:28

19 Q And over those two or three days how much 09:20:33

20 time would you say you spent in meetings preparing 09:20:37

21 for this deposition? 09:20:40

22 MR. MUKERJI: So, can I just -- for 09:20:41

23 clarification sake, since you have four depositions, 09:20:43

24 you keep asking about this deposition. The prep 09:20:47

1 time I will just tell you was for prepping for all 09:20:52
2 the depositions. 09:20:55

3 MR. HAIGHT: Sure. 09:20:56

4 MR. MUKERJI: Just to clarify the 09:20:57
5 question. So you can answer about this deposition 09:20:59
6 or you can answer in total, but just make it clear 09:21:00
7 what your answer is. 09:21:02

8 THE WITNESS: I appreciate it. Thank you. 09:21:04
9 I would say the last few days rather than just the 09:21:05
10 two or three days. For the last few days, boy, I 09:21:08
11 would say not only just for this deposition, but for 09:21:13
12 all the four depositions that I have. What do you 09:21:17
13 want? Hours? 09:21:24

14 BY MR. HAIGHT: 09:21:26

15 Q If you can. 09:21:26

16 A I can say roughly working hours, the last 09:21:27
17 three, four days it's been four and eight, six to 09:21:31
18 eight hours roughly for the last few days. 09:21:35

19 Q And specifically relating to this 09:21:39
20 deposition, the deposition related to IPR2015-01443, 09:21:44
21 did you review any documents during your 09:21:52
22 preparations? 09:21:55

23 A Yes, I did review documents in preparation 09:21:57
24 for -- 09:22:01

1 Q Do you recall -- sorry. I didn't mean to 09:22:01
2 interrupt. 09:22:04

3 A Absolutely. No problem. 09:22:05

4 Q Do you recall what those documents were? 09:22:06

5 MR. MUKERJI: Yes or no question. 09:22:07

6 A Do I recall what those documents were? 09:22:10

7 Yes, I do. Roughly, yes, I do. Yes. 09:22:14

8 Q What were those documents? 09:22:17

9 MR. MUKERJI: So I'm going to jump in 09:22:18

10 there. I think you are starting to get close to 09:22:20

11 work product now. You can put documents in front of 09:22:22

12 him and certainly ask him if he has reviewed this 09:22:26

13 recently and he will answer that. But sort of 09:22:28

14 asking him to describe the sum total of documents 09:22:30

15 that were used in his privileged preparations I 09:22:33

16 think is getting a bit close. I'm going to instruct 09:22:36

17 him not to answer. 09:22:39

18 MR. HAIGHT: Let's mark this as -- I 09:23:04

19 think, counsel, because we have four different 09:23:06

20 proceedings over the next couple days, what I would 09:23:09

21 like to do with the exhibits is I'm going to mark 09:23:10

22 them with the first four letters -- I guess the last 09:23:12

23 four letters of the IPR, so the first exhibit will 09:23:16

24 be 1443-1. 09:23:20

1 (1443 Exhibit Number 1 09:23:23
2 was marked for identification.) 09:23:23
3 MR. MUKERJI: Yes. I understand. Thank 09:23:25
4 you. Counsel, we may be missing some pages of the 09:23:26
5 exhibit. I have got the cover and certificate of 09:23:53
6 service. Maybe it's just a photocopying error. 09:23:57
7 MR. HAIGHT: Yep. Here. You can have 09:24:16
8 that. I apologize. 09:24:18
9 BY MR. HAIGHT: 09:24:19
10 Q Dr. Kiaei, can you just confirm that -- 09:24:20
11 no. You have a bad one, too. 09:24:23
12 MR. MUKERJI: I will give the witness the 09:24:26
13 good one, and if you don't mind, I'll just look over 09:24:28
14 his shoulder. 09:24:30
15 MR. HAIGHT: That's fine. 09:24:31
16 THE WITNESS: Do you want me to put the 09:24:32
17 Exhibit Number on this one? 09:24:34
18 MR. HAIGHT: Yes. If you wouldn't mind. 09:24:35
19 MR. MUKERJI: Let the record reflect that 09:24:42
20 Dr. Kiaei is removing the exhibit sticker from an 09:24:44
21 incorrectly photocopied exhibit and putting it on 09:24:47
22 the correct one. 09:24:51
23 THE WITNESS: That doesn't have a second 09:25:05
24 page. 09:25:06

1 MR. HAIGHT: That's fine. 09:25:06

2 BY MR. HAIGHT: 09:25:10

3 Q Just to confirm, there is text on the 09:25:11

4 second page of that? 09:25:14

5 A Yes, there is. There is text on the 09:25:15

6 second page. 09:25:18

7 Q Do you recognize what's been marked as 09:25:20

8 Exhibit 1443-1? 09:25:22

9 A I don't recall it. 09:25:29

10 Q Okay. For the record, that is the Notice 09:25:29

11 of Deposition for Case Number IPR2015-1443. I'll 09:25:32

12 just ask, doctor, is it your understanding that you 09:25:44

13 are here today specifically to discuss the subject 09:25:46

14 matter of IPR2015-1443? 09:25:49

15 A Yes. I am here to discuss the deposition 09:26:01

16 on that particular subject matter you just 09:26:03

17 mentioned. 09:26:06

18 Q Thank you. You can set that aside. 09:26:07

19 A Thank you. 09:26:10

20 MR. HAIGHT: I'm going to hand you what we 09:26:31

21 will mark as Exhibit 1443-2. 09:26:32

22 (1443 Exhibit Number 2 09:26:36

23 was marked for identification.) 09:26:36

24 THE WITNESS: Thank you. 09:26:55

1 BY MR. HAIGHT:

09:26:56

2 Q Feel free to look through the entire
3 exhibit, but I will ask you if you recognize that
4 document when you've had a chance to review it?

09:27:03

09:27:05

09:27:08

5 A Yes, I do recognize this document.

09:27:14

6 Q What is Exhibit 1443-2?

09:27:17

7 A It is a copy of my vitae, resume'.

09:27:24

8 Q And this resume' was submitted with your
9 declaration in this IPR; is that correct?

09:27:35

09:27:38

10 A Yes, it was.

09:27:42

11 Q As far as you are aware, is this CV or
12 resume' still up-to-date?

09:27:49

09:27:52

13 A It is not up-to-date. It is at least I
14 would say almost a year old. There has been a
15 number of changes, additions to that. But as of the
16 date I sent to them it was up-to-date.

09:27:58

09:28:06

09:28:09

09:28:12

17 Q And sitting here today, do you know what
18 specifically you would update on this resume'?

09:28:15

09:28:19

19 A I will try. I will do my best. My
20 positions have not changed at the university, with
21 the exception that I am currently in the process of
22 being promoted to the Vice President of Research,
23 Associate Vice President for Research in the
24 university. The list of expert witness cases is

09:28:24

09:28:43

09:28:49

09:28:53

09:28:56

09:28:59

1 maybe complete. It may have been missing a couple 09:29:18
2 of them. The one case I mentioned I had the 09:29:22
3 deposition last summer is not here. And also -- no. 09:29:25
4 That's the one that's not here. 09:29:32

5 Consultancies is accurate to the best of 09:29:38
6 my knowledge. Awards have not changed. 09:29:44
7 Professional recognitions are the same. IEEE 09:29:49
8 editorials, there has been some additions to that, 09:29:59
9 as well as invited talks. 09:30:04

10 My patents should be accurate. There may 09:30:16
11 have been a -- I noticed last night, I was doing 09:30:20
12 something else and I noticed that one of my GPS 09:30:26
13 patents is not here. So I have a patent on GPS 09:30:30
14 which I don't see it here. 09:30:33

15 Standards contributions are correct. 09:30:36
16 Except I see an error right now in item number 3 of 09:30:40
17 my standards contributions. It should be Universal 09:30:43
18 ADSL Working Group instead of ADAL. I'm glad we are 09:30:47
19 doing this. I'm finding typos in my resume'. 09:30:54

20 My journal publications may not be 09:30:59
21 accurate. I may have had additional ones in there. 09:31:01
22 And to be frank with you, I don't remember either -- 09:31:06
23 I go and look at the IEEE database to see -- 09:31:11

24 Q That's fine. I don't mean to interrupt. 09:31:16

1 I'm not trying to test your memory. I'm trying to 09:31:18

2 get a sense of whether this is -- 09:31:21

3 A Sure. 09:31:23

4 Q Going back, you said you are about to 09:31:34

5 receive a promotion to Assistant VP of Research; is 09:31:37

6 that correct? 09:31:41

7 A Associate Vice President. 09:31:42

8 Q Associate Vice President? 09:31:43

9 A Right. 09:31:44

10 Q When will that promotion take effect? 09:31:53

11 A Sometime in the next month or two if 09:31:57

12 everything is agreed upon. 09:32:02

13 Q Will you continue to be professor and 09:32:08

14 director of the NSF Wireless Research Center upon 09:32:11

15 your promotion, or will your responsibilities change 09:32:14

16 in that regard? 09:32:17

17 A That's some of the things we are 09:32:20

18 discussing. I will still be a professor. Whether I 09:32:21

19 will continue as a director of the center or not 09:32:25

20 depends on how much commitment I have in the 09:32:28

21 Associate Vice President. It's hard to say. I will 09:32:32

22 have some role in there. I'm not sure how I'm going 09:32:34

23 to handle that now. That's one of the things I'm 09:32:37

24 discussing. 09:32:40

1 Q Sure. If you could just briefly describe 09:32:40
2 your responsibilities as Director of the NSF 09:32:45
3 Wireless Communications Center? 09:32:49

4 A I am a -- number one, I'm a researcher in 09:32:51
5 that center, so I have a number of research projects 09:32:58
6 that I manage and work with my students that we 09:33:01
7 present and get funding from the center. 09:33:08

8 As a director of the center, I'm 09:33:16
9 responsible for interacting with industry, 09:33:18
10 developing projects with industry, and as well as 09:33:21
11 working with the National Science Foundations on 09:33:28
12 developing research projects and overall managing of 09:33:33
13 the center. I do have a number of staff that help 09:33:36
14 with the details. My focus is primarily on the 09:33:41
15 research, academic side, and overall direction and 09:33:43
16 strategy for the center. 09:33:49

17 Q And in addition to that, you are a 09:34:04
18 professor. What -- are there other roles and 09:34:13
19 responsibilities as a professor besides teaching 09:34:16
20 classes that you have currently? 09:34:20

21 A Yes. Teaching classes is almost like an 09:34:22
22 extra curriculum activity for us, which is meaning 09:34:26
23 that a majority of our time goes into research, 09:34:32
24 advising the students, writing research proposals, 09:34:35

1 other responsibilities as such.

09:34:42

2 Q Are you teaching any classes this
3 semester?

09:34:49

09:34:51

4 A Yes, I am.

09:34:51

5 Q Which class or what classes are you
6 teaching?

09:34:53

09:34:55

7 A I teach one class this semester, which is
8 a senior/graduate level class on analog circuits.

09:34:56

09:34:59

9 Q And to the extent that you know, what
10 roles and responsibilities will you have as
11 Associate Vice President of Research?

09:35:11

09:35:14

09:35:16

12 A That is not exactly clear, but primarily
13 overall leading the research effort in my area in
14 the university working with faculty and other
15 researchers in my own research focus areas.

09:35:23

09:35:28

09:35:34

09:35:38

16 Q What are your primary research focus
17 areas?

09:35:43

09:35:47

18 A Communications systems, networking
19 systems, and related areas to those, including both
20 the networking as well as the software and hardware
21 aspects of the communication systems. Also, I have
22 recently been working on energy systems and looking
23 at energy issues and related areas, research in the
24 area.

09:35:49

09:35:53

09:36:04

09:36:07

09:36:13

09:36:17

09:36:22

1 Q In the section of your CV that's titled 09:36:58

2 Consultant, I believe that's on page 4? 09:37:01

3 A Yes, I'm there. 09:37:08

4 Q You have five different I guess 09:37:11

5 engagements. Were any of those consultancies 09:37:15

6 litigation-related? 09:37:22

7 A None of them were litigation-related. 09:37:25

8 These were all technical consultancies. 09:37:27

9 MR. HAIGHT: Would you mark that Exhibit 09:38:14

10 1443-3? 09:38:16

11 (1443 Exhibit Number 3 09:38:17

12 was marked for identification.) 09:38:17

13 THE WITNESS: Thank you. 09:38:37

14 BY MR. HAIGHT: 09:38:38

15 Q Do you recognize what's been handed to you 09:38:48

16 as Exhibit 1443-3? 09:38:50

17 A Yes, I do, counsel. This is my 09:38:56

18 declaration on the '532 patent that we are 09:39:12

19 discussing today. 09:39:16

20 Q Just we are clear on the technology -- 09:39:24

21 terminology, sorry, when you say the '532 patent, 09:39:26

22 are you referring to U.S. Patent Number 7,295,532? 09:39:30

23 A Yes, I am, counsel. 09:39:35

24 Q And throughout the day if we refer to that 09:39:37

1 as the '532 patent, you'll understand what we are 09:39:39
2 talking about? 09:39:42

3 A Yes, counsel. 09:39:43

4 Q Thank you. 09:39:44

5 A Thank you. 09:39:45

6 Q Sitting here today, are you aware of any 09:39:55
7 mistakes or errors in this declaration? 09:39:58

8 A To the best of my knowledge, no. 09:40:05

9 Q And if I could have you flip to the last 09:40:14
10 page, I believe that's page 36 of Exhibit 1443-3? 09:40:16

11 A Yes, counsel. 09:40:21

12 Q Is that your signature about halfway down 09:40:22
13 the page on the right? 09:40:24

14 A Yes, it is, counsel. 09:40:26

15 Q If you could turn to I believe it's the 09:40:45
16 top of page 2 of your declaration, paragraph five 09:40:48
17 that continues over from page one to two. The last 09:41:00
18 sentence of paragraph five says: "My research is 09:41:10
19 funded by various industry, federal agencies, 09:41:13
20 including NSF, DARPA, ONR, DOE, et cetera, with an 09:41:16
21 average research funding of 1 million per year." Do 09:41:21
22 you see that? 09:41:24

23 A Yes, I do, counsel. 09:41:25

24 Q Do you have a sense of how much of that 09:41:26

1 average 1 million per year comes from the various 09:41:29
2 industries that you mentioned? 09:41:36

3 A I can't recall at this point. And if it 09:41:46
4 is coming from industry, it is coming through the 09:41:53
5 center, not directly as a one-to-one project with 09:41:58
6 industry. It's coming to the NSF Center Connection 09:42:01
7 One, and in there it's not a one-to-one specific 09:42:06
8 research project that we do work on. There is some 09:42:09
9 differentiations in there. 09:42:15

10 Q I think you mentioned the NSF Center 09:42:28
11 Connection One? 09:42:32

12 A Yes, I did. 09:42:32

13 Q What is that? 09:42:33

14 A It is the center which I am the director 09:42:35
15 of. It's the SNF industry university cooperative 09:42:38
16 research center. 09:42:45

17 Q That's what Connection One -- 09:42:46

18 A Connection One is the name of it. Right. 09:42:48

19 Q Thank you. 09:42:51

20 A Sure. 09:42:51

21 Q To your knowledge, has any of your 09:43:04
22 research that's been funded through the NSF Center 09:43:06
23 Connection come from Apple? 09:43:13

24 A No. 09:43:21

1 Q Has any come from Samsung? 09:43:22

2 A Not for my project. Samsung had a project 09:43:26
3 with another faculty. 09:43:29

4 Q But you were not involved in that? 09:43:30

5 A I was not involved in that. 09:43:32

6 Q What about Blackberry, same question? 09:43:34

7 A No. No Blackberry. 09:43:37

8 Q Would you say the majority of the funding 09:43:51
9 that comes in to the NSF comes from industry or 09:43:54
10 comes from the federal agencies? 09:44:00

11 A For the Connection One Center? 09:44:02

12 Q Yes. 09:44:05

13 A Connection One Center funding is by 09:44:06
14 membership, meaning that industry pays an annual fee 09:44:08
15 and becomes a member of the center, and as a result 09:44:17
16 of that, is able to work with various faculty and 09:44:23
17 students in the center. It's not a -- that's what I 09:44:29
18 said. It's not a direct one-to-one project. It's 09:44:34
19 not a statement of the work, do this job for me. 09:44:37
20 They are joining a federation I should say or a 09:44:41
21 center. They cannot have exclusive one-to-one 09:44:44
22 project with X and Y. 09:44:48

23 Q Do you have any research engagements 09:44:59
24 outside of that center that would correspond to a 09:45:01

1 one-to-one in your role as a professor? 09:45:05

2 A Yes. This year -- with industry you mean? 09:45:07

3 Q Yes. 09:45:18

4 A With industry this year, no. I don't 09:45:19

5 recall at least to the best of my knowledge. There 09:45:23

6 may have been some remnants from the past still 09:45:25

7 going on, but at this point, no, nothing this year. 09:45:29

8 Q In the past three years have you had any 09:45:33

9 research outside of the center funded by Apple, 09:45:38

10 Samsung or Blackberry? 09:45:44

11 A I personally have not had any research 09:45:48

12 funded by Apple or Samsung or Blackberry directly 09:45:51

13 with me. 09:45:56

14 Q In the last three years or ever? 09:45:57

15 A If I'm not mistaken, ever. I don't 09:46:06

16 remember -- Apple I know for sure never ever. 09:46:09

17 Blackberry I know for sure ever. And Samsung joined 09:46:14

18 the center, was working with another faculty. That 09:46:17

19 also terminated I believe two or three years ago, 09:46:22

20 their membership in the center. 09:46:27

21 Q The membership ended two or three years 09:46:29

22 ago? 09:46:31

23 A Yes, they did. 09:46:31

24 Q How many members does the center currently 09:46:33

1 have?

09:46:35

2 A Currently I don't know. I can say --
3 because it changes based on when their contract
4 ends. On average I would say anywhere from, it
5 ranges from eight to ten to 15.

09:46:36

09:46:41

09:46:45

09:46:52

6 Q Are either Apple or Blackberry currently
7 members?

09:46:58

09:47:02

8 A They are not.

09:47:03

9 Q Have they ever been?

09:47:04

10 A They have never been a member. To the
11 best of my knowledge they have never been a member.

09:47:06

09:47:08

12 I need to clarify one thing here. That's
13 why I said to the best of my knowledge, is because
14 the center is not just one university. We have, we
15 had four other universities. But overall I don't
16 remember the other universities have any of the
17 Samsung, Apple or Blackberry in their membership
18 either. I know Samsung was a member two, three
19 years ago with another faculty.

09:47:14

09:47:16

09:47:19

09:47:25

09:47:33

09:47:36

09:47:40

09:47:45

20 Q You mentioned four other universities.
21 What were those four?

09:47:49

09:47:52

22 A A couple of them completed their funding
23 in the center. The center at its maturity had
24 Arizona State University, University of Arizona at

09:47:55

09:48:00

09:48:07

1 Tuscan, Ohio State University, Rensselaer 09:48:10

2 Polytechnic Institute or RPI, and University of 09:48:15

3 Hawaii. That was for our summer meetings. 09:48:20

4 Q I can imagine. 09:48:25

5 A They have a very strong communications 09:48:31

6 system. 09:48:33

7 Q Looking at paragraph six of your 09:48:42

8 declaration, you mentioned you designed a baseband 09:48:45

9 communication system for Motorola called Talkabout 09:48:48

10 Radio; is that correct? 09:48:52

11 A Yes, I did. 09:48:53

12 Q Would you briefly describe what Talkabout 09:48:54

13 Radio is? 09:48:57

14 A The Talkabout Radio of Motorola is a 09:48:58

15 sports radio, a short wave -- it's sports radios 09:49:02

16 that, two-way radios that you see also being sold in 09:49:06

17 the country. It's a two-way radio mostly used for 09:49:14

18 sports and talking one-to-one like a walkie-talkie 09:49:19

19 type of a radio system. 09:49:24

20 Q And are those radio frequency or RF based? 09:49:26

21 A Yes. They are RF based radio frequencies, 09:49:32

22 yes, I believe. 09:49:37

23 Q You also mentioned that you have been a 09:49:57

24 consultant on various projects with Intel; is that 09:50:00

1 correct?

09:50:03

2 A Yes. I was.

09:50:04

3 Q When were -- when was that?

09:50:07

4 A It was in early 2000 time period, around

09:50:13

5 2000 -- I don't remember the exact date, 2002 or

09:50:20

6 three. It may have been around that time frame.

09:50:23

7 Maybe one year ahead of or before. Approximately

09:50:27

8 when I joined Arizona State I engaged with them.

09:50:30

9 Q And your engagements with Texas

09:50:42

10 Instruments and Sony Wireless and Tektronics, were

09:50:46

11 those roughly the same time period or did those

09:50:53

12 span --

09:50:56

13 A Different time periods. They span from

09:50:56

14 1987 to 2004, five.

09:50:59

15 Q Moving down to paragraph 13 of your

09:51:54

16 declaration, which is on page 3 and into page 4, you

09:51:57

17 see a list of documents that you reviewed in

09:52:07

18 preparation for your declaration?

09:52:11

19 A Yes. These are the documents that I

09:52:24

20 reviewed, including the claims of the patent, in

09:52:26

21 view of the specification and the file history.

09:52:34

22 Q Do you recall reviewing any other

09:52:37

23 documents that are not listed here in, as you were

09:52:39

24 preparing your declaration?

09:52:46

1 A I may have been looking at some references 09:52:57

2 to familiarize myself with some of the terminology. 09:53:02

3 Q What types of references would those be? 09:53:06

4 A I don't remember exactly. It could have 09:53:11

5 been IEEE papers and so forth or books, some of my 09:53:13

6 textbooks in my office refreshed my memory. 09:53:17

7 Q And are you aware that there is also a 09:53:25

8 currently pending litigation in U.S. District Court 09:53:28

9 related to this patent, the '532? 09:53:32

10 MR. MUKERJI: Yes or no question. 09:53:38

11 A Yes. 09:53:40

12 Q Did you review or look at any documents 09:53:41

13 from that litigation in preparation of your 09:53:45

14 declaration? 09:53:48

15 A No. 09:53:48

16 Q Is there any specific reason -- you 09:54:42

17 mentioned you may have consulted some other IEEE 09:54:44

18 papers or other references to familiarize yourself 09:54:49

19 with the terminology. Is there any particular 09:54:52

20 reason you would not have listed them in your 09:54:55

21 declaration here? 09:54:57

22 A No. 09:54:58

23 Q Is it fair to say that because they are 09:55:05

24 not listed here, you didn't rely on those 09:55:10

1 references?

09:55:13

2 A Yes. On this declaration I only relied on
3 these references, but my knowledge in the field, my
4 expertise and if I have to brush up on some areas, I
5 looked at them. But everything I have here in my
6 declaration is based on these references.

09:55:20

09:55:24

09:55:26

09:55:31

09:55:35

7 Q In paragraph 15 you talk about the level
8 of ordinary skill in the art. Do you see that?

09:55:52

09:55:56

9 A Yes. I see paragraph 15.

09:56:05

10 Q And you said that a person of ordinary
11 skill at the time of the critical date would have
12 had a master's of science in an academic area
13 emphasizing electrical engineering, computer
14 engineering or computer science or a similar
15 technical master's degree or higher degree with
16 concentration in communication and networking
17 systems, or alternatively, a bachelor degree or
18 higher degree in an academic area emphasizing
19 electrical engineering, computer engineering or
20 computer science and having two or more years of
21 experience in communication and networking systems.
22 Did I read that correctly?

09:56:11

09:56:17

09:56:19

09:56:24

09:56:27

09:56:29

09:56:33

09:56:35

09:56:39

09:56:43

09:56:45

09:56:48

09:56:50

23 A Yes, you did. That is correct. Thank
24 you.

09:56:52

09:56:53

1 Q Was that a definition that you arrived at 09:57:01
2 on your own? 09:57:09

3 A It was my recommendation based on my 09:57:15
4 knowledge. It may have been edited a little bit 09:57:19
5 jointly, but overall yes, it is my recommendation on 09:57:22
6 what a person of ordinary skill in the art as of the 09:57:27
7 critical date would be. 09:57:32

8 Q When you say edited jointly, to whom are 09:57:34
9 you referring to? 09:57:37

10 A When I wrote the document, my declaration, 09:57:39
11 the first draft, there was discussions with my 09:57:42
12 counsel and throughout that process. But the 09:57:47
13 overall definition and the requirements of a person 09:57:52
14 of ordinary skill in the art as of the critical 09:57:55
15 date, I agree with that, what's in here. 09:57:59

16 MR. HAIGHT: Can we mark that as 1443-4? 09:59:01
17 (1443 Exhibit Number 4 09:59:04
18 was marked for identification.) 09:59:04

19 BY MR. HAIGHT: 09:59:13

20 Q Dr. Kiaei, you have been handed what's 09:59:27
21 been marked as Exhibit 1443-4. Feel free to review 09:59:29
22 that exhibit in its entirety, but I will ask you 09:59:35
23 when you are ready if you recognize that document? 09:59:39

24 A Yes, I do recognize that document. 09:59:46

1 Q What is Exhibit 1443-4? 09:59:48

2 A It is U.S. Patent 7,295,532. 09:59:52

3 Q And it's your understanding this is, 10:00:01

4 certain claims of this patent are the ones being 10:00:04

5 challenged in this IPR proceeding? 10:00:06

6 A That is my understanding. 10:00:09

7 Q When was the last time you reviewed the 10:00:18

8 '532 patent? 10:00:21

9 A I looked at the '532 patent the last few 10:00:28

10 days. 10:00:31

11 Q And when was the last time you reviewed 10:00:37

12 your declaration? 10:00:39

13 A Yesterday and this morning I briefly 10:00:48

14 skimmed through it. 10:00:51

15 Q In your declaration you stated that you 10:01:48

16 considered how to interpret the term, quote, 10:01:52

17 "software component ... loaded ... from one or more 10:01:56

18 devices connected to said one or more cellular 10:02:04

19 networks." Paragraph 24 for your reference. Do you 10:02:07

20 recall that? 10:02:13

21 A Yes. It is the first two lines on 10:02:23

22 paragraph 24. 10:02:27

23 Q And you state from your review you believe 10:02:30

24 that term should be interpreted as encompassing 10:02:32

1 software components that are loaded from one or more 10:02:37
2 devices that are either directly or indirectly 10:02:40
3 coupled to one or more cellular networks; is that 10:02:42
4 correct? 10:02:48

5 MR. MUKERJI: There is a phrase in the 10:02:50
6 middle of that, counsel, which I'm sure you 10:02:51
7 accidentally left out. It says, "under the broadest 10:02:55
8 reasonable interpretation," for the clarity of the 10:02:58
9 record. I'm sorry. Your answer is. 10:03:00

10 A Thank you, counsel. What I have written 10:03:03
11 there in paragraph 24 is from my review I believe 10:03:06
12 the term should be interpreted under the broadest 10:03:09
13 reasonable interpretation standard as encompassing 10:03:13
14 software component that are loaded from one or more 10:03:16
15 devices that are either directly or indirectly 10:03:20
16 coupled to the one or more cellular networks, yes. 10:03:23

17 Q Did you arrive at that interpretation on 10:03:35
18 your own? 10:03:38

19 A This is my declaration, yes. In view of 10:03:41
20 the prior art, in view of my understanding as a 10:03:51
21 skilled and expert witness in this field. 10:03:56

22 Q Did you draft paragraph 24 in your 10:04:26
23 original drafting of your declaration? 10:04:31

24 MR. MUKERJI: Counsel, we are getting into 10:04:38

1 drafts in an expert declaration, which I think are, 10:04:40
2 you know, probably outside the scope. 10:04:43

3 MR. HAIGHT: I'll ask a different 10:04:46
4 question. 10:04:47

5 MR. MUKERJI: And these things that I say 10:04:47
6 throughout the day, I expect these to be bilateral. 10:04:48
7 So when we depose your expert, we will abide by the 10:04:52
8 same guidelines. 10:04:57

9 MR. HAIGHT: I understand. 10:04:59

10 BY MR. HAIGHT: 10:04:59

11 Q So my question was, maybe more directly, 10:04:59
12 is that broadest reasonable interpretation of 10:05:01
13 encompassing software components that are loaded 10:05:05
14 from one or more devices that are either directly or 10:05:05
15 indirectly coupled to one or more cellular networks, 10:05:05
16 did you come up with that interpretation on your 10:05:12
17 own? 10:05:15

18 A As I said already, it is based on my 10:05:20
19 knowledge of understanding the wireless field and 10:05:26
20 cellular field and also the prior art that I have 10:05:31
21 mentioned. Yes, it is my statement in there, which 10:05:36
22 is my interpretation of my statement, yes. 10:05:43

23 Q Your statement on the last line of that 10:06:16
24 paragraph that such an interpretation is also not 10:06:18

1 inconsistent with an understanding of a POSITA -- 10:06:22

2 I'm sorry. Let me start again. 10:06:27

3 "Such an interpretation is also not 10:06:31

4 inconsistent with an understanding a POSITA would 10:06:33

5 ascribe to the term." Do you see that? 10:06:37

6 A Yes, I see that. Yes. 10:06:40

7 Q Is there another interpretation that a 10:06:42

8 person of ordinary skill would ascribe to that term? 10:06:49

9 MR. MUKERJI: Objection to form. 10:06:58

10 A I can't speculate what a POSITA may 10:07:00

11 interpret. It's a hypothetical question. 10:07:03

12 Q I understand. I'm just trying to 10:07:07

13 understand the scope of what it means to be not 10:07:08

14 inconsistent with that understanding. Would they 10:07:11

15 understand it to mean encompassing software 10:07:13

16 components that are loaded from one or more devices 10:07:17

17 that are either directly or indirectly coupled to 10:07:19

18 one or more cellular networks? Or would they 10:07:20

19 understand it to be something consistent with that? 10:07:23

20 A I think you are referring to the sentence 10:07:27

21 above that, which is, "accordingly, in my opinion, 10:07:28

22 this term should be construed under the broadest 10:07:33

23 reasonable interpretation standard as encompassing 10:07:40

24 software components that are loaded from one or more 10:07:42

1 devices that are either directly or indirectly 10:07:45

2 coupled to said one or more cellular network." 10:07:47

3 So what I was saying in there was that 10:07:51

4 this interpretation is also not consistent with an 10:07:55

5 understanding of a POSITA would ascribe to this term 10:07:58

6 above. 10:08:03

7 MR. MUKERJI: Did you say not consistent 10:08:07

8 or not inconsistent? 10:08:08

9 THE WITNESS: Also not inconsistent. 10:08:11

10 Sorry if I misinterpret. It should be is also not 10:08:14

11 inconsistent with an understanding a POSITA would 10:08:17

12 ascribe to the term. 10:08:20

13 BY MR. HAIGHT: 10:08:23

14 Q And based on your declaration, is it fair 10:08:40

15 to say that you didn't think there were any other 10:08:43

16 terms in the challenged claims of the '532 that 10:08:47

17 needed interpretation? 10:08:52

18 A Can you repeat the question, please? 10:08:56

19 Q Sure. Is it fair to say that you didn't 10:08:58

20 think there were any other terms in the challenged 10:09:01

21 claims of the '532 patent that needed 10:09:03

22 interpretation? 10:09:06

23 A To the best of my knowledge, these are the 10:09:13

24 ones that I interpreted. There may be others, but I 10:09:15

1 did not discuss them and went through them or at 10:09:23
2 least at this point what I have here, these are the 10:09:28
3 terms that I am discussing which relates to, to the 10:09:32
4 paragraph on what I mentioned before. If there are 10:09:40
5 others, I didn't consider them at this point. That 10:09:42
6 doesn't say that there is or isn't others. 10:09:46

7 Q Is there anything in the term "software 10:10:21
8 component loaded from the one or more devices 10:10:29
9 connected to said one or more cellular networks" 10:10:31
10 that in your opinion is ambiguous or unclear? 10:10:36

11 MR. MUKERJI: Objection to form. 10:10:51

12 A My interpretation of them is based on the 10:10:55
13 discussions -- first in paragraph 24 I discuss that 10:11:00
14 I believe the term should be interpreted under the 10:11:12
15 broadest reasonable interpretation standard as 10:11:15
16 encompassing software components that are loaded 10:11:18
17 from one or more devices that are either directly or 10:11:20
18 indirectly coupled to one or more cellular networks. 10:11:24
19 So on the broadest reasonable interpretation is what 10:11:30
20 I have stated in my analysis in my declaration. 10:11:33

21 Are there other potential broader 10:11:38
22 interpretation of that? That's a hypothetical 10:11:41
23 question. What I have here is what I have -- all I 10:11:43
24 have interpreted reasonably in my understanding. 10:11:47

1 Q So if I understand it, that's what you are 10:12:15
2 saying the broadest reasonable interpretation is in 10:12:22
3 your opinion. My question is a little bit more 10:12:27
4 nuanced, and that's why aren't the words in the 10:12:31
5 claim sufficient enough to understand that term? 10:12:38

6 MR. MUKERJI: Object to form. 10:12:47

7 A I describe this later on as well in the 10:13:29
8 same paragraph, 24, which is line one, two, three, 10:13:32
9 four, on line seven, that the '532 patent has no 10:13:37
10 disclosure of loading software component directly 10:13:47
11 from a device on a cellular network. Instead, the 10:13:49
12 only description of loading software component in 10:13:53
13 the '532 patent is with reference to loading network 10:13:56
14 service plug-ins from a manager server 102 on the IP 10:14:00
15 back-end network. 10:14:05

16 And in particular, the '532 patent states 10:14:08
17 that the manager server 102 is coupled to a carrier 10:14:14
18 backbone 104 which is depicted in Figure 1 as a 10:14:19
19 wired network. The next line after that I discuss 10:14:23
20 that the carrier backbone 104 is then coupled to a 10:14:27
21 wide area network 104 that included a cellular 10:14:33
22 network. Which leads me to conclude the conclusion 10:14:36
23 I have after that, that the only disclosure in the 10:14:41
24 '532 patent regarding downloading software component 10:14:44

1 from a device to a cellular network is with 10:14:49
2 reference to downloading plug-ins from the manager 10:14:52
3 server 102 which is indirectly coupled via carrier 10:14:56
4 backbone 104 to a cellular network. 10:15:01

5 Q And is it your opinion that the claims of 10:15:30
6 the patent are limited only to the specific 10:15:32
7 embodiments described in the specification? 10:15:40

8 MR. MUKERJI: Object to form. 10:15:43

9 A Sorry. Can you repeat that? The last 10:15:46
10 part you went quick. I couldn't follow it. 10:15:48

11 Q Is it your opinion that the claims of the 10:15:52
12 patent are limited only to the specific embodiments 10:15:55
13 described in the specification? 10:15:59

14 MR. MUKERJI: Same objection. 10:16:01

15 A What I have done is I'm not an attorney 10:16:06
16 first of all. I'm a technical expert here. So I'm 10:16:10
17 looking at the understanding of the patent and the 10:16:13
18 claims of the patent in view of the body of the 10:16:18
19 patent, and looking at what I read in the patent 10:16:23
20 claim, and also how in the body of the patent it 10:16:30
21 described the software component loaded from one or 10:16:36
22 more devices connected to said one or more cellular 10:16:44
23 network. I, based on those things, I have come up 10:16:49
24 with an interpretation that I have outlined in 10:16:53

1 paragraph 24, that I have stated in paragraph 24. 10:16:56

2 I'm not an attorney. I didn't do a total 10:17:07
3 claim analysis and so on. 10:17:10

4 Q What do you mean when you say you didn't 10:17:42
5 do a total claim analysis and so on? 10:17:45

6 A I meant total. Sorry. What I mean here 10:17:48
7 is I looked at the -- I read the patent and the body 10:17:59
8 of the patent and understood what the patent is 10:18:03
9 saying, as well as looking at the claims, and based 10:18:07
10 on those, concluded my analysis of the patent which 10:18:18
11 is declared in this declaration, and the sentence I 10:18:25
12 just mentioned is my understanding of how that 10:18:29
13 sentence means which we just discussed at the 10:18:36
14 beginning of line 24. 10:18:39

15 I was not -- that's it. That's what I 10:18:49
16 mean. 10:18:52

17 Q If I could direct your attention to column 10:18:59
18 five of the '532 patent, and starting at line about 10:19:02
19 62 where it says, "in an embodiment of present 10:19:20
20 invention." Do you see that? 10:19:25

21 A Yes. 10:19:27

22 Q Could you read that first sentence for the 10:19:28
23 record? 10:19:30

24 A Sure. "In an embodiment of the present 10:19:33

1 invention, WAN 105, carrier backbone 104, and 10:19:39
2 manager server 102 is, singly or in combination, a 10:19:46
3 telecommunication network that is managed and 10:19:52
4 monitored by operator 115. In an embodiment of the 10:19:56
5 present invention, IP packets," do you want me to 10:20:01
6 continue on? 10:20:05

7 Q No, no. That's good. 10:20:06

8 A Stop there. 10:20:08

9 Q So it says singly or in combination; 10:20:08
10 correct? 10:20:11

11 A Yes, it does, yes. 10:20:15

12 Q Does that change in any way your 10:20:17
13 interpretation of that term we've been discussing? 10:20:21

14 A I don't believe so, no. 10:20:34

15 MR. HAIGHT: We've been going for a little 10:20:43
16 over an hour. Let's take a break. 10:20:45

17 THE WITNESS: That would be great. Thank 10:20:48
18 you. 10:20:49

19 VIDEOGRAPHER: This concludes disk number 10:20:50
20 one of the video deposition of Sayfe Kiaei, Ph.D. 10:20:51

21 The time is 10:20:08 a.m. We are now off the 10:21:00
22 record. 10:21:04

23 (Recessed at 10:20 a.m.) 10:21:05

24 (Reconvened at 10:34 a.m.) 10:21:06

1 VIDEOGRAPHER: This begins disk number two 10:25:08
2 of the video deposition of Sayfe Kiaei, Ph.D. The 10:35:16
3 time is 10:34:34 a.m. We are now on the record. 10:35:21
4 BY MR. HAIGHT: 10:35:26
5 Q Welcome back, doctor. 10:35:27
6 A Thank you, counsel. 10:35:29
7 Q During the break did you happen to discuss 10:35:31
8 any of the substance of your testimony with counsel? 10:35:33
9 A No, I did not. 10:35:36
10 Q Revisiting the claim construction issue 10:35:38
11 that we were talking about before the break, you 10:35:55
12 only provided one or explained only one construction 10:35:58
13 in your declaration; is that correct? 10:36:02
14 A I'm not sure you are talking about the -- 10:36:08
15 sorry. Let me -- you are talking about the 10:36:15
16 paragraph 24 where I discussed used in claim one 10:36:20
17 under the broadest reasonable interpretation; 10:36:25
18 correct? 10:36:27
19 Q Yes. 10:36:28
20 A That is the -- yeah, I believe in my 10:36:29
21 declaration this is the only place where I 10:36:44
22 specifically discuss how I interpreted that 10:36:47
23 terminology there. 10:36:52
24 Q And backing up one paragraph to paragraph 10:36:54

1 23, you state that, "I have been informed that it 10:36:57
2 would be useful to provide some guidance in this 10:37:00
3 proceeding with respect to the terms below." Do you 10:37:03
4 see that? 10:37:05

5 A Yes. 10:37:06

6 Q Who informed you of that? 10:37:07

7 A The counsel I'm working with. 10:37:09

8 Q Was the term you identified in paragraph 10:37:16
9 24, was that specifically identified by counsel as a 10:37:20
10 term that would be useful to provide some guidance 10:37:25
11 for? 10:37:28

12 A The exact sentence, no, it was not. It 10:37:37
13 was my interpretation and they provided some 10:37:41
14 guidance with respect to the term below. 10:37:44

15 Q I'm sorry? You said it was your 10:37:58
16 interpretation and they provided some guidance. 10:38:00
17 What do you mean by that? 10:38:03

18 A When I was writing the report, I had a 10:38:05
19 first draft and there were some edits as we went 10:38:12
20 back and forth doing the process of finalizing my 10:38:16
21 report. So I don't recall the details of it. It 10:38:20
22 was at least nine months ago. It was around May 10:38:23
23 time frame. This was not the only patent also I was 10:38:28
24 working on. So I don't remember all the exact 10:38:32

1 details, but I can say that in general the statement 10:38:34
2 I have here has been, are my statements but there 10:38:39
3 have been some edits. In there -- I'm not an 10:38:43
4 attorney, so there may have been some technical 10:38:49
5 attorney language issues in general with all the 10:38:53
6 statements, but not -- the declaration is my 10:38:55
7 declaration. 10:38:58

8 Q And based on your declaration, there were 10:39:08
9 no other terms in the claims of the '532 that you 10:39:10
10 thought would be useful to provide some guidance on; 10:39:17
11 is that correct? 10:39:21

12 A I'm sorry. That's a very broad statement 10:39:26
13 you are making. If you could focus on more 10:39:29
14 specifics, that would be helpful. For this 10:39:32
15 particular statement I have stated statement number 10:39:34
16 24, under the broadest reasonable interpretation. 10:39:40
17 Other claims are different discussions. 10:39:45

18 Q But you didn't discuss them in your 10:39:50
19 declaration? That's the only -- 10:39:52

20 A Yeah. I did not discuss them in my 10:39:55
21 declaration. There may have been discussions -- I 10:39:57
22 have not discussed them in my declaration. I don't 10:39:59
23 recall it. 10:40:03

24 Q And is it your opinion that a person of 10:40:04

1 ordinary skill in the art would understand the 10:40:07
2 claims of the '532 -- strike that. Let me start 10:40:10
3 again. 10:40:14

4 Is it your opinion that a person of 10:40:15
5 ordinary skill in the art would understand the 10:40:18
6 challenged claims of the '532 patent without further 10:40:21
7 explanation? 10:40:27

8 A It is my understanding that a person of 10:40:31
9 skilled in the ordinary art by reading the body of 10:40:34
10 the patent and in view of the body of the patent and 10:40:38
11 what the body of the patent says and also looking at 10:40:43
12 the claims, they should be able to understand 10:40:46
13 details of the patent and what it's describing. 10:40:51

14 Q And when you say understand the details of 10:41:04
15 the patent and what it's describing, are you also 10:41:07
16 referring to the claims? 10:41:09

17 A Yes. Understanding the claims in view of 10:41:10
18 the body of the patent is, is -- 10:41:12

19 Q So the -- excluding the term that you 10:41:19
20 provided some guidance on in paragraph 24, a person 10:41:26
21 of ordinary skill in the art would understand what 10:41:28
22 those claims mean without further interpretation 10:41:31
23 based on the specification? 10:41:34

24 A It's a hypothetical question. It depends 10:41:40

1 on what the claim, how the claims are written, what 10:41:42
2 the claims say, the language in there and so on. If 10:41:45
3 you want a general answer, I can give you a general 10:41:52
4 answer for a hypothetical question. 10:41:55

5 Q Okay. But you didn't think it was 10:41:58
6 necessary to explain any other terms of the 10:42:02
7 challenged claims of the '532 patent in your 10:42:06
8 declaration; correct? 10:42:09

9 A In my declaration I did not explain any 10:42:10
10 further interpretation of the other claims. 10:42:13

11 Q And is that because those terms are easily 10:42:17
12 understood by one of skill in the art? 10:42:21

13 MR. MUKERJI: Objection to form. 10:42:29

14 A Again as I said, it's a hypothetical 10:42:30
15 question. Depending on the claim language and the 10:42:31
16 body of the claim and how they are written, I can 10:42:35
17 give you a general answer. In general, again if you 10:42:45
18 want a general answer, I'll be happy to give you a 10:42:47
19 general answer. 10:42:50

20 Q I'm asking about -- I'm sorry. 10:42:50

21 A If you would like to talk about a specific 10:42:52
22 claim -- 10:42:55

23 Q I'm just referring to the section in your 10:42:56
24 declaration where you discuss terminology. And as I 10:42:58

1 read your declaration, you've only offered one 10:43:03
2 interpretation of one phrase in all of the 10:43:07
3 challenged claims of the '532 patent; is that 10:43:11
4 correct? 10:43:14

5 A Yes. 10:43:15

6 Q So is it fair to say that you understood 10:43:16
7 those claims without prior explanation? 10:43:19

8 MR. MUKERJI: Objection to form. 10:43:27

9 A I understood the claims after I read the 10:43:30
10 body of the patent and understood what the body of 10:43:34
11 the patent was trying to say, and based on those I 10:43:37
12 understood that. 10:43:41

13 Q And you also agree that a person of 10:43:46
14 ordinary skill in the art would come to that same 10:43:48
15 conclusion reading the claims and specifications? 10:43:52

16 MR. MUKERJI: Objection to form and also 10:43:55
17 outside the scope. You can answer. 10:43:56

18 A Thank you. Again I'm going to give you a 10:44:01
19 general answer, but in my declaration also on the 10:44:07
20 same paragraph 24, at the end of it I discuss that 10:44:11
21 such an interpretation is also not consistent with 10:44:14
22 an understanding a POSITA would ascribe to the term. 10:44:16
23 So in general for specific to this claim language 10:44:20
24 24, I explain that and my explanation is also in 10:44:25

1 terms of what the POSITA would understand is at the 10:44:34
2 end of it. Other ones I don't have it in my 10:44:36
3 declaration. I don't want to speculate. There may 10:44:41
4 or may not be. If there is any specific ones, we 10:44:46
5 can discuss. 10:44:50

6 Q In your analysis did you think it was 10:45:27
7 important to consider how a person of ordinary skill 10:45:30
8 in the art would interpret the language of the 10:45:33
9 challenged claims? 10:45:36

10 A In general, yes, when I'm doing my 10:45:48
11 analysis, I'm an expert, technical expert in this 10:45:52
12 field. And I also described in paragraph 15 what a 10:45:56
13 person of ordinary skill in the art as a critical 10:46:16
14 date background should have to understand these 10:46:20
15 things, and the various educational background or 10:46:23
16 industry background to be able to understand these 10:46:29
17 things. 10:46:35

18 So when I was reviewing this, I was 10:46:36
19 reviewing this as an expert in the field, but also 10:46:38
20 my interpretation of what I have come up with in 10:46:45
21 paragraph 24, as I specifically said, is also not 10:46:49
22 inconsistent with an understanding a POSITA would 10:46:52
23 ascribe to this term. So I -- yes, I do. 10:46:56

24 Q So in your consideration of how a person 10:47:01

1 of ordinary skill in the art would interpret the 10:47:04
2 language of those challenged claims, if there were 10:47:08
3 something ambiguous in that claim language, would 10:47:12
4 you have included it in your declaration? 10:47:15

5 A In that, for that specific claim one? 10:47:18

6 Q For any of the challenged claims in the 10:47:21
7 '532 patent. 10:47:23

8 A In view of a POSITA? 10:47:25

9 Q Yes. 10:47:27

10 A If it was any of the challenged claims and 10:47:31
11 I believed that the terminology -- it's a 10:47:35
12 hypothetical question. I can't -- I mean if you 10:47:37
13 have a specific claim, I can go and look at it. You 10:47:39
14 know, this patent had -- how many claims does it 10:47:43
15 have? It's more than 31, right? 31 claims? 10:47:51

16 Anyhow, this patent had all these claims 10:48:02
17 in here and I was dealing also with four other 10:48:05
18 declaration. I did my best at the time I was 10:48:10
19 writing the report, I did my best of understanding 10:48:13
20 these and stating how a POSITA would interpret that. 10:48:18
21 Hypothetically is it possible that there is a claim 10:48:22
22 language in there which I did not -- I can't say 10:48:26
23 right now if there is a claim, a specific claim. I 10:48:29
24 can look at it and give you my opinion whether a 10:48:32

1 POSITA would understand that or not. 10:48:35

2 Q Did you review all of the challenged 10:48:39
3 claims in your analysis of the '532 patent? 10:48:42

4 A Yes, I did. 10:48:45

5 Q And again the only term of all of those 10:49:21
6 challenged claims that you discussed in your 10:49:24
7 declaration is that phrase from claim one; is that 10:49:26
8 correct? 10:49:29

9 A The only one of the claims that I have 10:49:34
10 stated in my statement which I discuss it in terms 10:49:36
11 of broadest reasonable interpretation is specified 10:49:40
12 in paragraph 24, yes. 10:49:47

13 Q So if you could turn to Figure 1 of the 10:51:13
14 '532 patent that's Exhibit 1443-4? What is Figure 1 10:51:16
15 of the '532 patent depicting? 10:51:39

16 A Figure 1 is a high level abstract over 10:51:46
17 figure that shows an architecture of a system 100, 10:51:52
18 which consists of a wide band area network, with 10:51:58
19 cellular carrier backbone Internet servers, manager 10:52:13
20 servers and communications on the left side. On the 10:52:21
21 right side local area network and the terminals 10:52:26
22 within the short range radio signals, and a device 10:52:31
23 106 which is coupled to a LAN as well as to a 10:52:41
24 wireless area network to the left. 10:52:50

1 Q And when you demarcate things from left 10:52:54
2 versus right, where is the breaking point that you 10:52:58
3 are referring to there in Figure 1? 10:53:00

4 A It is vague, but somewhere in the device 10:53:08
5 106 where the device 106 is acting as a gateway 10:53:11
6 between the wireless area network on the left and 10:53:17
7 the local area network on the right. Again this is 10:53:22
8 an abstract high level description of the system, 10:53:35
9 very abstract and very high level that I would show 10:53:39
10 in my junior level classes of the overall system 10:53:43
11 architecture of what a wireless network connected to 10:53:48
12 a local area network and so on would look like. 10:53:53

13 Q And would you agree that the systems, the 10:54:08
14 challenged claims in the '532 are represented by the 10:54:15
15 diagram in Figure 1? 10:54:21

16 MR. MUKERJI: Objection to form. 10:54:23

17 A I did not look at every claim and see if 10:54:30
18 that those claims are described in every one of them 10:54:33
19 described in Figure 1 or not. Again as I said, it's 10:54:37
20 an abstract high level description of it. What's 10:54:40
21 inside the server 101, how is it interfacing with 10:54:43
22 the Internet or the descriptions of the claims have 10:54:48
23 a one to one how they are shown in the Figure 1 and 10:54:54
24 so on, I did not do that. 10:54:57

1 Q And I think you said that the dividing 10:55:00
2 line between the left side and the right side of 10:55:06
3 this figure is somewhere in device 106? 10:55:08

4 A I did not say it is within the device 106, 10:55:15
5 but the device 106, if you look at my paragraph 19 10:55:18
6 of my declaration, device 106 is coupled to a LAN by 10:55:23
7 short range wireless signals -- by wireless 10:55:29
8 connection 110 and is also coupled to the WAN 105 by 10:55:32
9 cellular connection 111. Exactly where we draw the 10:55:38
10 dividing line in there, the main thing is that the 10:55:43
11 device is coupled to both LAN and to wireless area 10:55:47
12 network on the right. 10:55:51

13 Again this is an abstract configuration 10:55:53
14 which only shows a picture of a cell phone without 10:55:56
15 any description, block level diagrams internally, 10:56:00
16 what are the various hardware, software components, 10:56:03
17 how they are managed, how they interface with the 10:56:07
18 two network on the short range wireless network and 10:56:12
19 the wireless wide band area network on the left and 10:56:16
20 right and so on, those details are not depicted in 10:56:20
21 that diagram in Figure 1. 10:56:24

22 It's a very abstract high level 10:56:25
23 description of it. This would be like a first slide 10:56:28
24 I would show in my junior classes, here is a 10:56:31

1 wireless system, undergraduate junior level class in 10:56:34
2 communications. 10:56:39

3 Q And at least from the high level 10:56:57
4 abstraction reflected in Figure 1, the devices that 10:56:59
5 you had identified that are on the right side of the 10:57:04
6 figure, those being the terminals 107 -- 10:57:08

7 A Uh-huh. 10:57:15

8 Q -- those all would seemly communicate to 10:57:16
9 the wide area network through that cell phone, or 10:57:21
10 I'm sorry, through that device 106; is that correct? 10:57:24

11 A The device 106 is a gateway which is in 10:57:35
12 general, yes, it is coupled to both the LAN and the 10:57:50
13 wide area network, and if you look at the fourth 10:57:54
14 line in my paragraph 19 again, it describes some of 10:57:58
15 the routing of the packets where device 106 has 10:58:05
16 software for routing packets between the LAN 116 and 10:58:10
17 the WAN 105. For example, the device 106 has 10:58:12
18 installed a microrouter 404 with the software to 10:58:18
19 route communications between local devices 107 and 10:58:19
20 the LAN, on the LAN 116 and the wide band area 10:58:26
21 network 105. So in general, yes, your answer is. 10:58:31

22 Q And in the context of the '532 patent, 10:58:39
23 those terminals on the local area network, the LAN 10:58:43
24 116, those aren't able to connect to the wide area 10:58:49

1 network independent of that device 106; is that 10:58:59
2 correct? 10:59:01

3 A In the configuration that is shown in 10:59:14
4 Figure 1, those are coupled and connected to the 10:59:17
5 wide area network via the gateway 106, device 106. 10:59:21

6 Q Does the specification of the '532 patent 10:59:34
7 describe or detail any scenario in which the 10:59:53
8 terminals 107 could communicate with the wide area 10:59:57
9 network without using the device 106? Let me reask 11:00:01
10 that. 11:00:08

11 MR. MUKERJI: I apologize. 11:00:09

12 BY MR. HAIGHT: 11:00:12

13 Q Does the specification of the '532 patent 11:00:12
14 describe or detail any scenario in which the 11:00:16
15 terminals 107 communicate with the wide area network 11:00:27
16 105 without the use of device 106? 11:00:33

17 A Does the patent describe any of those, any 11:01:05
18 other configuration that would -- I don't believe it 11:01:09
19 does, with the different -- it has a variety of 11:02:25
20 different scenarios for what the device 106 could 11:02:29
21 be, which is a gateway, but I don't believe that it 11:02:33
22 has any description of if the local area network on 11:02:37
23 the right 110 -- sorry -- local area, yes, short 11:02:43
24 range radio signal without a gateway of some sort, 11:02:48

1 in all the different descriptions it has, in an 11:02:54
2 abstract level again, would be able to communicate 11:02:58
3 with a cellular network on the left. 11:03:01

4 Q I want to dig in a little bit on the 11:03:12
5 cellular network on the left. Would it be fair to 11:03:17
6 say that -- well, let me ask this. What is your 11:03:19
7 understanding of what WAN or wide area network 105 11:03:23
8 is in Figure 1? 11:03:30

9 A In Figure 1, again in an abstract high 11:03:48
10 level description they have, it consists of all the 11:03:51
11 elements that they have shown, which is the cellular 11:03:55
12 signal, Internet, backbone, manager server, the 11:04:00
13 communication operator, server 101 and so on. It's 11:04:08
14 a compilation of all of those together, which they 11:04:11
15 call the wide area network. 11:04:16

16 Q And as one of ordinary skill in the art, 11:04:21
17 could you briefly describe what a wide area network 11:04:26
18 means? 11:04:29

19 A A description of that is -- it really 11:04:41
20 depends on the implementation, on the frequencies it 11:04:45
21 is, on what the distance could be, what the 11:04:53
22 geographical location is and so forth. It could 11:04:56
23 change by signal strengths of the, whether it's a 11:05:01
24 wire line signal or wireless signal and so forth 11:05:06

1 what it is.

11:05:12

2 That's actually one of the ambiguities of

11:05:13

3 the, of this patent as well. But in general

11:05:17

4 wireless area network is a, is a wide area network

11:05:20

5 which is, has -- there is no clear definition of it

11:05:41

6 in the patent and here as well is that it's a wide

11:05:49

7 area network which is connecting these different

11:05:52

8 components, and it depends on the signal and depends

11:05:58

9 on the signal power strength and what are the

11:06:00

10 different components it's connecting.

11:06:03

11 Q I want to go back to something. You said

11:06:08

12 that's one of the ambiguities of this patent. What

11:06:10

13 were you referring to?

11:06:13

14 A Oh, I was referring -- I apologize. I

11:06:15

15 misspoke there. I was referring to the Figure 1

11:06:17

16 which is a very abstract high level description of

11:06:20

17 the system.

11:06:22

18 Q Let me ask you this way. How would one of

11:06:26

19 ordinary skill in the art distinguish a wide area

11:06:33

20 network from a local area network?

11:06:37

21 MR. MUKERJI: Objection to form.

11:06:42

22 A There is really no clear definition of

11:08:20

23 wide area network in the -- what I have described in

11:08:22

24 my declaration is on paragraph 19 again, that the

11:08:31

1 device is coupled to a LAN by a short range radio, 11:08:38
2 short range wireless connection and it's coupled to 11:08:42
3 a WAN with a cellular connection 111. 11:08:46

4 So from that perspective, we are looking 11:08:51
5 at the LAN by short range wireless connection 110, 11:08:56
6 which is connecting the terminals 107 together, and 11:08:59
7 in the patent, by the way, it describes other 11:09:04
8 configuration of that local area network. An 11:09:06
9 example of this would be a Bluetooth type of 11:09:12
10 configuration. 11:09:15

11 And on the left side is coupled to a wide 11:09:16
12 band area network, which is through that system on 11:09:20
13 the wireless area network is connected by cellular 11:09:25
14 connection to the device 116. So one of the 11:09:29
15 elements to the device -- sorry, 106. So one of the 11:09:32
16 elements of the WAN is the cellular network and 11:09:36
17 other configurations and other equipments and 11:09:40
18 architectures that they have in there. 11:09:46

19 Q So the cellular network would be an 11:09:49
20 example of a wide area network; is that correct? 11:09:54

21 A That's not what I said. It is an element 11:09:59
22 of the wide area network, it could be an element of 11:10:01
23 the wide area network. It's not a one-to-one 11:10:05
24 connection. The wide area network will have many, 11:10:08

1 many elements in there which could be a, the server, 11:10:12
2 the Internet, the communication operator, manager 11:10:16
3 server, a private IP network, a number of other 11:10:21
4 things which connects it together. So a cellular 11:10:25
5 connection or a cellular network is part of the 11:10:32
6 elements of that. 11:10:34

7 Now, is there a possibility that the 11:10:42
8 cellular network could not be part of it? That's 11:10:44
9 speculation, high level. I'm not going to speculate 11:10:47
10 on that if there are other systems. 11:10:49

11 Q So would you consider the AT&T wireless 11:10:52
12 cellular network to be on the same wide area network 11:11:02
13 as say a Verizon cellular network? 11:11:06

14 MR. MUKERJI: Objection to form and 11:11:10
15 outside the scope. 11:11:10

16 A Personally I'm not aware of the details of 11:11:15
17 the AT&T or Verizon network or what's inside of it. 11:11:18
18 They provide cellular connection to the customers, 11:11:25
19 but I haven't looked at all the details of how their 11:11:28
20 configuration is. So I'm not going to speculate on 11:11:31
21 that. I was not asked to look at the architecture 11:11:34
22 of AT&T or Verizon, neither do I have that 11:11:38
23 confidential information on how they do that. 11:11:42

24 Q What is your understanding of what the 11:12:09

1 carrier backbone 104 as depicted in Figure 1 of the 11:12:13
2 '532 patent is? 11:12:19

3 A My understanding is on page 8 of my 11:13:21
4 declaration. Paragraph 24, line 3 from the bottom, 11:13:24
5 which is actually -- sorry. Let's go back up to 11:13:27
6 line five from the bottom. In particular, the '532 11:13:33
7 patent states that manager server 102 is coupled to 11:13:38
8 a carrier backbone 104 which is connected to Figure 11:13:41
9 1 as wired network. And the next line is carrier 11:13:45
10 backbone 104 is then coupled to a WAN, wide area 11:13:49
11 network that includes a cellular network. 11:13:54

12 So as I mentioned in here, it's a backbone 11:14:00
13 which connects a, as shown in Figure 1, connecting a 11:14:03
14 manager server to the wide area network and to the 11:14:06
15 cellular network. 11:14:14

16 Q Does it also connect the cellular network 11:14:18
17 to the Internet 103? 11:14:22

18 A Elements of wide area network includes the 11:14:28
19 Internet 103 as well. 11:14:31

20 Q That wasn't my question. My question was 11:14:33
21 whether the carrier backbone as depicted in Figure 1 11:14:37
22 connects to Internet 103? 11:14:40

23 A It shows a dotted line in there. How that 11:14:42
24 connection is made and how it does that, it doesn't 11:14:47

1 show the details of it. The dotted line is, there 11:14:49
2 is no clear description of how the connection there 11:14:58
3 is made. 11:15:02

4 Q Would one of ordinary skill in the art 11:15:08
5 understand how a carrier backbone connects to the 11:15:11
6 Internet? 11:15:14

7 MR. MUKERJI: Objection to form. Outside 11:15:16
8 the scope. 11:15:17

9 A I did not go into details of how one 11:15:31
10 skilled in the art would understand the carrier 11:15:43
11 backbone and its connection to Internet 103 and so 11:15:46
12 forth. 11:15:51

13 Q So sitting here today, you don't know how 11:16:24
14 that carrier backbone 104 connects to the Internet 11:16:32
15 103 in the context of the '532 patent? 11:16:36

16 MR. MUKERJI: Objection to form. 11:16:40

17 A That's not what I said. Your last 11:16:41
18 question was would a person of skill in the art know 11:16:43
19 the details of this. And my answer was I did not 11:16:51
20 analyze what a person skilled in the art would know 11:16:55
21 the details of the connection of carrier backbone to 11:16:58
22 the Internet. If you like a general answer, I can 11:17:01
23 give you a general answer. But the specifics of how 11:17:06
24 it's done, it depends on the configurations and so 11:17:09

1 forth. 11:17:12

2 Q Is it your opinion that you wouldn't need 11:17:21
3 to know how a carrier backbone works in order to 11:17:23
4 understand the claims of the '532 patent? 11:17:26

5 A No. That's not what I said. What I said 11:17:34
6 was that the details of the connection on 104 to the 11:17:37
7 Internet and so forth depends on the configuration 11:17:41
8 and depends on how it's done and what the 11:17:45
9 architecture is. It depends on many aspects. It 11:17:47
10 depends on where the manager server is, the band 11:17:51
11 width of the manager server, the hardware involved 11:17:55
12 in there, the software, how it -- many, many factors 11:17:58
13 in there. It's not a -- that's not what I said. 11:18:02

14 Q Just to clarify, I'm not disputing what 11:18:09
15 you said before. I'm just trying to clarify my 11:18:12
16 question. So I'm not -- 11:18:14

17 A Sure. I appreciate it. 11:18:16

18 Q Based on the diagram of Figure 1 and the 11:18:21
19 description in the '532 patent, would you agree that 11:18:26
20 the device 106 connects to the carrier backbone 11:18:37
21 through the cellular network and that carrier 11:18:49
22 backbone is connected to the Internet? 11:18:53

23 A I think I already mentioned the statement 11:19:06
24 in paragraph 19, which is device 106 is coupled to a 11:19:09

1 LAN by short range wireless connection 110 and is 11:19:13
2 coupled to wide area network by cellular connection 11:19:16
3 111, and what is depicted in Figure 1 includes, the 11:19:20
4 wide area network includes the Internet, manager 11:19:26
5 server, server 101, et cetera. And when I was 11:19:30
6 discussing the terminology as well on -- on 11:19:38
7 paragraph 24, I specifically also said that, in line 11:20:03
8 3, that from my view I believe the term should be 11:20:06
9 interpreted under the broadest reasonable 11:20:10
10 interpretation standard as encompassing software 11:20:12
11 components that are loaded from one or more devices 11:20:15
12 that are either directly or indirectly coupled to 11:20:18
13 one or more cellular network, which means that the 11:20:21
14 device 106 is directly or indirectly coupled to one 11:20:25
15 or more cellular networks through this 11:20:30
16 configuration. 11:20:33

17 Q Okay. And according to the diagram of 11:20:35
18 Figure 1 and the specification of the '532 patent, 11:20:47
19 would you agree the only way for the device 106 to 11:20:50
20 communicate with any of the identified items on the 11:20:54
21 wide area network is through the carrier backbone 11:21:01
22 104? 11:21:14

23 MR. MUKERJI: Object to form and outside 11:21:21
24 the scope. 11:21:22

1 A It really depends on the architecture of 11:21:25
2 the system. Those elements are needed in the 11:21:28
3 system. The configuration of how the connection 11:21:37
4 could be could be different from a system to a 11:21:43
5 system in a wide area network. So whether the 11:21:45
6 connection is made through that or not, first of 11:21:51
7 all, in Figure 1 it's showing all of the connections 11:21:54
8 as dotted line, and there is no clear depiction of 11:21:58
9 what's going on in there. And also it's a very 11:22:02
10 abstract terminology in the figure which shows 11:22:05
11 overall high level of what's going on here. There 11:22:08
12 are many other configurations that this could be 11:22:12
13 done, how the device 106 could connect to the 11:22:16
14 various elements in here. 11:22:19

15 Q Okay. Figure 1 shows device 106 11:22:22
16 connecting via cellular signals 111 to the carrier 11:22:26
17 backbone 104. Do you agree? 11:22:32

18 A With the dotted line it connects that 11:22:36
19 going to this, I presume that's a base station 11:22:38
20 figure, the one with the circles on top and antenna. 11:22:42
21 To that is connecting, and what's in between that 11:22:47
22 and how it's connecting directly or indirectly to 11:22:50
23 the backbone is showing a figure, showing the lines 11:22:52
24 between them. Yeah, I agree it shows the lines 11:22:57

1 between them. 11:22:59

2 Q And you mentioned a base station. Is a 11:23:00
3 base station a part of a cellular network? 11:23:02

4 A It doesn't say any details of it, how what 11:23:05
5 it is in here. Not necessarily. I don't -- it 11:23:08
6 shows a -- all I said in here was that it shows an 11:23:13
7 antenna with a, I presume those are electromagnetic 11:23:17
8 waves going around in the circles. It's showing 11:23:20
9 some form of a, an antenna with the radio signals 11:23:26
10 going in there. Whether it's a part of a cellular 11:23:32
11 system or not, it doesn't say that. I can't 11:23:36
12 speculate on that. 11:23:38

13 Q Okay. If you could look at paragraph 20 11:23:39
14 of your declaration? And actually we will go to the 11:23:44
15 second line on page 7. It starts in turn, comma. 11:23:49
16 Do you see that? 11:23:57

17 A Uh-huh. 11:23:58

18 Q Could you read that sentence for the 11:23:59
19 record? 11:24:00

20 A Sure. It says that: "In turn, the 11:24:00
21 carrier backbone 104 is coupled to a WAN that 11:24:04
22 includes a cellular network accessible by device 106 11:24:09
23 via cellular signal 111." 11:24:14

24 Q So based on that statement, do you agree 11:24:17

1 that the device 106 is connected to the carrier 11:24:19
2 backbone via cellular signals 111? 11:24:22

3 A My statement is correct, yes, in terms of 11:24:26
4 how in Figure 1 it is depicted. But I also have a 11:24:29
5 statements before that say that what's shown in 11:24:34
6 Figure 1 is not -- one has to look at this 11:24:37
7 connection as direct or indirect connections. There 11:24:47
8 is some connection between the device 106 and 11:24:51
9 carrier backbone 104 as I described in my statement 11:24:53
10 line 22. 11:24:59

11 Q Okay. 11:25:00

12 A What I'm describing here is, this is a 11:25:01
13 very abstract high level description of it. 11:25:03

14 Q I understand that. Now let's talk about 11:25:05
15 the specification of the '532 patent. Is there 11:25:07
16 anywhere in the specification that describes any 11:25:11
17 other connection between device 106 and the carrier 11:25:13
18 backbone that is not through a cellular network or 11:25:16
19 through cellular signals? 11:25:21

20 A I'll have to look at the patent if you 11:25:46
21 don't mind for a few minutes. 11:25:48

22 Q Sure. 11:25:50

23 A And see if -- so your question again was, 11:25:51
24 can you repeat it again, if you don't mind? 11:25:55

1 Q Is there anywhere in the specification of 11:25:59
2 the '532 patent that describes any other connection 11:26:02
3 between the device 106 and the carrier backbone 104 11:26:05
4 that is not through a cellular network? 11:26:11

5 A Okay. So if you don't mind, let's look at 11:26:14
6 the patent, column 5, line 52. And I'm going to 11:29:46
7 read that as well as a few lines from column six if 11:29:56
8 you don't mind to clarify your question here. 11:29:59

9 "In an embodiment of the present 11:30:06
10 invention, WAN 105 is coupled to device 106. In an 11:30:07
11 embodiment of the present invention, WAN 105 11:30:12
12 includes a cellular network transmitting and 11:30:18
13 receiving cellular signals. In an embodiment of the 11:30:18
14 present invention, cellular signals are transmitted 11:30:22
15 using a protocol" -- we don't need to go through 11:30:25
16 those anymore. 11:30:29

17 Then looking at column 6, if you look at 11:30:31
18 line 11, it describes that -- sorry. Let's go to 11:30:36
19 line 16. I apologize. Line 16, column 6, it says 11:30:46
20 that device 106 is a cellular handset. In an 11:30:53
21 alternative embodiment of the present invention, 11:31:01
22 device 106 -- I apologize. Yes. In an alternative 11:31:04
23 embodiment of the present invention, device 106 is a 11:31:11
24 cellular enabled PDA, wireless modem or wireless 11:31:14

1 laptop computer. And it describes the question you 11:31:21
2 had in the next paragraph, 20, line 20; in an 11:31:25
3 embodiment of the present invention, WAN 106 is 11:31:29
4 coupled to a wireless carrier network or carrier 11:31:33
5 backbone 104. So it describes the WAN is coupled to 11:31:37
6 a carrier internal network or a carrier backbone. 11:31:44

7 In an embodiment of the present invention, 11:31:51
8 manager server 102 is coupled to a backbone. In an 11:31:53
9 alternative embodiment of the present invention, 11:31:58
10 carrier backbone 104 is coupled to an Internet 103, 11:32:00
11 which is above it on the left, and then it goes into 11:32:04
12 other things that the connections are, how the 11:32:10
13 server 101 is connected to this, is coupled to the 11:32:13
14 Internet 103. 11:32:18

15 So if your question is it doesn't 11:32:24
16 specifically say how the gateway device 106 is 11:32:30
17 directly coupled to the carrier backbone or not, 11:32:33
18 what it's describing here is WAN 106, 105 is coupled 11:32:37
19 to wireless carrier internal network or a carrier 11:32:42
20 backbone. It's talking about WAN. 11:32:45

21 And on the previous paragraph that I 11:32:48
22 talked about in column 5, line 52, it says that WAN 11:32:51
23 is coupled to device 106. In an embodiment of the 11:32:59
24 present invention, WAN includes a cellular network, 11:33:03

1 so saying it includes a cellular network, in column 11:33:06
2 6 it discusses the details of WAN and so forth. So 11:33:10
3 I'm not sure where you are referring that they're 11:33:18
4 discussing the question you asked. 11:33:19

5 Q Does the '532 patent describe any way in 11:33:45
6 which device 106 connects to the Internet without 11:33:51
7 going through the cellular network? 11:33:54

8 A Again back to my statement, device 106 in 11:34:21
9 paragraph 19 is coupled to a WAN by a cellular 11:34:25
10 connection 111. And what it's saying is that it is 11:34:31
11 within the WAN that is connected to a cellular 11:34:37
12 connection, and later I describe that it is 11:34:41
13 connected -- that it's connected to the Internet. 11:34:43
14 But the exact architecture of how the connection is 11:35:11
15 made in the patent is all under the umbrella of WAN, 11:35:16
16 not a specific -- again this is a very abstract 11:35:20
17 terminology, not a specifics of how the connections 11:35:23
18 are made, which one is connected directly to, which 11:35:26
19 one is connected indirectly to and the procedures 11:35:29
20 for them. 11:35:33

21 Q Sure. And my question wasn't really 11:35:33
22 specifically related to the WAN, it was related to 11:35:36
23 the device 106 connecting to the Internet. Does the 11:35:39
24 '532 patent describe any other mechanism for that 11:35:44

1 connection other than through a cellular network? 11:35:49

2 MR. MUKERJI: Object to form. 11:36:05

3 A In general it discusses the device 106 is 11:36:11
4 connected to the Internet. The details of whether 11:36:13
5 it's going through the cellular networks or not, 11:36:18
6 it's discussing that this connection is made through 11:36:21
7 the WAN, wide area network. Whether it's done 11:36:24
8 through the cellular signals or not, it does not 11:36:28
9 describe that in details. It does not describe 11:36:30
10 that, at least from what I remember reading, my 11:36:33
11 recollection of the patent. 11:36:38

12 Q Let's go back to paragraph 20 of your 11:36:40
13 declaration then. It's that same sentence I pointed 11:36:43
14 you to earlier on the second line of page 7. It 11:36:47
15 says, in turn -- 11:36:49

16 A Which line was it? Paragraph 20? 11:36:56

17 Q Starting on the second line. 11:36:59

18 A Oh, okay. Second line on paragraph 20? 11:37:02

19 Q I'm sorry. I'm waiting for the sirens to 11:37:08
20 go by. 11:37:12

21 A Sorry. 11:37:14

22 MR. MUKERJI: It's from being this close 11:37:16
23 to the White House. 11:37:17

24

1 BY MR. HAIGHT: 11:37:18

2 Q We will strike that and I will start with 11:37:21

3 the question again. The second line on page 7 of 11:37:25

4 your declaration, which is in paragraph 20, says: 11:37:31

5 "In turn, the carrier backbone 104 is coupled to a 11:37:34

6 WAN 105 that, quote, includes a cellular network, 11:37:39

7 end quote, accessible by device 106 via cellular 11:37:42

8 signal 111." Do you see that? 11:37:47

9 A Yes, I do. 11:37:49

10 Q Does that not indicate that the device 106 11:37:52

11 is coupled to the WAN via the cellular network? 11:37:59

12 A I don't believe that's what that sentence 11:38:06

13 says. Let me read it again if you don't mind. In 11:38:07

14 turn, the carrier backbone 104 is coupled to a WAN 11:38:11

15 105 that includes a cellular network. So we have 11:38:16

16 all these elements of the WAN, one of them is a 11:38:19

17 cellular network, that the device -- accessible by 11:38:24

18 device 106, but it does not talk about the specific 11:38:29

19 connections of how device 106 is coupled to a 11:38:32

20 backbone 104 via specifically cellular network. It 11:38:37

21 says it includes. 11:38:41

22 Here is a WAN, the WAN has a cellular 11:38:42

23 network, and as Figure 1, it shows WAN has Internet, 11:38:45

24 server, all these other things it has. In here it 11:38:50

1 is making a general statement that in turn, the 11:38:54
2 carrier backbone 104 is coupled to a WAN that 11:38:57
3 includes a cellular network, accessible by device 11:39:01
4 106. 11:39:05

5 Q Via cellular signal? 11:39:07

6 A Via cellular signal 111, yes. It's 11:39:11
7 coupled to a WAN via cellular signal. 11:39:15

8 THE WITNESS: If you don't mind, let me 11:39:29
9 finish this questioning and I wouldn't mind taking a 11:39:30
10 five-minute break. 11:39:35

11 MR. HAIGHT: Sure. 11:39:37

12 THE WITNESS: But I don't want to 11:39:38
13 interrupt your questioning. 11:39:40

14 BY MR. HAIGHT: 11:39:42

15 Q I think I can wrap this up in just a few 11:39:42
16 minutes. 11:39:45

17 A Absolutely. 11:39:46

18 Q Are there -- let me ask this. How would a 11:40:00
19 cellular device 106 communicate with the Internet 11:40:07
20 103 without going through the carrier backbone? 11:40:15

21 MR. MUKERJI: Objection to form. Outside 11:40:23
22 the scope. 11:40:24

23 A It depends on the configuration. The 11:40:31
24 device 106 is a wireless network, so it could have 11:40:34

1 many different architectures and possible 11:40:38
2 connections that it could use for connecting to the 11:40:41
3 Internet. 11:40:49

4 Q Are any of those described in the '532 11:40:49
5 patent? 11:40:52

6 A I just explained it to you based on 11:40:53
7 actually the paragraph you quoted to me, which is 11:40:55
8 the carrier backbone 104 is connected to that. And 11:40:58
9 does it describe it specifically the Internet 103 is 11:41:05
10 also connected to that, I can look into there again 11:41:09
11 and answer you. 11:41:12

12 But back to your question in general, I 11:41:12
13 don't believe it describes the details of how the 11:41:18
14 device 106 is connected to Internet. It is a 11:41:21
15 wireless device, it is sending radio signals. The 11:41:25
16 details of the architecture of where those radio 11:41:31
17 signals go and what's in route between that and the 11:41:35
18 Internet and how it's done, there are many different 11:41:37
19 configurations possible there. 11:41:41

20 Q Okay. The '532 patent specifically refers 11:41:43
21 to those wireless signals that you were referring 11:41:48
22 to -- 11:41:50

23 A Right. 11:41:51

24 Q -- as cellular signals; correct? 11:41:51

1 A The device 106 is coupled to a WAN and 11:42:10
2 components of the WAN by a cellular connection. 11:42:14
3 That's what I meant to say there. So I need to 11:42:19
4 correct myself. It is coupled to a cellular, to a 11:42:30
5 wireless area network via, by a cellular connection, 11:42:33
6 as I have stated in paragraph 19 of my statement. 11:42:35

7 Q Okay. And the WAN 105 would include a 11:42:44
8 cellular network? 11:42:50

9 A As I have in the paragraph 20, the line we 11:42:51
10 just read on page 7, line 2; in turn, carrier 11:42:55
11 backbone coupled to a WAN 105 that includes a 11:43:00
12 cellular network, yes. The wireless -- the WAN as 11:43:05
13 shown in Figure 1 includes the Internet 103. 11:43:09

14 Q Okay. And those cellular signals, 11:43:12
15 according to the '532 patent, are either GSM or CDMA 11:43:16
16 or TDMA or GPRS protocol signals? 11:43:24

17 A Yes, they are. 11:43:30

18 MR. HAIGHT: All right. Why don't we 11:43:33
19 break there. 11:43:35

20 VIDEOGRAPHER: This concludes disk number 11:43:40
21 two of the videotaped deposition of Sayfe Kiaei, 11:43:42
22 Ph.D. The time is 11:43:03 a.m. We are now off the 11:43:50
23 record. 11:44:00

24 (Recessed at 11:43 a.m.) 11:44:04

1 (Reconvened at 12:33 p.m.) 11:44:08

2 VIDEOGRAPHER: This begins disk number 12:32:34

3 three of the video deposition of Sayfe Kiaei, Ph.D. 12:34:34

4 The time is 12:33 p.m. We are now on the record. 12:34:39

5 BY MR. HAIGHT: 12:34:46

6 Q Dr. Kiaei, welcome back. 12:34:46

7 A Thank you, counsel. 12:34:49

8 Q During the lunch break did you happen to 12:34:50

9 discuss any of the substance of your testimony with 12:34:53

10 counsel? 12:34:56

11 A No, I did not. 12:34:56

12 Q Thank you. 12:34:58

13 A Thank you. 12:34:58

14 Q Before the break we were talking about the 12:35:04

15 '532 patent and Figure 1 and how that device 106 12:35:07

16 connects to the wide area network 105. Do you 12:35:19

17 remember that discussion? 12:35:25

18 A Yes. We discussed the device 106. 12:35:26

19 Q And the device 106 serves as a gateway 12:35:30

20 between the wide area network and the local area 12:35:47

21 network of Figure 1; is that correct? 12:35:52

22 A That is correct. 12:35:54

23 Q And that, device 106, has what's referred 12:36:15

24 to as a microrouter; is that correct? 12:36:20

1 A As I have in my -- yes, that is correct, 12:36:34
2 and I have that also on my declaration, paragraph 12:36:38
3 number 20, fourth line or actually the third line, 12:36:42
4 the additional software can be in the form of 12:36:49
5 software components called plug-ins that may be 12:36:50
6 added to the microrouter 404. 12:36:52

7 Q So the '532 describes software components 12:36:59
8 called plug-ins that are added to the microrouter 12:37:07
9 404; correct? 12:37:12

10 A Yes, that may be added to the microrouter 12:37:14
11 404. 12:37:17

12 Q What is your understanding of what 12:37:23
13 microrouter 404 is? 12:37:25

14 A If you look at paragraph 19 of my 12:38:22
15 declaration, the last two lines, I describe a, for 12:38:25
16 example, the device 106 has installed a microrouter 12:38:31
17 404 with software to route communications between 12:38:36
18 local devices 107 on the LAN 116 and the WAN 105. 12:38:40

19 Q And let me ask you this. Is the term 12:38:49
20 "microrouter" a term that one of ordinary skill in 12:38:52
21 the art would generally recognize outside the '532 12:38:58
22 patent? 12:39:01

23 A A -- within the context of this patent. 12:39:03
24 Microrouter in general could be a variety of 12:39:12

1 different communication blocks. In the context of 12:39:15
2 this patent, this microrouter is a component which 12:39:21
3 has the software to route communications between 12:39:29
4 local devices 107 on the LAN and the WAN 105. 12:39:33

5 Q Generally speaking, outside the scope of 12:39:44
6 the '532, does the term "microrouter" have a special 12:39:46
7 meaning to one of skill in the art? 12:39:51

8 MR. MUKERJI: Object to form. Outside the 12:40:01
9 scope. You can answer. 12:40:02

10 A Can you repeat the question again, please? 12:40:04
11 Sorry. 12:40:06

12 Q Sure. Generally speaking, outside the 12:40:07
13 scope of the '532, does the term "microrouter" have 12:40:11
14 a special meaning to one of skill in the art? 12:40:15

15 A It could mean many different things 12:40:23
16 depending on the application that's being used, the 12:40:25
17 system it's connected to, and so on. If I tell 12:40:31
18 somebody in general what's a microrouter, unless the 12:40:38
19 context is well-known and what it is doing in terms 12:40:41
20 of being a router, it depends on the situation, it 12:40:45
21 really depends on the specifics of the situation. 12:40:53

22 Q And within the scope of the '532, you 12:40:55
23 would agree that the microrouter, it enables the 12:40:59
24 terminals that we see in Figure 1 on the LAN to 12:41:07

1 connect to the wide area network through the device 12:41:11

2 106? 12:41:16

3 A It routes communications between the local 12:41:19

4 devices and the WAN, wireless area network. 12:41:25

5 Q And what does it mean to route 12:41:32

6 communications? Let me withdraw that. Let me ask 12:41:38

7 you in a general context. 12:41:50

8 A Sure. 12:41:52

9 Q What does it mean to route communications? 12:41:53

10 A In a general context, to route 12:41:58

11 communication, it also depends on the conditions and 12:42:02

12 the specifics of what we are dealing with. It is to 12:42:08

13 route between two elements in a communications 12:42:12

14 system, is, it depends on the configuration, depends 12:42:15

15 on what we have. I can tell you the English meaning 12:42:23

16 of it, but -- 12:42:26

17 Q Sure. Let's start -- 12:42:28

18 A In terms of -- that it routes, means it 12:42:30

19 sends signals or it sends components or signals or 12:42:36

20 whatever it is we are dealing with between two 12:42:45

21 points. 12:42:48

22 Q Under what circumstances would you, would 12:43:17

23 a router be needed to allow communication between 12:43:20

24 two different devices? 12:43:27

1 MR. MUKERJI: Object to the form. 12:43:31

2 A Again if there is specific items and they 12:43:34
3 are either in my declaration or patent, I can go 12:43:38
4 through that. But it really depends on the, it 12:43:41
5 depends on the architecture, it depends on the 12:43:45
6 system and how and what it's trying to route between 12:43:48
7 the two points. 12:43:52

8 Q Okay. I'm just trying to get a general 12:43:53
9 understanding of what function a router will serve. 12:43:56
10 So let me try a hypothetical. If say in a 12:43:59
11 home-based environment, if I want my laptop to talk 12:44:07
12 to my PDA, do I need a router? 12:44:15

13 MR. MUKERJI: Objection to form. Outside 12:44:20
14 the scope. 12:44:21

15 A Again, it's a hypothetical question. It 12:44:26
16 depends on what's between them, how they are 12:44:28
17 connected and so forth. I believe that the scope of 12:44:31
18 my work is based on what I'm discussing here. But 12:44:36
19 if you are asking me generally, I'm going to give 12:44:40
20 you a very general answer. 12:44:43

21 Q I'm asking generally. 12:44:44

22 A In general it depends on the architecture, 12:44:45
23 it depends on the system, it depends on many issues, 12:44:47
24 how the connection between them is, what devices 12:44:51

1 they have enabled in each one of the two devices, 12:44:53
2 what type of communications that can exist between 12:44:57
3 them, the bandwidth and the speed of the signaling, 12:44:59
4 many other issues. It really cases by case. 12:45:04

5 Q Okay. So let's tie it back to the '532 12:45:13
6 then. Why does the device 106 need a microrouter? 12:45:17

7 A The microrouter is to route communications 12:45:34
8 between the two devices, local device 107 and the 12:45:36
9 WAN 105 as it is in my statement of paragraph 19. 12:45:42

10 Q I understand what it's doing. I'm asking 12:45:46
11 why, why is it needed? 12:45:49

12 A Why? If you look at my statement, 12:45:51
13 declaration line 21, I describe that the device 106 12:46:35
14 adds in the plug-in 406 to the microrouter using 12:46:44
15 software components hookups -- sorry -- hooks 590, 12:46:49
16 which are application program interfaces for the 12:46:55
17 plug-ins. 12:46:59

18 Q Okay. My question wasn't about the 12:47:00
19 plug-ins. It's about the microrouter itself. Why 12:47:03
20 is that microrouter 404 needed in the device 106? 12:47:07

21 A It's to allow communications between the 12:47:17
22 local area network devices using the gateway and the 12:47:22
23 microrouter within that to the wide area network. 12:47:26

24 Q What does that microrouter do? Are -- let 12:47:32

1 me ask a different question. 12:47:36

2 Are the signals that are -- in Figure 1, 12:47:44
3 are the short range radio signals between the 12:48:04
4 terminals and the device, are those somehow 12:48:08
5 incompatible with signals that would be going out on 12:48:12
6 the wide area network? 12:48:15

7 A In '532 patent it doesn't go into details 12:48:21
8 of compatibility of the signals between the two and 12:48:29
9 so forth. But in general it discusses the router is 12:48:32
10 used for communications between the two terminals -- 12:48:35
11 between the two -- sorry -- domains, the LAN domain 12:48:41
12 and the wide area domain. There are many reasons 12:48:46
13 for having those two connected. 12:48:49

14 Q If we remove the microrouter from device 12:48:56
15 106, would the terminals on the local area network 12:49:00
16 be able to communicate to any of the systems or 12:49:07
17 devices on the wide area network? 12:49:13

18 A It depends what architecture and what type 12:49:17
19 of a system is implemented in 106. It's a -- are 12:49:22
20 there other possibilities? It depends on the 12:49:32
21 architecture of 106 and what it has and how it's 12:49:35
22 implementing the communications between the wide 12:49:39
23 area network and the local area network. 12:49:42

24 Q What is your understanding of how that 12:49:55

1 microrouter is implemented in the '532 patent? 12:49:57

2 A In paragraph 19 I describe that, in the 12:50:17

3 fifth line, which I say that the device 106 has 12:50:26

4 software -- this is a description of what's in the 12:50:29

5 patent -- for routing packets between the LAN 116 12:50:33

6 and WAN 105. At least that's what they describe in 12:50:37

7 the patent '532. 12:50:43

8 And later on in paragraph 20 has 12:51:02

9 additional terms, "in addition to routing software, 12:51:07

10 device 106 also has other software that can be 12:51:11

11 installed for providing various LAN network services 12:51:15

12 to local device 107 on the LAN 116. The additional 12:51:18

13 software can be in the form of software components 12:51:24

14 called plug-ins that may be added to the microrouter 12:51:27

15 404." 12:51:32

16 Q I understand. We will get to the plug-ins 12:51:33

17 later. I'm trying to understand what the core 12:51:36

18 functionality of that microrouter is. 12:51:39

19 A Thank you for that comment. It is what I 12:51:43

20 just read in terms of paragraph 19, which is device 12:51:46

21 106 has software for routing packets between the LAN 12:51:52

22 116 and the WAN 105. These packets are what's 12:51:56

23 routing between the two devices. 12:52:01

24 Q Is there a reason the device 106 has a 12:52:47

1 microrouter to transfer packets? 12:52:53

2 A One reason is in paragraph 21, the third 12:53:20

3 line, which again goes back to plug-ins, but it is a 12:53:26

4 discussion here in terms of the software plug-ins 12:53:38

5 406 enable the device 106 to provide various network 12:53:42

6 services to the local device 107 on the LAN. So 12:53:46

7 that's another reason besides routing packets 12:53:49

8 between the two devices, is to provide various 12:53:52

9 network services to the local devices on the LAN 12:53:56

10 116. 12:53:59

11 Q Right. And so I understand that that's in 12:54:01

12 addition to routing the packets. I'm trying to get 12:54:04

13 at why you need a router to direct those packets. 12:54:07

14 A Why do you need a router to route those 12:54:15

15 packets? 12:54:18

16 Q Yes. 12:54:19

17 A In general, the router is used in dealing 12:54:28

18 with two different domains, depending on what you 12:54:30

19 have on each domain and how it's implemented and the 12:54:35

20 signaling and the protocols in each one. 12:54:42

21 Q What do you mean by when you say domain? 12:54:55

22 A What I meant here is the signals which are 12:55:03

23 on one set of protocols or one -- in this case we 12:55:07

24 are talking about terminals 107 on one side LAN and 12:55:13

1 then on terminals 105 on the left side. So the 12:55:17
2 router is there to route and connect from the WAN to 12:55:22
3 the LAN or from the LAN to the WAN vice versa. The 12:55:30
4 domains I meant LAN 110 and the wireless area 12:55:36
5 network 105. 12:55:41

6 Q And you said earlier signals which are one 12:55:48
7 set of protocols or another. What do you mean by 12:55:53
8 protocols? 12:55:56

9 A What I meant there was that in the LAN 12:56:06
10 110, how that is configured and how the network that 12:56:09
11 operates, and then on the WAN on the left, whether 12:56:20
12 the operations of the signals in the WAN on the 12:56:25
13 left. 12:56:29

14 Q Looking back at Figure 1, we said that the 12:56:34
15 terminals 107 use the router, the microrouter on 106 12:56:45
16 to be able to communicate with the wide area 12:56:51
17 network; right? 12:56:55

18 A Yes. We said that. 12:56:56

19 Q So the connection between the terminal and 12:56:59
20 device 106, does that need a router? 12:57:07

21 A Depends again on the architecture, depends 12:57:18
22 on what system you have and how it's implemented. 12:57:20

23 Q Does the '532 say anything about that? 12:57:23

24 A Let me look at the patent one second. 13:00:49

1 Yes. Thank you for your -- in column 5, line 29, it 13:02:33
2 discusses that, patent '532 discusses that Figure 1 13:02:49
3 illustrates system 100 according to an embodiment of 13:02:54
4 the present invention. And it says that in an 13:02:58
5 embodiment of the present invention, device 106 and 13:03:12
6 one or more terminals 107 to communicate to form a 13:03:17
7 LAN 116. And the terminals 107 are coupled to the 13:03:20
8 device 106 by a short range radio signals 110 to 13:03:31
9 form LAN 116. 13:03:36

10 And later on in line 41 it discusses more 13:03:49
11 details of the, in an embodiment of the present 13:03:54
12 invention, terminal 107 includes a Bluetooth 2.4 13:03:59
13 gigahertz transceiver/receiver. Likewise, device 13:04:04
14 106 includes a Bluetooth 2.4 gigahertz 13:04:10
15 transceiver/receiver. 13:04:12

16 Q So because those two are communicating via 13:04:19
17 a Bluetooth 2.4 gigahertz transceiver, there is no 13:04:25
18 need for a router; is that correct? 13:04:32

19 A I would not say that as a general 13:04:34
20 statement. I do not agree with that statement. But 13:04:36
21 these have a -- they are part of the local area 13:04:38
22 network what describes in here that they are working 13:04:42
23 together. With an architecture -- it's a 13:04:46
24 hypothetical question. With an architecture of a 13:04:50

1 LAN, require a LAN -- sorry -- requires a router 13:04:53
2 between them and so on, it depends on the system and 13:04:58
3 its architecture. So what it describes is that 13:05:00
4 these devices are communicating with each other just 13:05:05
5 within itself, device 106 is a member of the local 13:05:11
6 area network. The gateway is a member of the local 13:05:16
7 area network. 13:05:20

8 Q Okay. 13:05:21

9 A And however that is implemented depends on 13:05:21
10 the -- 13:05:24

11 Q And the terminals of that local area 13:05:25
12 network cannot communicate with the wide area 13:05:27
13 network without a router in the '532 patent; is that 13:05:30
14 correct? 13:05:33

15 A In the '532 patent, as I just said 13:05:37
16 already, the device 106 has a software to couple -- 13:05:39
17 has a software and a microrouter to route 13:05:54
18 communications between local devices 107 and the WAN 13:05:58
19 105, yes. It has that microrouter 404 which enables 13:06:02
20 communications between the two. 13:06:09

21 Q And because that microrouter enables the 13:06:17
22 communications between the devices on the LAN and 13:06:19
23 the wide area network, if that microrouter were not 13:06:22
24 present, those devices on the local area network 13:06:27

1 would not be able to communicate with the wide area 13:06:29
2 network; is that correct? 13:06:33

3 MR. MUKERJI: Object to form. Outside the 13:06:35
4 scope. 13:06:36

5 A It depends -- it is again a -- can you 13:06:44
6 repeat the question again, please? Sorry. 13:06:56

7 Q Sure. Because the microrouter, as you 13:06:59
8 said, enables communications between the devices on 13:07:07
9 the LAN and the wide area network, if the 13:07:10
10 microrouter were not present, those devices on the 13:07:14
11 local area network would not be able to then 13:07:18
12 communicate with the wide area network; is that 13:07:21
13 correct? 13:07:23

14 MR. MUKERJI: Same objection. 13:07:24

15 A This depends on the implementation and how 13:08:11
16 it is done between the -- what I'm describing here 13:08:14
17 is a specific, or the patent '532 in terms of using 13:08:18
18 a microrouter that enables communications between 13:08:25
19 the local area network and wide area network. 13:08:29
20 Hypothetically, if it's not there, I -- it depends 13:08:35
21 on the architecture. I have not analyzed it, but 13:08:40
22 depending on the architecture and on what other 13:08:43
23 enablers are there to provide communications between 13:08:46
24 them, I would not call it in general they cannot 13:08:49

1 communicate. There may be other ways of doing that 13:08:53
2 between them. 13:08:56

3 Q Does the '532 patent teach any other way 13:08:57
4 to, for those terminals to communicate with the wide 13:09:04
5 area network other than going through that router? 13:09:10

6 A Based on the implementation they have 13:11:40
7 shown and discussed here, looking at column 8, 13:11:42
8 paragraph 29, which describes the microrouter, it 13:11:50
9 describes the microrouter enabling an IP based 13:12:02
10 network between the device 106 and terminals 107, it 13:12:08
11 discusses a high level block diagram and a software 13:12:23
12 in Figure 5 which shows what the microrouter is and 13:12:27
13 the implementation of the software in there. 13:12:32

14 Does it discuss other alternative 13:12:44
15 methodologies between that? I don't recall. At 13:12:47
16 least I don't remember from reading the patent '532. 13:12:50
17 That is one way of doing that based on the 13:12:54
18 microrouter they have. And they don't go into a lot 13:12:56
19 of details of how it's done and what happens when 13:13:01
20 that router is eliminated in between the local 13:13:05
21 devices and wireless devices. It describes all the 13:13:07
22 services of the microrouter in that paragraph. 13:13:13

23 Q Okay. And the '532 doesn't describe any 13:13:17
24 other method or component of enabling an IP based 13:13:20

1 network to communicate between device 106 and the 13:13:29
2 terminals -- I'm sorry -- between the terminals 107 13:13:33
3 and the wide area network; is that correct? 13:13:37

4 A As I said, it's been a -- I don't recall 13:13:57
5 if there was other methodologies discussed in terms 13:14:02
6 of communications or routing actually, what other 13:14:05
7 things it has in terms of a microrouter for 13:14:09
8 communicating between the two. There may be one, 13:14:13
9 but I don't remember that at this point. Yeah. 13:14:16
10 Sorry. 13:14:50

11 Q I want to direct your attention to Figure 13:14:56
12 4 of the '532 patent, and I understand the copy that 13:14:58
13 is -- 13:15:06

14 A Is that the one that's impossible to read? 13:15:07

15 Q Yeah. That's copies of copies of copies. 13:15:10
16 But I want to go through these components to make 13:15:13
17 sure we are talking about the same pieces. 13:15:16

18 A Yeah. I could not read this figure at 13:15:22
19 all. I tried even on the Internet, I tried to print 13:15:24
20 many other copies, and -- 13:15:28

21 Q I understand. 13:15:30

22 A -- I fail to understand the details of 13:15:31
23 that. 13:15:33

24 Q I think we did the same. Is it your 13:15:33

1 understanding that the elements 406 in the upper 13:15:39
2 left, and I think maybe if we do a little 13:15:44
3 cross-referencing with the specification, probably 13:15:47
4 around column 7, is it your understanding that those 13:15:51
5 elements 406 are network service plug-ins? 13:16:00

6 Let me take that back and ask a different 13:16:04
7 question. What is your understanding of what Figure 13:16:07
8 4 is supposed to be showing? 13:16:08

9 A I could not read Figure 4 after many times 13:16:13
10 of going through that. I tried to look for a better 13:16:18
11 way of looking at that figure. I'll do my best to 13:16:25
12 answer your questions by going to the patent and 13:16:29
13 seeing what the patent describes, but looking at the 13:16:32
14 Figure 4, I can't make anything out of that figure 13:16:35
15 besides a bunch of black boxes with scribbly white 13:16:38
16 lines in them. 13:16:45

17 Q Let me point you to column 7 of the '532 13:16:53
18 patent starting at line 35. 13:16:56

19 A Okay. 13:16:58

20 Q Does that inform your opinion of what 13:17:06
21 Figure 4 is depicting? 13:17:08

22 A It talks about, illustrates a software 13:17:11
23 architecture 500 for device 106 illustrated in 13:17:14
24 Figure 3A according to the embodiment of the present 13:17:19

1 invention. And 3A, by the way, just for the record, 13:17:23
2 is as bad as Figure 4. 13:17:30

3 Q Yeah. I understand that. And just for 13:17:33
4 the record, I'm not trying to pull one over on you. 13:17:35
5 I think any of the copies we pulled down from the 13:17:38
6 website were going to be, were just as bad. 13:17:41

7 A Yeah. I had the same problem, so I 13:17:45
8 appreciate that. 13:17:47

9 Q Is the -- the software architecture of 13:18:23
10 diagram -- of Figure 4, would, would that also be 13:18:38
11 described as a protocol stack? 13:18:48

12 MR. MUKERJI: Mr. Haight, so we are clear, 13:19:07
13 are you asking about Figure 4 itself or the 13:19:08
14 description you took him to regarding Figure 4? 13:19:11

15 MR. HAIGHT: The diagram Figure 4. 13:19:20

16 MR. MUKERJI: Objection to form. 13:19:24

17 A Let me look at all of the elements of 13:19:38
18 Figure 4 and see what it is trying to describe in 13:19:40
19 each element, whether it's describing the protocol 13:19:44
20 stack or not. 13:19:48

21 Q Maybe I can ask a different question. 13:19:58

22 A Yeah. 13:20:00

23 Q What is your understanding of what a 13:20:01
24 protocol stack is? 13:20:03

1 A That's easier than this figure. A 13:20:06
2 protocol stack is a networking protocol definition 13:20:17
3 and configuration of different layers in the 13:20:32
4 network. 13:20:38

5 Q And, so if I could point you to column 7, 13:20:47
6 around lines 56, 57, sorry, the paragraph that 13:20:52
7 begins "software 500"? 13:20:58

8 A Yes. 13:21:01

9 Q Could you read that first sentence, 13:21:02
10 please? 13:21:03

11 A Sure. "Software 500 includes 13:21:04
12 telecommunications software or physical layer 13:21:07
13 protocol stacks, in particular telecommunications 13:21:12
14 software 503 and a short-range radio communication 13:21:16
15 software 502." 13:21:21

16 Q And those elements 502 and 503 are in 13:21:24
17 Figure 4, we just can't read the labels? Do you 13:21:29
18 agree? 13:21:32

19 A Yes, I do agree. 13:21:33

20 Q So it's fair to say that that software 13:21:39
21 architecture 500 is a physical layer protocol stack, 13:21:43
22 based on those lines 57 through 59 of column 7? 13:21:56

23 A I can't based on this conclude that, 13:22:06
24 because it doesn't say any details about what does 13:22:08

1 it mean by cellular communication software 503 and 13:22:18
2 what does it mean by short-range radio communication 13:22:23
3 software 502 just by reading those three, four 13:22:27
4 lines. Software corresponding to what? That's a 13:22:31
5 pretty poor definition of a physical layer protocol 13:22:47
6 stack in my opinion. 13:22:51

7 Q So you referred to layers within a 13:23:37
8 protocol stack before. Do you recall that? 13:23:39

9 A Yes, I do. 13:23:43

10 Q How do -- what's the relationship of those 13:23:45
11 layers within the protocol stack? 13:23:51

12 A It depends on the configuration what the 13:24:03
13 relationships are, the specifics of them. But one 13:24:09
14 skilled in the art would know and understand in 13:24:13
15 general the details of each one of those layers, 13:24:15
16 what they are and how they communicate with the 13:24:19
17 upper stack or lower stack. It's an abstract notion 13:24:21
18 of how the different components of a network are 13:24:26
19 stacked on top of each other. 13:24:28

20 Q Uh-huh. Can components on the same -- 13:24:31
21 different components on the same layer of a protocol 13:24:37
22 stack interface with each other? 13:24:40

23 A It depends. 13:24:47

24 Q On what? 13:24:48

1 A It depends on what those components are 13:24:49
2 and whether, where are they in the chain of the 13:24:52
3 signaling coming in. With the GPS and Bluetooth, 13:24:56
4 both are physical layer signals, talk to each other. 13:25:05
5 It depends on how it is implemented. Is Bluetooth 13:25:10
6 trying to access location? If it is done in -- each 13:25:16
7 layer has a different domain and a different speed, 13:25:23
8 different -- typically physical layer is a real-time 13:25:27
9 signal coming in. 13:25:36

10 Q So why don't we do this. I want to try to 13:25:58
11 put labels on the elements of Figure 4, and we will 13:26:01
12 sort of go through the exercise together to make 13:26:05
13 sure we are talking about the same elements. 13:26:08

14 A Do you mind if I do the same thing on my 13:26:12
15 figure? 13:26:14

16 Q No, no. Yes. That would be fine. 13:26:14

17 A Can I borrow a pen or a pencil? 13:26:20

18 Q So starting with what's marked in Figure 4 13:26:30
19 as element 406. 13:26:35

20 A Yes. 13:26:39

21 Q If we go to column 8, beginning around 13:26:51
22 lines 29, I think we were discussing it earlier, the 13:27:02
23 description of the microrouter. 13:27:06

24 A Right. 13:27:08

1 Q Do you see element 406 in that paragraph? 13:27:09

2 A 406 or 404? 406? 13:27:12

3 Q Yes. 406. 13:27:16

4 A Yes, I do. It's line 34. Which says that 13:27:21

5 extended network services such as network service 13:27:26

6 plug-ins 406 may be added to the microrouter 404. 13:27:30

7 Q Okay. So we can fairly label element 406 13:27:34

8 as network service plug-ins; correct? 13:27:38

9 A Okay. 13:27:41

10 Q Let's move on to 404, which I think in 13:27:49

11 that same paragraph starting at line 29 referred to 13:27:54

12 as microrouter 404? 13:27:58

13 A Yes. Microrouter 404. 13:28:00

14 Q Would it be fair to label element 404 as 13:28:04

15 the microrouter? 13:28:07

16 A Sounds good. Yes. Thank you. 13:28:09

17 Q We are going to be referring back to these 13:28:14

18 in a few minutes. You asked for a pen. If you want 13:28:16

19 to write them down on the figure, you are more than 13:28:20

20 welcome to. 13:28:23

21 A Okay. I will remember them. I think that 13:28:24

22 helps for me to remember. 13:28:27

23 Q Sure. Element 407, which if you go one 13:28:28

24 paragraph above in column 8, at line 24, says: 13:28:39

1 "Furthermore, graphics user interface 407." It 13:28:45
2 would be fair to label element 407 as the graphics 13:28:51
3 user interface? 13:28:55

4 A Yes. 13:28:57

5 Q Moving on to element 403, which roughly 13:28:58
6 around line 9 and 10 of column 8, reads: "Operating 13:29:09
7 system 403 manages hardware and enables execution 13:29:17
8 space for device software components." Do you see 13:29:22
9 that? 13:29:25

10 A Yes. 13:29:26

11 Q It would be fair to label element 403 as 13:29:26
12 the operating system? 13:29:31

13 A Yes, it is. 13:29:32

14 Q Element 504, which beginning at column 8, 13:29:35
15 line 12, would it be fair to label element 504 as a 13:29:44
16 media abstraction layer? 13:29:51

17 A Yes, it is. 13:29:53

18 Q And then elements 503, 502, 501 -- well, 13:30:00
19 we will take them one by one. Element 503, if we go 13:30:06
20 back to column 7, at the bottom, roughly line 57, 13:30:18
21 would it be fair to label block 503 as the cellular 13:30:27
22 communications software? 13:30:33

23 A Yes. 13:30:35

24 Q And element 2 as the short-range radio 13:30:36

1 communications software? 13:30:39

2 A Yes. 13:30:40

3 Q And then the last line of column 7 says: 13:30:44

4 "Other telecommunication software may be used as 13:30:48

5 illustrated by other basebands 501." So it would be 13:30:51

6 fair to label 501 as other basebands, other baseband 13:30:58

7 telecommunication software? 13:31:00

8 A Yes. 13:31:03

9 Q I think that covers all the elements of 13:31:04

10 Figure 4. 13:31:07

11 A Yes, it does. Yeah. 13:31:07

12 Q Okay. 13:31:09

13 MR. MUKERJI: This may be a good time to 13:31:11

14 take a short break. We've been going about an hour. 13:31:12

15 It seems like the figure labeling portion is 13:31:16

16 finished. 13:31:21

17 MR. HAIGHT: Yeah. We can do that. 13:31:22

18 VIDEOGRAPHER: This concludes disk number 13:31:24

19 three of the video deposition of Sayfe Kiaei, Ph.D. 13:31:25

20 The time is 1:30:44 p.m. We are now off the record. 13:31:32

21 (Recessed at 1:30 p.m.) 13:31:38

22 (Reconvened at 1:55 p.m.) 13:31:39

23 VIDEOGRAPHER: This begins disk number 13:55:56

24 four of the video deposition of Sayfe Kiaei, Ph.D. 13:55:58

1 The time is 1:55:17 p.m. We are now on the record. 13:56:03

2 BY MR. HAIGHT: 13:56:09

3 Q Doctor, welcome back. 13:56:16

4 A Thank you, counsel. 13:56:18

5 Q Did you discuss any of your prior 13:56:20

6 testimony or the subject matter of your testimony 13:56:21

7 with counsel during the break? 13:56:23

8 A No, I did not. 13:56:26

9 Q Before we broke we went through the 13:56:28

10 exercise of identifying all of the sort of 13:56:30

11 blacked-out boxes of Figure 4. Do you recall that? 13:56:33

12 A Yes, I do. 13:56:37

13 Q And we had identified the three blocks at 13:56:38

14 the bottom, 501, 502, 503, as 503 being cellular 13:56:43

15 communication software. Do you recall that? 13:56:54

16 A Yes, I do. 13:56:56

17 Q And block 502 being short-range 13:56:57

18 communication software; correct? 13:57:01

19 A Yes. 13:57:01

20 Q And 501 referred to other baseband 13:57:02

21 telecommunication software; correct? 13:57:06

22 A Yes, sir. 13:57:08

23 Q What is your understanding of what the 13:57:09

24 '532 patent means by other baseband 13:57:11

1 telecommunication software? 13:57:15

2 A Other physical layer communication 13:57:27
3 methodologies, algorithms, software. 13:57:43

4 Q Can you give me other -- excuse me. Can 13:57:49
5 you give me an example of what an other baseband 13:57:52
6 telecommunications might be other than cellular or 13:57:57
7 short-range? 13:58:01

8 MR. MUKERJI: Objection to form. 13:58:04

9 A It doesn't go into detail. It has a very 13:58:10
10 generic description. Even the 502 and 503, calling 13:58:13
11 them cellular communication software and the 13:58:20
12 short-range radio software. 501, baseband, I can 13:58:23
13 speculate what they are if you would like me to. 13:58:28

14 Q I'm not asking you to speculate about the 13:58:31
15 '532 patent. I'm asking in general. As a person of 13:58:33
16 skill in the art, or even in your expert opinion, 13:58:37
17 what's an example of a baseband telecommunication? 13:58:38

18 A Baseband telecommunication is when we are 13:58:42
19 looking at a, at the signal not in the up-converted 13:58:46
20 to whether it's an RF or whatever frequency the 13:58:57
21 transmission is, but it is in a baseband in its 13:59:01
22 baseband frequency. Baseband refers to the baseband 13:59:05
23 frequency it's operating in. 13:59:09

24 There are -- the physical layer consists 13:59:13

1 of, that's pretty much a textbook material. 13:59:15

2 Physical layer consists of a variety of different 13:59:21

3 functionalities, algorithms, modulations, 13:59:26

4 demodulations, coding, et cetera, that goes on in 13:59:30

5 the baseband functionality. 13:59:35

6 So these are, I presume they are 13:59:37

7 separating it out. What other baseband they are, I 13:59:39

8 don't know what they mean in here, but baseband in 13:59:41

9 general are signaling and communications and 13:59:44

10 algorithms that are happening at the base, baseband 13:59:46

11 frequency, that's why they call it a baseband, 13:59:51

12 versus a Bluetooth 2.4 gigahertz frequency or a WiFi 13:59:54

13 5.4 gigahertz frequency. 14:00:00

14 Q So Bluetooth and WiFi would not be 14:00:06

15 considered to be a baseband communication? 14:00:11

16 A No. That's not what I said. I said at 14:00:23

17 those frequencies. 14:00:25

18 Q Okay. 14:00:27

19 A We are talking about there is all of those 14:00:27

20 are in the -- all of those Bluetooth, WiFi and so 14:00:30

21 on, they all have the phy layer, the physical layer 14:00:34

22 as well. So components of them are in here as well. 14:00:37

23 What I meant was at that frequency. Baseband is the 14:00:40

24 signaling and modulations, et cetera, at the lower 14:00:42

1 baseband frequency. So I did not -- by no means I 14:00:45
2 meant -- I want to make sure I correct myself. It 14:00:55
3 is not by any means that I'm excluding Bluetooth or 14:00:59
4 WiFi. All of these and so on, they have the phy 14:01:02
5 layer in there. 14:01:06

6 Q Sure. Just for terminology, when you are 14:01:08
7 saying the phy layer, you are referring to the 14:01:15
8 physical layer? 14:01:18

9 A Yes. Physical layer. Thank you. That's 14:01:20
10 a physical layer which deals with actual signals. 14:01:21

11 Q And in the diagram of Figure 4, the 14:01:25
12 elements 501, 502, 503, they make up the physical 14:01:32
13 layer? 14:01:36

14 A Well, that's their description of it, and 14:01:38
15 they haven't done a good job of describing what that 14:01:43
16 is. Calling it a cellular communication software 14:01:47
17 503, that is a very vague definition of it. Calling 14:01:53
18 it a short-range radio communication software, 14:01:57
19 that's also very vague terminology in there. So... 14:02:01

20 Q But you would agree that they are -- 14:02:08
21 those -- 14:02:10

22 A Yes. 14:02:10

23 Q Those components are within or make up the 14:02:11
24 physical layer of this software architecture of 14:02:14

1 Figure 4? 14:02:20

2 A They could be, yes, they are. If what 14:02:22
3 they mean is, is what they describe later on a few 14:02:25
4 lines later, they are the phy layer, physical layer 14:02:33
5 of a communication protocol stack. 14:02:37

6 Q And by a few lines later, you mean 14:02:41
7 communication software used to transmit and receive 14:02:44
8 cellular signals? Let me ask a different question. 14:02:53
9 That's probably very loaded. 14:02:56

10 A Thank you. 14:02:58

11 Q In column 7, starting at line 60, it says: 14:03:00
12 "In an embodiment, communication software 503," so 14:03:04
13 this would be the cellular communication software, 14:03:08
14 "is a GPRS baseband software component used with 14:03:11
15 processor 306 to transmit and receive cellular 14:03:12
16 signals." 14:03:17

17 A I don't agree with their definition of 14:03:23
18 that. 14:03:26

19 Q You don't agree that a cellular 14:03:30
20 communication software is a GPRS baseband software 14:03:32
21 component used to transmit and receive cellular 14:03:38
22 signals? 14:03:42

23 A I would call this used to send and receive 14:03:43
24 GPRS signals, or other types of signals that's in 14:03:44

1 there. 14:03:48

2 Q You said send and receive? 14:03:58

3 A No, no. 14:03:59

4 Q I'm just trying to understand what your 14:03:59

5 issue with that definition is. 14:04:02

6 A My issue with that definition is that as a 14:04:05

7 GPRS baseband software component, that is a very, 14:04:08

8 very generic and very abstract notion of what that 14:04:13

9 means. So I can't -- looking at that, that could be 14:04:18

10 many, many different things. 14:04:25

11 And then the other thing I have a problem 14:04:27

12 with is that the transmit and receive cellular 14:04:29

13 signal, in the phy layer what comes in is a digital 14:04:33

14 signal that's coming in in whatever format it is, 14:04:43

15 and whatever the media and wireless outside of the 14:04:48

16 Internet and how it's sent back and forth, it has 14:04:52

17 nothing to do with the phy layer what it could be. 14:04:55

18 So calling it a cellular signal, I do not agree with 14:04:58

19 that. It could be in a GPRS format. 14:05:01

20 Q And GPRS is a cellular protocol; correct? 14:05:06

21 A GPRS is a protocol used in the cellular 14:05:19

22 communications. But that does not -- still I do not 14:05:28

23 agree with calling a GPRS baseband software in the 14:05:38

24 phy layer is a transmit and receive cellular signals 14:05:44

1 that comes in there. 14:05:50

2 Q And is that because by the time it gets to 14:05:58

3 the physical layer, it's no longer a cellular 14:06:01

4 signal? Is that fair? 14:06:05

5 A No. That's not fair either. Because we 14:06:06

6 don't know what happens in the rest of the system. 14:06:09

7 This is only the software stack protocol in the 14:06:12

8 baseband of the device. This has nothing to do with 14:06:18

9 the air, what's going on outside of the radio or 14:06:24

10 cellular phone or handheld device or a WiFi or LAN 14:06:28

11 or whatever it is. What's out there and how they 14:06:33

12 were connected is a different issue. 14:06:36

13 Q Okay. I think you had said earlier that 14:06:38

14 CDMA would be another type of cellular protocol; 14:06:40

15 correct? 14:06:45

16 A CDMA is another types of a -- a protocol. 14:06:47

17 Q Sorry. 14:06:52

18 A Yes. Please, go ahead. 14:06:53

19 Q So in a baseband layer of a device like 14:06:55

20 that shown in the diagram of Figure 4, that cellular 14:07:04

21 communication software would be a different software 14:07:09

22 component for GPRS protocol versus a CDMA protocol; 14:07:12

23 correct? 14:07:23

24 A In general that's a correct statement, 14:07:23

1 yes. 14:07:26

2 Q Above the physical layer components that 14:07:32
3 we identified we see 504, which we agreed was the 14:07:36
4 media abstraction layer; is that correct? 14:07:41

5 A Yes, it is. 14:07:43

6 Q What does a media abstraction layer do? 14:07:49

7 A I don't know what they are calling a media 14:07:57
8 abstraction layer here. It is a pretty abstract 14:08:01
9 terminology for what they call it. That's one of 14:08:05
10 the problems I have with this, their definition. I 14:08:07
11 don't know what they mean by media abstraction 14:08:14
12 layer. I can speculate or I can guess what they are 14:08:18
13 saying, but I don't think you want me to do that. 14:08:23

14 Q So if I point you to column 8, starting at 14:08:26
15 line 12, it says media abstraction layer 504, would 14:08:31
16 you agree that that abstraction layer allows the 14:08:37
17 operating system 403 to communicate with the 14:08:43
18 basebands? 14:08:47

19 A In their figure the way they have shown 14:08:48
20 it, a media abstraction layer is a box between 403 14:08:51
21 and the physical layers, and in their interpretation 14:08:55
22 of that they show that as communicating between the 14:08:59
23 upper layer, the lower layer as they described in 14:09:05
24 their definition here. What it's saying here is the 14:09:08

1 first line, media abstraction layer 504 allows 14:09:15
2 operating system 403 to communicate with baseband 14:09:20
3 503, 502 and 501 respectfully. And I want to 14:09:23
4 emphasize again this is a very abstract way that 14:09:36
5 they have shown this and it is, terminology here is 14:09:40
6 different than what I have seen most places. 14:09:48

7 Q Are you saying you would refer to that 14:09:57
8 layer above the physical layer as something other 14:09:59
9 than a media abstraction layer? 14:10:01

10 A For me it's not clear what they call, what 14:10:06
11 is their definition of media abstraction layer. 14:10:09
12 That's really not coming to me. 14:10:13

13 Q Is there a term you would use for an 14:10:17
14 architecture level that would allow communication 14:10:26
15 between an operating system and a baseband layer? 14:10:29

16 A It depends on the architecture. It 14:10:37
17 depends on how the software stack is in the network 14:10:39
18 protocol layers. Top of my head I don't -- there 14:10:43
19 are many different locations used, many different 14:10:49
20 blocks that are used in there. And again the OSI 14:10:54
21 concept is a concept that the way they have shown it 14:10:58
22 is very abstract. 14:11:08

23 Q What do you mean by OSI? 14:11:10

24 A What we were just talking about. The 14:11:13

1 network protocol stack. Sorry. The network 14:11:15

2 protocol stack. 14:11:19

3 Q And just so we are clear, the network 14:11:21

4 protocol stack would be the lower-most layer, the 14:11:26

5 physical layer? 14:11:30

6 A No. The protocol stack is the entire box 14:11:32

7 500. 14:11:36

8 Q Okay. Where is the -- the network -- I'm 14:11:37

9 sorry. So you are saying box 500 is the network 14:11:42

10 protocol stack? 14:11:46

11 A The whole thing is the protocol stack. 14:11:47

12 Q Okay. 14:11:49

13 A Is the protocol stack. 14:11:51

14 Q And is it your understanding that an OSI 14:11:59

15 is a model for a protocol stack? 14:12:02

16 A Not necessarily. It depends on the 14:12:11

17 implementation. 14:12:13

18 Q I'm just trying to understand the term. 14:12:16

19 Does OSI stand for something? 14:12:18

20 A I forgot what it is actually, the acronym. 14:12:20

21 So let's stick to the protocol stack in general, 500 14:12:25

22 being a protocol stack. 14:12:30

23 Q In this network protocol stack of Figure 14:13:03

24 4, the way the layers are arranged, is that to allow 14:13:06

1 components to interface vertically with the layers 14:13:18
2 below it and above it? 14:13:23

3 A I can not refer to Figure 4 as how they 14:13:33
4 are, they are meant to implement this, because they 14:13:36
5 don't have -- besides very vague abstract 14:13:40
6 description of how these blocks operate with each 14:13:43
7 other, and that's actually overall in the patent, 14:13:46
8 architecture, both hardware and software and the 14:13:50
9 network infrastructure here is very abstract. They 14:13:55
10 are not talking any details of how the communication 14:13:59
11 is done. There are -- we just looked at that 14:14:01
12 paragraph. There are -- that's it. 14:14:04

13 Q Would a person of ordinary skill in the 14:14:10
14 art understand how the layers of a protocol stack 14:14:15
15 interact with each other? 14:14:19

16 A A person of ordinary skill in the art 14:14:22
17 would understand how the protocol stack in general 14:14:25
18 would work for a generic architecture of the 14:14:27
19 software and hardware network, the phy layer and so 14:14:30
20 on. Yes, they would. 14:14:36

21 Q We identified the network service plug-ins 14:15:12
22 406 at the top of that network protocol stack in 14:15:16
23 Figure 4. Do you recall that? 14:15:20

24 A Yes. I see the -- I see what they call it 14:15:21

1 in line 34, which is extended network services such 14:15:34
2 as network service plug-ins 406 may be added to the 14:15:41
3 microrouter 404. 14:15:46

4 Q Can those individual service plug-ins 14:15:50
5 communicate with each other? 14:15:57

6 A Depends again on the implementation. I 14:16:03
7 brought you example of in the phy layer, depends on 14:16:06
8 implementation, whether there are appropriate 14:16:12
9 information to be passed, the software is capable of 14:16:16
10 doing that and so forth. 14:16:19

11 Q Let's turn to Figure 5 of the '532 patent. 14:17:02
12 Luckily, I don't think we will have to go through 14:17:08
13 the same exercise here since it will be a little 14:17:11
14 more clear. What is your understanding of what 14:17:15
15 Figure 5 is showing there? 14:17:19

16 A It is a block diagram or I would say a 14:17:29
17 high level, high level diagram of the microrouter 14:17:36
18 404 with the components as shown here. 14:17:42

19 Q Is the microrouter of Figure 5 arranged in 14:18:50
20 layers similar to a protocol stack? 14:18:59

21 A I'm not aware of a -- the answer is no, 14:19:06
22 it's not. 14:19:15

23 Q There is no significance to the 14:19:26
24 arrangement of these blocks? 14:19:28

1 A That's not what I said. What I said was 14:19:36
2 it does not signify the network protocol stack. How 14:19:38
3 they have stacked these together and the hierarchy 14:19:46
4 of that, I don't think that's what I mentioned. I 14:19:49
5 didn't discuss that. 14:19:55

6 Q Right. I'm not trying to put words in 14:19:56
7 your mouth. 14:19:59

8 A Sure. 14:19:59

9 Q I'm just asking the question. 14:19:59

10 A No. It's not a network protocol stack, 14:20:00
11 conventional network protocol stack I would see. 14:20:03

12 Q But there are layers of this microrouter 14:20:07
13 arranged in a hierarchical format. Is that fair to 14:20:10
14 say? 14:20:14

15 A I wouldn't say that it is in a 14:20:18
16 hierarchical format, because you have the network 14:20:20
17 services and the hooks that connect to that. Would 14:20:25
18 that be above network services? Or is that in the 14:20:29
19 same level, just connecting to that? So are the 14:20:33
20 plug-ins only -- I don't know what this plug-in 14:20:39
21 ladder is on the left, how are they connected 14:20:46
22 together with the rest of the plug-ins and so forth? 14:20:50
23 I don't believe it's necessarily in any hierarchical 14:20:52
24 format they have shown it. 14:20:56

1 Q Do you see the lower-most block labeled as 14:21:10
2 network services 580 of Figure 5? 14:21:15

3 A I see network services 580 at the bottom 14:21:20
4 of that figure. 14:21:25

5 Q What is your understanding of what network 14:21:26
6 services 580 represents? 14:21:29

7 A As it says also in the figure, it performs 14:21:33
8 PPP, dynamic host configuration, DHCP, routing, NAT, 14:21:37
9 network address translation, and BAP, which I forgot 14:21:51
10 what BAP was. After all these acronym with all 14:21:57
11 these four patents and, I don't know what BAP is. 14:22:03

12 Q That's understandable. 14:22:07

13 A Oh, I'm sorry. It is here. It is a 14:22:18
14 Bluetooth access profile. 14:22:20

15 Q There we go. And you mentioned the 14:22:22
16 DHCP/PPP block 552. What is your understanding of 14:22:27
17 what that block does? 14:22:34

18 A In general, these are network services 14:22:42
19 that provides dynamic host allocation in the 14:22:48
20 Internet IP. 14:22:54

21 Q Would you agree that a DHCP or PPP server 14:23:21
22 would provide IP network information to the terminal 14:23:26
23 as its used in the '532 patent? 14:23:30

24 A IP information. 14:23:40

1 Q Like an IP address? 14:23:42

2 A Yeah. IP information, yes. Not IP 14:23:44

3 network information. I have to be careful what that 14:23:47

4 means. IP information, yes. 14:23:49

5 Q And do you see block 550 labeled Routing? 14:23:52

6 Do you have an understanding of what that block is 14:24:00

7 doing in the context of Figure 5? 14:24:03

8 A In a general fashion, because they don't 14:24:10

9 describe the details of what routing 550 is. In 14:24:16

10 general, I assume they mean routing of the IP or IP 14:24:20

11 packets. But it doesn't describe the details of 14:24:25

12 what's in 550. And again this block again is 14:24:30

13 another example of how the descriptions of the 14:24:33

14 blocks in this patent are very generic and high 14:24:36

15 level abstract. 14:24:40

16 Q Would a person of ordinary skill in the 14:24:42

17 art understand what routing block 550 is doing? 14:24:44

18 A A person of ordinary skill in the art 14:24:49

19 would know what routing means and what it is. But 14:24:52

20 routing between what elements between, whether we 14:24:55

21 are talking about routing between what and what and 14:24:59

22 how we are routing and so forth. There is a lot of 14:25:02

23 details in routing. It's important in the 14:25:05

24 architecture of the system to know and how it's 14:25:07

1 implemented. 14:25:11

2 Q If I could direct your attention to column 14:25:32

3 9 of the '532 patent, starting roughly around line 14:25:34

4 21. Do you see the section there called Routing? 14:25:39

5 A Yes, I see that. 14:25:46

6 Q And in the second paragraph of that 14:25:48

7 section, starting at about line 27, it says: 14:25:52

8 "Routing component 550 is responsible for IP packet 14:25:55

9 queuing/dropping." Do you see that? 14:26:01

10 A Yes. 14:26:03

11 Q What is your understanding of IP packet 14:26:03

12 queuing/dropping? 14:26:06

13 A In general what they mean by here is that 14:26:19

14 the IP, the routing component 550 is responsible for 14:26:22

15 IP packet queuing, meaning that if the IP is coming 14:26:27

16 in, queue them -- queuing -- actually, later on it 14:26:32

17 describes it later on. 14:26:44

18 So if you go down by, exactly right after 14:26:45

19 that it describes what it means by that. An IP 14:26:49

20 packet dropping software component is used for 14:26:53

21 reducing congestions caused by having more than one 14:26:56

22 terminal connected simultaneously. In an embodiment 14:27:00

23 of the present invention, routing 550 includes a 14:27:05

24 queuing software component, quality of service 14:27:09

1 software component or equivalent for queuing IP 14:27:13
2 packets. 14:27:15

3 And it continues on discussing that, 14:27:18
4 likewise, routing component 550 includes a dropping 14:27:20
5 software component that is configured by service 14:27:26
6 manager, a user or other remote entity. I think it 14:27:29
7 has a description of that in the rest of the 14:27:32
8 paragraph in there. And then it continues on again. 14:27:37
9 There is more description down at the bottom of that 14:27:41
10 paragraph. 14:27:43

11 Q Okay. 14:27:44

12 A If you like me to, I can go through that. 14:27:45

13 Q No. That's okay. Going back to Figure 5, 14:27:47
14 another block in that network services layer is the 14:28:09
15 NAT 553. Do you see that? 14:28:16

16 A Yes. 14:28:19

17 Q What does NAT stand for again? Sorry. 14:28:26

18 A Network address translation. 14:28:30

19 Q What is your understanding of what that 14:28:34
20 component is doing in the context of the microrouter 14:28:37
21 in the '532 patent? 14:28:44

22 A Actually, I believe I described that also 14:28:51
23 in my declaration. I have to find it. I have a 14:28:54
24 brief description of that on page 28, paragraph 64, 14:30:39

1 where it describes a prior art, which is RF 2663. 14:30:47

2 But I'm going to focus on the definition that it has 14:30:59

3 for network address translation. 14:31:02

4 "Describes an IP network address 14:31:03

5 translator, NAT, that can be implemented on a router 14:31:04

6 or a local network." And then in the end of the 14:31:08

7 second line: In particular, RF 2663 describes the 14:31:15

8 basic NAT, which translates between IP address in a 14:31:19

9 private domain and an external domain. 14:31:25

10 So with that definition, and I'm going to 14:31:29

11 assume that what they mean here in Figure 5, NAT is 14:31:40

12 the same NAT, which is a network address 14:31:45

13 translation, which is also in paragraph, in line 55, 14:31:47

14 column 9 of the patent, which describes the details 14:31:53

15 of the NAT in here. But the general description of 14:32:02

16 it is a network address translator that translates 14:32:17

17 between IP addresses in one domain which is private 14:32:22

18 domain and one domain external domain using it in 14:32:26

19 this patent. 14:32:32

20 Q What is your understanding of what the BAP 14:33:35

21 block 551 does in the context of the '532 patent? 14:33:40

22 A BAP, reading column 8 of the patent '532, 14:34:28

23 line 50 -- sorry -- line 55, is a software component 14:34:36

24 enables Bluetooth terminal to gain access to a LAN 14:34:47

1 116, and it says to a WAN by using IP protocol, 14:34:52
2 wireless -- wide band area network by using IP 14:35:02
3 protocol. 14:35:07

4 And it describes this more later on in the 14:35:08
5 last paragraph, which is line 63, that says: 14:35:17
6 Bluetooth LAN Access Profile software component 14:35:22
7 allows a LAN Access client in a terminal to obtain 14:35:25
8 an IP address and use the IP address in order to 14:35:32
9 gain connectivity to other LAN terminals or to a 14:35:36
10 WAN, behaving as if they were on a LAN. I'm 14:35:40
11 finished. Thank you. 14:35:55

12 Q The layer above the network services 580 14:36:13
13 is labeled as Hooks 590. Do you see that? 14:36:15

14 A Yes, I do. 14:36:23

15 Q What is your understanding of what hooks 14:36:25
16 are as they are used in the '532 patent? 14:36:29

17 A That's also described in the patent '532. 14:37:24
18 Their definition is hooks to Extended Network 14:37:27
19 Service Plug-ins, the top line, line 1, starting in 14:37:36
20 column 10, that describes it as in an embodiment of 14:37:43
21 the present invention, microrouter 404, that is in 14:37:50
22 Figure 5, includes hooks 590 allowing for the 14:37:57
23 extension of microrouter 404 networking services, 14:38:05
24 such as plug-ins 406. 14:38:07

1 Q Would you agree that those hooks are, they 14:38:35
2 act as an interface between the plug-ins and the 14:38:43
3 network services? 14:38:47

4 A In their particular implementation hooks 14:38:53
5 590 are, and description of what I just read in 14:38:57
6 their implementation is, they are looking at it as 14:39:00
7 connecting the plug-ins 406 with the network 14:39:06
8 services. 14:39:15

9 Q When you say connecting, is that the same 14:39:18
10 as providing an interface? 14:39:20

11 A Yes, providing interface as a hook, 14:39:28
12 meaning interfaces between the two. 14:39:32

13 Q If we could turn back to Figure 1, and 14:40:49
14 specifically to element 115 labeled communication 14:40:56
15 operator. Do you see that? 14:41:06

16 A Yes, I do. 14:41:08

17 Q Would you agree that in the context of the 14:41:15
18 '532 patent, that the communication operator 14:41:18
19 controls manager server 102? 14:41:23

20 A The representation they have and the 14:42:07
21 description they have -- sorry. The '532 patent 14:42:11
22 has, I apologize for calling them they. Strike 14:42:14
23 that. The description that '532 patent has in line 14:42:18
24 62, it describes that, in the embodiment of the 14:42:22

1 present invention, WAN 105, carrier backbone 104 and 14:42:33
2 manager server 102 is singly or in combination a 14:42:39
3 telecommunication network that is managed and 14:42:44
4 monitored by operator 115. I think -- yeah. That's 14:42:47
5 it. 14:43:00

6 THE WITNESS: The time is? 2:45? I don't 14:43:23
7 have a watch. That's why. 14:43:27

8 MR. MUKERJI: Do you need a break? 14:43:29

9 THE WITNESS: Not right now but maybe 14:43:31
10 after a couple questions. 14:43:33

11 MR. HAIGHT: I'm actually at a decent 14:43:35
12 breaking point. 14:43:37

13 THE WITNESS: That would be great. 14:43:40

14 VIDEOGRAPHER: The time is 2:42:52 p.m. 14:43:41
15 We are now off the record. 14:43:48

16 (Recessed at 2:42 p.m.) 14:43:49

17 (Reconvened at 3:01 p.m.) 14:43:50

18 VIDEOGRAPHER: The time is 3:01:04 p.m. 15:01:51
19 We are now on the record. 15:01:56

20 BY MR. HAIGHT: 15:01:59

21 Q Welcome back, doctor. 15:02:06

22 A Thank you, counsel. 15:02:08

23 Q During the break did you discuss the 15:02:09
24 substance of your testimony with counsel? 15:02:12

1	A	No, I did not.	15:02:14
2	Q	Thank you.	15:02:16
3	A	Thank you.	15:02:17
4		MR. HAIGHT: I'm going to hand you what we	15:02:35
5		will mark as 1443-5.	15:02:37
6		(1443 Exhibit Number 5	15:02:40
7		was marked for identification.)	15:02:40
8		THE WITNESS: Thank you.	15:02:59
9		BY MR. HAIGHT:	15:03:02
10	Q	Feel free to review the entire exhibit,	15:03:13
11		but my question is do you recognize what's been	15:03:16
12		marked as Exhibit 1443-5?	15:03:19
13	A	Yes, I do. It is a Patent Number 662,017;	15:03:25
14		also, I referred to it as Hoffman in my declaration.	15:03:41
15	Q	Okay. Just to be clear, I think you	15:03:53
16		skipped a number. This would be U.S. Patent	15:03:55
17		6,622,017; is that correct?	15:03:58
18	A	Yes. You are correct. 6,622,017.	15:04:01
19	Q	Thank you.	15:04:06
20	A	Thank you, sir.	15:04:07
21	Q	Is this a document you reviewed in	15:04:09
22		preparation of your declaration?	15:04:11
23	A	Yes, I have.	15:04:16
24	Q	What is your understanding of, generally,	15:05:02

1 of what the Hoffman patent is teaching? 15:05:05

2 A The general description of what the patent 15:05:11
3 teaches is, I have it outlined in my paragraph 43 of 15:05:15
4 my declaration, which says that Hoffman describes, 15:05:23
5 if you are ready with that? 15:05:27

6 Q Uh-huh. 15:05:29

7 A Hoffman describes a cellular mobile 15:05:30
8 station, such as a digital cellular telephone or 15:05:32
9 mobile handset, that uses over-the-air programming 15:05:37
10 to download software modules, or plug-ins, into the 15:05:41
11 handset. Such over-the-air programming over 15:05:45
12 cellular connections allows a user to download 15:05:49
13 software onto a mobile handset from any equipment 15:05:53
14 coupled to the Internet, virtually anywhere in the 15:05:56
15 world. So that's a general description of the 15:06:01
16 patent. 15:06:04

17 Q Hoffman doesn't disclose or discussed ad 15:06:17
18 hoc networks, does it? 15:06:20

19 A Excuse me. To the best of my recollection 15:06:38
20 on this patent, it does not describe any of the ad 15:07:45
21 hoc network, ad hoc network methods. 15:07:49

22 Q Hoffman also does not discuss or teach the 15:07:58
23 use of Bluetooth in any of its networks; is that 15:08:03
24 correct as well? 15:08:08

1 A I don't recall Hoffman discussing 15:08:35
2 specifically Bluetooth network in the Hoffman 15:08:36
3 disclosure patent. 15:08:43

4 Q And Hoffman doesn't teach or describe the 15:08:46
5 use of JINI technology or Java technology; is that 15:08:48
6 correct? 15:08:53

7 MR. MUKERJI: Did you say JINI or Java, 15:08:58
8 counsel? I'm sorry. I missed that. 15:09:03

9 MR. HAIGHT: I said both. 15:09:04

10 A Hoffman does not explicitly discuss JINI 15:09:15
11 or Java technologies in the Hoffman patent, '017. 15:09:20

12 Q Would you agree that the plug-ins that are 15:10:12
13 described in Hoffman are meant to upgrade the 15:10:14
14 terminal devices onto which those plug-ins are 15:10:28
15 downloaded? 15:10:32

16 A I'm sorry. You said to upgrade the 15:10:41
17 terminal devices? 15:10:44

18 Q To upgrade the units. Sorry. 15:10:45

19 A Oh, okay. What Hoffman teaches is in 15:10:48
20 paragraph 44 of my declaration, which is the mobile 15:11:09
21 handset -- any time you are ready I can read that. 15:11:13

22 Q Sure. 15:11:16

23 A The mobile handset 5 downloads software 15:11:18
24 modules, called plug-ins, over a cellular network 15:11:23

1 using the over-the-air programming from multiple 15:11:25
2 third-party server -- sorry -- from a remote, from a 15:11:30
3 remote third-party server 37. The remote server 37 15:11:35
4 can transmit the plug-ins to the cellular network 15:11:40
5 and thus over the air-link to the mobile handset 5. 15:11:43

6 For example, the mobile handset 5 15:11:52
7 communicates with a wireless telephone network 3 via 15:11:55
8 cellular or personal communications services, 15:12:00
9 service, PCS type services. The next line discusses 15:12:03
10 that the plug-in modules can be downloaded from 15:12:10
11 various sources on the Internet, et cetera. I'll 15:12:14
12 stop there. 15:12:19

13 MR. HAIGHT: I'm going to hand you what we 15:12:51
14 will mark as Exhibit 1443-6. 15:12:52

15 (1443 Exhibit Number 6 15:12:56
16 was marked for identification.) 15:12:56

17 BY MR. HAIGHT: 15:13:12

18 Q Do you recognize what's been handed to you 15:13:22
19 as Exhibit 1443-6? 15:13:24

20 A Yes, counsel. It is a version, IEEE 15:13:43
21 Standard 802.11b-1999 version edition of the Part 15:13:54
22 11: Wireless LAN Medium Access Control, or MAC, and 15:14:03
23 a physical layer, PHY, specification for the 15:14:10
24 higher-speed physical layer extension in the 2.4 15:14:16

1 gigahertz bandwidth, which is also the -- I'm going 15:14:21
2 to call this the 802.11b, or wireless LAN 15:14:24
3 specification. 15:14:32

4 Q You understand this document to be a 15:14:34
5 supplement to the 802.11 standard; is that correct? 15:14:36

6 A Yes, it is. This is a 1999 version, which 15:14:42
7 may be different than what I have, which is -- maybe 15:14:45
8 it's the same thing -- which was the 2000 version, 15:14:49
9 but this one was -- I think it may be the same 15:14:54
10 thing, so yeah. 15:14:57

11 Q When you say 2000 version, what do you 15:14:59
12 mean? 15:15:03

13 A It was published in January 20th of 2000, 15:15:08
14 but that's the same document I believe. If you look 15:15:11
15 at the copyright on the first page, at the bottom of 15:15:18
16 the first page it says published January 20th of 15:15:22
17 2000. And that's what I have in my reference on 15:15:26
18 page 4 of my prior art, which is the same thing. So 15:15:29
19 I wanted to make sure I don't have a different 15:15:33
20 supplement to this. 15:15:36

21 Q Sure. 15:15:37

22 A It is a Part 11, and it is a -- yeah. 15:15:39
23 It's the correct version. Yeah. Sorry. These 15:15:43
24 change, every month they change. If you are 15:15:47

1 involved in the standards, every month there is a 15:15:49
2 supplement and that supplement changes almost on a 15:15:52
3 quarterly basis, so I want to make sure I'm looking 15:15:55
4 at the same thing. I don't mean to be picky here. 15:15:58

5 Q No, no. That's fine. 15:16:01

6 A There could be substantial changes in 15:16:03
7 there as we go forward. 15:16:06

8 Q That leads to my next question. 15:16:07

9 Throughout this document there are portions that are 15:16:09
10 underlined and portions that have strike-throughs. 15:16:11

11 What is the significance of those markings? 15:16:16

12 A I have been in the standards bodies 15:16:20
13 before, and what we do is that the editors when 15:16:24
14 they, the different representatives of the companies 15:16:27
15 meet in the standards body. We may not agree on the 15:16:30
16 language or we may strike language or components of 15:16:37
17 the standards so we strike through that. There are 15:16:40
18 components that we may need to have different 15:16:44
19 discussions, we underline those and so on and so 15:16:47
20 forth. 15:16:49

21 There is a specific format we use to keep 15:16:51
22 the document in a format that everybody will 15:16:54
23 understand, and the last meeting, these are the 15:16:56
24 issues we discussed, these are the issue we strike 15:16:58

1 over, and that will continue until the final version 15:17:01
2 is done, and even then it's not done. 15:17:06

3 Q So it's fair to say the strike-throughs 15:17:08
4 and the underlines are edits made to a previous 15:17:11
5 version? Is that fair? 15:17:15

6 A Yes. It's a continual edition of the 15:17:16
7 standards. And this was in 1999. Yeah. 15:17:20

8 Q And is there an indication on this 15:17:23
9 document that this was the version that was accepted 15:17:33
10 by the committee? 15:17:41

11 A Up to this point it was accepted as it was 15:17:51
12 by the committee when it was published. It's not -- 15:17:55
13 if what you mean is a different question, I can, if 15:18:00
14 you are more specific. 15:18:02

15 Q Let me ask it a different way. Is there 15:18:05
16 anything in this document to indicate that this 15:18:09
17 isn't just a marked-up draft of the standard or of 15:18:11
18 the supplement? 15:18:16

19 A No. This is not a marked-up draft. At 15:18:31
20 the time this was an agreed upon standard at the 15:18:36
21 time that it was published and agreed upon standard 15:18:39
22 by the committee at that point. 15:18:42

23 Q How do you know that generally speaking? 15:18:46

24 A By the fact that it discusses that in the 15:18:50

1 document as well, you know, it discusses at the top, 15:18:55
2 this is the IEEE standards. 15:19:02

3 Q Where are you looking, sir? 15:19:04

4 A At the page 2. It describes what the 15:19:06
5 standards is, it describes the use of the IEEE 15:19:35
6 standards is discussion on the second paragraph, and 15:19:40
7 then in the fourth paragraph it discusses the 15:19:45
8 questions that may arise regarding the meaning of 15:19:48
9 this standard and if there are any 15:19:51
10 interpretations -- if this was a draft, there would 15:19:54
11 be a specific, either a watermark or specific things 15:19:57
12 that would say this is a draft. So I assume -- I 15:20:02
13 was not in that committee at that time. If this was 15:20:06
14 a draft, there would be a clear indication on that 15:20:10
15 up front or even a watermark that would say that 15:20:12
16 this is a draft document. So... 15:20:15

17 Q To the best of your knowledge, the edits 15:20:22
18 in the supplement were in fact adopted as part of 15:20:25
19 the standard; is that correct? 15:20:28

20 A Yes. And also page 8 it describes that 15:20:29
21 editing done in there. If you look at page 8 of the 15:20:31
22 document, which is page 1 of the 802.11 document, 15:20:36
23 but the page 8 of your reference, the paragraph, 15:20:40
24 second paragraph on the page 1 of the standard, it 15:20:46

1 says the editing instructions are shown in bold, et 15:20:54
2 cetera. So it discusses all the formatting 15:20:58
3 questions you already had in there. So to the best 15:21:00
4 of my knowledge, this was the standard that was at 15:21:04
5 that time adopted by the IEEE body that was an 15:21:06
6 802.11b committee, technical committee. 15:21:11

7 Q The 802.11 standard, is that also known as 15:21:17
8 a WiFi standard? 15:21:37

9 A Would I generalize it as a WiFi standard, 15:21:44
10 802.11? I hesitate to say that because I believe 15:21:48
11 that -- I'm just thinking if there were some other 15:21:53
12 standards that may have used the same first five 15:21:56
13 numbers as well. I don't know whether -- but for 15:22:01
14 the sake of this discussion here, this is 15:22:04
15 specifically standard for 802.11 -- one second. Let 15:22:09
16 me -- I guess my preference would be to keep as 15:22:30
17 802.11 dot B standard rather than calling it a WiFi, 15:23:06
18 because it is, it is 802.11b. So I would like to 15:23:14
19 keep it that way. I don't want to cause 15:23:20
20 interpretation of that because WiFi could be many, 15:23:25
21 many different things. Since we are talking about 15:23:30
22 the standard, let's stick to the number it has. 15:23:33

23 Q I was more asking in general. I 15:23:36
24 understand the purpose. I will be as specific as 15:23:38

1 possible. 15:23:40

2 A I was on the standards body for a few 15:23:42
3 years and we were very sensitive about even any Bs, 15:23:45
4 Cs or C primes and so forth. In general if you like 15:23:48
5 to call it a WiFi, I prefer to call it 802.11b. 15:23:55

6 Q And is it your understanding that the 15:24:01
7 802.11b standard is implemented through a media 15:24:06
8 access protocol known as CSMA? 15:24:21

9 A Could you point exactly in the document 15:24:32
10 you are talking about where it talks about CSMA? 15:24:34

11 Q I'm asking generally. 15:24:38

12 A Again with all the acronyms and all the 15:24:39
13 names, there is CSMA, there is CDMA, there is QDSS. 15:24:43
14 So if you have a specific, please point that. 15:24:47

15 Q Yep. I will try and pin that down. 15:24:50
16 Sitting here today, do you have an understanding of 15:24:53
17 what CSMA, a CSMA media access protocol is? 15:24:56

18 A Not off top of my head to be frank, no. 15:25:12
19 So if you have a -- if I discuss it anywhere in my 15:25:15
20 document, please point to that. 15:25:23

21 Q On page -- it's lower case Roman IV of the 15:25:29
22 actual standard, it's stamped as page 4, cardinal 4, 15:25:36
23 and starting on the previous page, it says: "The 15:25:50
24 standards defining the access technologies are as 15:25:54

1 follows." 15:25:58

2 A No, I'm sorry. 15:25:58

3 Q On page 3. 15:25:59

4 A Here we go. Okay. So where on the page 15:26:00

5 again? 15:26:11

6 Q So maybe we start with the paragraph on 15:26:12

7 page 3 that says, about halfway through the page, it 15:26:17

8 says "this family of standards." 15:26:21

9 A Yeah. Do you want me to read that? 15:26:24

10 Q Sure. 15:26:26

11 A Okay. I read that, and there are all 15:26:43

12 these annotations for the IEEE Standard 802 and so 15:26:46

13 forth and all the columns in there. 15:26:50

14 Q Sure. 15:26:52

15 A Then the next page is the CSMA; right? 15:26:53

16 Q Right. That second bullet point on page 4 15:26:56

17 says: "CSMA/CD Access Method and Physical Layer 15:27:00

18 Specifications"? 15:27:07

19 A Uh-huh. 15:27:08

20 Q Does that refresh your recollection of 15:27:11

21 what, CSMA is a media access protocol? 15:27:14

22 A I don't know what the acronym exactly 15:27:21

23 stands for, but it is media access control. If you 15:27:25

24 don't mind, let me look at it for a second in that 15:27:29

1 section, which I don't know whether this document 15:27:34
2 describes that or not. 15:27:38

3 Q If I submit to you that it stands for 15:27:44
4 carrier sense multiple access, would you agree with 15:27:47
5 that? 15:27:49

6 A I don't remember exactly the acronym, what 15:28:00
7 it was. To be frank, it's not a memory test. 15:28:02

8 Q I understand. But, so sitting here today, 15:28:06
9 you are not aware that the 802.11 standard 15:28:09
10 implements CSMA/CD media access protocol? 15:28:13

11 MR. MUKERJI: Objection to form. 15:28:19

12 A Not remembering acronyms does not mean 15:28:21
13 that. That's not what I said. I said acronyms, I 15:28:26
14 don't remember exactly the details of acronym, what 15:28:31
15 it was for. I am familiar with the 802.11 media 15:28:32
16 access control and what it does. But that's outside 15:28:36
17 of the -- but anyhow, that's it. 15:28:48

18 Q Is the 802.11 media access protocol based 15:28:51
19 on a master/slave relationship, or media access 15:28:59
20 protocol? 15:29:09

21 A I don't recall that, but in general the 15:29:39
22 master/slave relationship can be implemented in any 15:29:42
23 network configurations in here. But I don't 15:29:48
24 remember the details of 802.11 had a master/slave 15:29:52

1 configuration. It may have been contributions in 15:29:57
2 there and discussions in there which they supported 15:30:01
3 master/slave. Off the top of my head I don't 15:30:05
4 remember that. But I don't see what would preclude 15:30:12
5 that from having a master/slave relationship. 15:30:15

6 Q Is there anything in the supplement IEEE 15:30:18
7 standard that's been marked as 1443-6 that indicates 15:30:20
8 a 802.11 protocol would implement a master/slave 15:30:24
9 media access protocol? 15:30:41

10 A Again looking at this top of my head, I 15:30:47
11 don't remember seeing that in here. But in general 15:30:50
12 the master/slave relationship can be implemented 15:30:53
13 within a network of wire line or wireless devices 15:30:57
14 and each other. That's not a -- that's a very much 15:31:04
15 a well-known concept in the communication systems. 15:31:08

16 Q Does 802.11 encompass wire line 15:31:12
17 communications? 15:31:15

18 A I said in general. Wireless and wire. 15:31:16
19 The statement I made was a general statement. 15:31:19

20 Q Sure. I'm talking about this document 15:31:21
21 specifically. 15:31:23

22 A It is a wireless system. And I don't see 15:31:24
23 any reason why what would preclude or exclude 802.11 15:31:28
24 from having a master/slave relationship. 15:31:35

1 Q Would you consider master/slave to be a 15:31:47
2 type of media access technology? 15:31:51

3 A That's a very generic and general 15:31:58
4 statement. Master/slave relationship is used even 15:32:01
5 in printers, and in -- it goes back to, the best I 15:32:06
6 recollect, from 1980s, even late '70s I was taking 15:32:22
7 network class. At that time master/slave 15:32:24
8 relationships was well-known fact in memory, in how 15:32:28
9 to connect daisy-chain printers together, how to 15:32:34
10 connect memory devices together. So it's not a, 15:32:39
11 necessarily a just a network media access control 15:32:44
12 configuration. 15:32:49

13 Q In the paragraph we discussed on page 3 15:33:08
14 where it says "this family of standards", do you see 15:33:10
15 that? 15:33:14

16 A Yes. 15:33:17

17 Q The second sentence of that paragraph 15:33:18
18 says: "The access standards define seven types of 15:33:20
19 medium access technologies." Do you see that? 15:33:23

20 A Yes. 15:33:27

21 Q Do you have any understanding of what 15:33:28
22 those, specifically what those seven types of media 15:33:31
23 access technologies are? 15:33:34

24 A Not off top of my head. I would be happy 15:33:39

1 to read this. And also it says at the end of the 15:33:41
2 line, paragraph, that other types are under 15:33:44
3 investigation. 15:33:47

4 Q But you don't know what those types are? 15:33:48

5 A No. No, I do not. 15:33:50

6 MR. HAIGHT: We need to change the tapes 15:33:53
7 real quick. 15:33:56

8 VIDEOGRAPHER: This concludes disk number 15:33:57
9 four of the video deposition of Sayfe Kiaei, Ph.D. 15:33:58
10 The time is 3:33:17 p.m. We are now off record. 15:34:05

11 (Recessed at 3:33 p.m.) 15:34:09

12 (Reconvened at 3:37 p.m.) 15:34:10

13 VIDEOGRAPHER: This begins disk number 15:38:25
14 five of the video deposition of Sayfe Kiaei, Ph.D. 15:38:27
15 The time is 3:37:46 p.m. We are now on the record. 15:38:33

16 BY MR. HAIGHT: 15:38:38

17 Q Dr. Kiaei, I'm going to hand you what we 15:38:52
18 are marking as Exhibit 1443-7. 15:38:54

19 (1443 Exhibit Number 7 15:38:58
20 was marked for identification.) 15:38:58

21 THE WITNESS: Thank you. 15:39:16

22 BY MR. HAIGHT: 15:39:16

23 Q Do you recognize what's been marked as 15:39:22
24 Exhibit 1443-7? 15:39:24

1 A Yes, I do, counsel. It is a RFC 2663 15:39:32
2 reference used as a prior art in my declaration, 15:39:47
3 which is titled IP Network Address Translator (NAT) 15:39:51
4 Terminology and Considerations. 15:39:56

5 Q Just for terminology sake, RFC, does that 15:40:05
6 stand for requests for comments? 15:40:09

7 A Yes. RFC stands for requests for comments 15:40:11
8 within the network working group. 15:40:16

9 Q Do you have any understanding of what the 15:40:23
10 network working group is? 15:40:25

11 A I have not participated in that group 15:40:38
12 before. I have a general idea of what that working 15:40:41
13 group is, but I don't have a lot of detailed 15:40:44
14 information about it. 15:40:47

15 Q Is that a working group within a larger 15:40:48
16 organization? 15:40:51

17 A I believe so, but I'm not sure which 15:40:53
18 organization they belong to, or that it was part of 15:40:55
19 an ITU FC, IEEE. It was overall a networking group 15:41:00
20 that, working group that we were aware of. I don't 15:41:06
21 know the details of how they are shared and so. 15:41:08

22 Q Do you see the reference in the upper 15:41:38
23 right-hand corner to Lucent Technologies? 15:41:40

24 A Yes, I see that. 15:41:43

1 Q And it's got a date of August 1999; is 15:41:51
2 that correct? 15:41:55

3 A Yes, it does. 15:41:55

4 Q Is it possible that the network working 15:42:04
5 group is, for lack of a better word, a working group 15:42:06
6 within the company Lucent Technologies at the time? 15:42:18

7 MR. MUKERJI: Objection to form. 15:42:21

8 A I do not know that. I cannot comment on 15:42:21
9 that. I can tell you about my experience within the 15:42:25
10 working groups if that helps your question. 15:42:27

11 Q No. I'm just trying to understand the 15:42:33
12 context of where this document came from? 15:42:36

13 A No. In general working groups are -- when 15:42:39
14 the Bluetooth standard started before that, Intel, 15:42:42
15 Microsoft, a number of other companies created the 15:42:46
16 Bluetooth working group and we got together. That 15:42:50
17 was for Bluetooth. I don't know what this one is. 15:42:52
18 I cannot speculate. 15:42:59

19 Q Did you identify this reference personally 15:43:11
20 as a prior art reference in the scope of your work 15:43:13
21 for this IPR? 15:43:18

22 A I don't believe I did on this one. No, I 15:43:22
23 did not. 15:43:24

24 Q Exhibit 1443, I believe you identified the 15:44:03

1 title is the IP Network Address Translator (NAT) 15:44:08

2 Terminology and Considerations; is that correct? 15:44:12

3 A Yes. 1443-7; right? 15:44:16

4 Q Yes. 15:44:19

5 A Dash seven, yeah. 15:44:20

6 Q I'm sorry. Did I -- 15:44:20

7 A You just said 1443. 15:44:20

8 Q I apologize. Thank you. 15:44:23

9 A That's okay. 15:44:25

10 Q And I think you had alluded to it and 15:44:26

11 pointed to a paragraph in your declaration earlier 15:44:30

12 when we were generally discussing the NAT component 15:44:34

13 in the '532 patent, you referred to this document. 15:44:37

14 Would it be fair to say that network address 15:44:44

15 translation as used in this document is a method by 15:44:52

16 which IP addresses are mapped from one realm to 15:44:55

17 another in an attempt to provide transparent routing 15:44:59

18 to hosts? 15:45:04

19 MR. MUKERJI: Can I get that question back 15:45:14

20 please, starting with would it be fair? 15:45:16

21 - - - 15:45:19

22 (Whereupon the following portion of the 15:45:19

23 testimony was repeated by the Court Reporter: 15:45:19

24 QUESTION: Would it be fair to say that 15:45:19

1 network address translation as used in this document 15:45:19
2 is a method by which IP addresses are mapped from 15:45:19
3 one realm to another in an attempt to provide 15:45:19
4 transparent routing to hosts?) 15:45:19

5 - - - 15:45:20

6 A Give me one second. Here we go. I would 15:46:17
7 like to correct your statement and go back to my 15:46:42
8 declaration, paragraph 64, which is I feel more 15:46:48
9 comfortable with this definition in terms of 15:46:54
10 paragraph 64, line 3, which is also described in 15:46:57
11 2663 reference, "basic NAT, which translates between 15:47:08
12 IP addresses in a private domain and an external 15:47:15
13 domain," and then it goes on describing other NAT. 15:47:19

14 Q Let me point you to the first page of that 15:47:24
15 Exhibit 1443-7 in the first line of the abstract. 15:47:27
16 Do you disagree with that statement? 15:47:35

17 A It is really -- it's talking about 15:47:59
18 multiple statements in here, so I don't know which 15:48:03
19 one you are talking about. So if you are talking 15:48:05
20 about -- are you talking about the preface or 15:48:08
21 abstract? Sorry. Which line are we talking about 15:48:10
22 in page 1 of the RF 2663? 15:48:13

23 Q The language I read to you was the first 15:48:17
24 line of the abstract. 15:48:20

1 A Of the abstract. Sorry. Okay. I was 15:48:21
2 reading the preface. What it says in here is that 15:48:24
3 network address translation is a method by which IP 15:48:48
4 addresses are mapped from one realm to another in an 15:48:52
5 attempt to provide transparent routing to host. In 15:48:57
6 an attempt to provide transparent routing to host. 15:49:04

7 So in general I agree with that statement. 15:49:09
8 However, it is saying in an attempt to -- it does 15:49:12
9 not talk about the details of how and exactly it's 15:49:17
10 implemented. And it talks about traditionally NAT 15:49:22
11 devices are used to connect an isolated address 15:49:26
12 realm with private unregistered addresses to the 15:49:31
13 external realm with globally unique registered 15:49:35
14 addresses. 15:49:37

15 So I think it defines it a little bit more 15:49:40
16 clearly here. And then -- then it talks about this 15:49:43
17 document attempts to describe the operation of NAT 15:49:47
18 devices and the associated considerations in general 15:49:50
19 and to define terminology used to identify various 15:49:53
20 flavors of NAT. I agree with that statement they 15:50:00
21 have in the abstract. 15:50:03

22 Q So that abstract and the language you just 15:50:43
23 read identifies that there is various flavors of 15:50:48
24 NAT; is that correct? 15:50:52

1 A It describes the overall idea of what NAT 15:50:59
2 is in terms of connecting isolated address field in 15:51:02
3 the private unregistered address to an external 15:51:08
4 realm with globally registered address. And then 15:51:11
5 later on it talks about various different forms of 15:51:21
6 NAT, including the one I have in my declaration, 15:51:24
7 which is on NAPT. So that's what it's saying in 15:51:30
8 that document. 15:51:36

9 Q By NAPT, you mean network address port 15:51:37
10 translation; is that correct? 15:51:41

11 A Yes. 15:51:43

12 Q Would you agree with me that there are 15:51:52
13 other ways to translate IP addresses between a 15:51:54
14 private domain and an external domain that don't 15:52:02
15 rely on NAT? 15:52:06

16 MR. MUKERJI: Objection to form and 15:52:09
17 outside the scope. 15:52:09

18 A They -- my analysis was based on looking 15:52:14
19 specifically for NAT and the references I have here 15:52:19
20 and the description of what NAT, which I have in my 15:52:22
21 references. Are there other methodologies to do it 15:52:28
22 without NAT? There may be. I did not consider that 15:52:32
23 and I did not look at it. 15:52:35

24 Q Would a person of ordinary skill in the 15:52:40

1 art recognize there are multiple ways other than NAT 15:52:43
2 to translate IP addresses in a private domain to an 15:52:48
3 external domain? 15:52:57

4 A Again as I said, my focus was not to look 15:53:02
5 at different ways of doing NAT and how it's done, 15:53:05
6 but to focus on the prior art and the '532 patent 15:53:10
7 and see how NAT is described, which is in my, the 15:53:15
8 translation is done which is also in my document, 15:53:20
9 declaration multiple places I have described it. 15:53:24

10 Are there other ways of doing it? I can 15:53:27
11 speculate and give you a hypothetical answer in the 15:53:30
12 hypothetical question. Is there a possibility that 15:53:32
13 a POSITA may come up with their own different way of 15:53:38
14 doing that? I cannot speculate on that. 15:53:43

15 Q You can't say whether NAT is the only way 15:53:46
16 you can translate an IP address between a public 15:53:49
17 domain and a private domain? 15:53:51

18 MR. MUKERJI: Objection to form. 15:53:55

19 A I believe I already answered that. 15:53:55

20 Q So the answer is no? 15:54:01

21 A My answer is my focus was not to look at 15:54:04
22 different ways of doing NAT. My focus was to look 15:54:08
23 at the prior art and '532 and the references I have 15:54:12
24 here, and what I have is a network address 15:54:17

1 translation done that's described in my report. If 15:54:24
2 there are other ways hypothetically, there may be 15:54:26
3 other ways. Top of my head right now sitting here, 15:54:30
4 I can't say that. If you want me to look into the, 15:54:33
5 read the NAT document, I can go through that 15:54:36
6 document and see if there are other ways it 15:54:40
7 describes it and look at my other references, I can 15:54:43
8 do that. 15:54:47

9 Q Is the NAT described in Exhibit 1443-7, 15:54:54
10 did that, does that live in a particular layer of a 15:55:11
11 protocol set, network protocol set? 15:55:17

12 A One place that I mention this is in my 15:59:34
13 declaration 50, in paragraph 50, page 21, where I 15:59:38
14 discuss in view of router plug-ins, how a POSITA, a 15:59:43
15 person of skill in the art, would have modified 15:59:52
16 Marchand's mobile gateway 33 to implement its 15:59:54
17 routing and address translation functionalities by 15:59:59
18 utilizing a router and routing software technology 16:00:04
19 prescribed in the router plug-ins. So one method 16:00:07
20 would be to look at this in a router plug-in. 16:00:12

21 MR. HAIGHT: I object as non-responsive. 16:00:29

22 BY MR. HAIGHT: 16:00:32

23 Q My question was whether or not the NAT 16:00:32
24 lives in a particular layer of the protocol stack. 16:00:35

1 I wasn't discussing Marchand, I wasn't discussing 16:00:38
2 router plug-ins. Talking about the NAT 16:00:40
3 implementation and whether that necessarily lives in 16:00:43
4 one layer, one particular layer of a protocol stack? 16:00:47

5 A The network translation in general for 16:00:54
6 network address translation depends again on the 16:01:00
7 implementation, but generally it is in the stack 16:01:04
8 obviously above the phy layer, physical layer, and 16:01:09
9 on the implementation, it could be in the network 16:01:14
10 layer in the middle or it could be in the upper 16:01:17
11 layer where it's, as I said in here, within the 16:01:20
12 router plug-ins and upper layer of the stack. It 16:01:28
13 depends on the implementation. 16:01:31

14 Q If you could look at page 2 of Exhibit 16:01:41
15 1443-7? 16:01:46

16 A Uh-huh. 16:01:49

17 Q And the fourth paragraph. It starts by 16:01:52
18 saying, "NAT devices attempt to provide." Do you 16:01:58
19 see that? 16:02:00

20 A Yes, I do. 16:02:01

21 Q And feel free to read the whole paragraph, 16:02:07
22 but I'm going to point your attention to the third 16:02:09
23 sentence that says: "This solution only works when 16:02:12
24 the applications do not use the IP addresses as part 16:02:15

1 of the protocol itself." Do you see that? 16:02:18

2 A Yes, I do. 16:02:22

3 Q Does that indicate to you that there are 16:02:25

4 other solutions that are not based on NAT that would 16:02:27

5 be used to translate addresses between two domains? 16:02:33

6 MR. MUKERJI: Objection to form. 16:02:39

7 A That's their interpretation of it, in 16:03:00

8 terms of they are not offering any other solutions I 16:03:04

9 see here. They are saying that if the particular 16:03:08

10 NAT devices attempts to provide a transparent 16:03:11

11 routing solution and do not use IP address in the 16:03:14

12 part of the protocol. I already answered this 16:03:22

13 question in terms of are there other ways of doing 16:03:26

14 NAT, and the one I'm familiar with and I discussed 16:03:31

15 it in my report is outlined in my discussions in 16:03:41

16 here. In this prior art is claiming that this 16:03:46

17 solution would work only with the application of -- 16:03:52

18 sorry -- this solution only works when the 16:03:58

19 application do not use the IP address as part of the 16:04:01

20 protocol itself. 16:04:03

21 Whether I agree with it or not, I have to 16:04:17

22 analyze it and look at the whole discussion they 16:04:19

23 have and see within which context they are talk 16:04:21

24 about if NAT works or doesn't work. I'm familiar -- 16:04:28

1 sorry. That's it. 16:04:35

2 THE WITNESS: Oh. Did my microphone fall? 16:04:44

3 Can you hear me? Okay. Good. Forgot to put it on. 16:04:48

4 A It's very much application dependent and 16:04:59
5 how it's implemented. 16:05:04

6 Q There could be applications that call for 16:05:11
7 routing that don't implement the NAT system? 16:05:14

8 MR. MUKERJI: Objection to form. 16:05:21

9 A What I meant in terms of an application 16:05:28
10 here was the overall architecture of the system, not 16:05:31
11 the specific applications. For a given architecture 16:05:35
12 of hardware and software, the implementation that I 16:05:37
13 have discussed is a NAT in my report. Again I don't 16:05:44
14 want to speculate are there any other ways of doing 16:05:53
15 that on the fly here and engineer other methods of 16:05:55
16 doing that. I don't have that. 16:06:00

17 Q I'm not asking you to speculate. I'm 16:06:02
18 asking you based on the structure of that paragraph 16:06:03
19 that says this solution only works under certain 16:06:05
20 conditions, doesn't that necessarily mean that there 16:06:08
21 are other solutions that would be implemented in 16:06:11
22 that situation? 16:06:13

23 A This is their claim and that's not what 16:06:16
24 they say. They don't say that that solution -- 16:06:17

1 there are not other ways of implementing this. I 16:06:21
2 mean that paragraph, if I read that paragraph by 16:06:26
3 itself, I cannot conclude what exactly they mean by 16:06:29
4 that. I have to look at the entirety of the report 16:06:35
5 and see this is specific example they are 16:06:37
6 discussing, under what cases and circumstances it 16:06:41
7 would not work. So it's a hypothetical thing. At 16:06:46
8 this point I cannot point to it and analyze it. 16:06:51

9 Q If I could direct your attention to page 6 16:07:06
10 of that same exhibit, 1443-7, and the paragraph 16:07:09
11 number 3 that's headed, quote, "What is NAT?" Do 16:07:19
12 you see that paragraph? 16:07:26

13 A Oh, yes. 16:07:27

14 Q Could you read that paragraph for the 16:07:28
15 record, please? 16:07:29

16 A Sure. Network address, a network address 16:07:31
17 translation is a method by which IP addresses are 16:07:40
18 mapped from one address realm to another, providing 16:07:44
19 transparent routing to end hosts. There are many 16:07:49
20 variations of address translations that lend 16:07:52
21 themselves to different applications. However, both 16:07:55
22 flavors of NAT devices should share the following 16:07:58
23 characteristics, which are the three characteristics 16:08:02
24 that is outlined on page 7 in terms of transparent 16:08:08

1 address assignment, transparent routing to address 16:08:13
2 translation, routing here refers to forwarding 16:08:16
3 packets and not exchanging routing information, and 16:08:20
4 ICMP error packet payload, and it goes on more in 16:08:25
5 here, but I'm going to stop here. 16:08:30

6 Q That's fine. Thank you. 16:08:32

7 A Yeah. 16:08:34

8 Q RFC 2663 doesn't discuss mobile phones, 16:08:38
9 does it? 16:08:51

10 A RFC 2663 is primarily discussing 16:08:57
11 networking and in general networking as also viewed 16:09:05
12 in the abstract, it discussed network address 16:09:16
13 translation is a method by which IP addresses are 16:09:23
14 mapped from one realm to another realm. So it's 16:09:26
15 looking at in general networking, a person of skill 16:09:29
16 in the art would be able to understand that this 16:09:34
17 networking could apply for wireless applications as 16:09:36
18 well. 16:09:40

19 Q Does RFC 2663 discuss JINI/Java 16:09:44
20 technology? 16:09:53

21 A To the best of my recollection, it does 16:09:55
22 not discuss JINI/Java in the RFC 2663. Thank you. 16:10:01

23 MR. HAIGHT: I'm handing you -- excuse me. 16:11:44

24 THE WITNESS: Maybe before we start do you 16:11:48

1 mind if we take a five-minute break? 16:11:49

2 MR. HAIGHT: That's fine. 16:11:53

3 VIDEOGRAPHER: The time is 4:11:08 p.m. 16:11:56

4 We are now off record. 16:11:59

5 (Recessed at 4:11 p.m.) 16:12:01

6 (Reconvened at 4:27 p.m.) 16:12:01

7 VIDEOGRAPHER: This begins disk number six 16:27:55

8 of the video deposition of Sayfe Kiaei, Ph.D. The 16:27:57

9 time is 4:27:16 p.m. We are now on the record. 16:28:03

10 BY MR. HAIGHT: 16:28:08

11 Q Dr. Kiaei, welcome back. 16:28:15

12 A Thank you, counsel. 16:28:17

13 Q Did you happen to discuss any of your 16:28:19

14 testimony today with your counsel during the break? 16:28:22

15 A No, I did not, counsel. 16:28:25

16 Q I'm going to hand you what we are going to 16:28:27

17 mark as 1443-8. 16:28:29

18 (1443 Exhibit Number 8 16:28:31

19 was marked for identification.) 16:28:31

20 THE WITNESS: Thank you, sir. 16:28:41

21 BY MR. HAIGHT: 16:28:43

22 Q Do you recognize Exhibit 1443-8? 16:28:51

23 A Yes, I do, counsel. It is a, the 16:28:57

24 reference I call Marchand, which is patent 16:29:02

1 WO2001/076154. 16:29:13

2 Q This is a document you reviewed in 16:29:25
3 preparation for your declaration? 16:29:28

4 A Yes, sir, I did. 16:29:31

5 Q And Marchand teaches at a high level using 16:29:51
6 an ad hoc network to share services amongst the 16:29:56
7 devices in that ad hoc network? Would you agree 16:30:06
8 with that? 16:30:10

9 A What Marchand teaches is that paragraph 25 16:30:16
10 on my declaration, which describes a mobile phone 16:30:24
11 configured to act as a gateway between two different 16:30:28
12 networks, an external wireless IP network and a 16:30:32
13 local wireless ad hoc network as shown in Figure 3 16:30:37
14 of Marchand. 16:30:41

15 Q And what is your understanding of what an 16:31:14
16 ad hoc network is? 16:31:18

17 A I described that also further in paragraph 16:31:41
18 28 of my declaration. Local ad hoc network 30 can 16:31:43
19 be a wireless network for an office, for example. 16:31:48
20 Therefore, Marchand's local ad hoc network 30 can be 16:31:52
21 a corporate or private network that is connected via 16:31:57
22 gateway 33 to a cellular network. 16:32:01

23 And later on on line 3 I discuss that 16:32:11
24 Marchand also describes other examples of local ad 16:32:14

1 hoc network such as networks in home, local networks 16:32:18
2 such as security surveillance system and 16:32:22
3 temperature-control thermostat, unquote. 16:32:26

4 Q Does the term "ad hoc" have a particular 16:32:30
5 meaning to one of skill in the art as you defined it 16:32:39
6 in this IPR? 16:32:45

7 A Excuse me one second. So that is 16:32:51
8 discussed in my declaration paragraph 31 where I 16:33:37
9 elaborate more on the network here. In addition to 16:33:44
10 communicating with external network via the gateway 16:33:49
11 33, Marchand describes that local devices on the 16:33:52
12 Bluetooth ad hoc piconet can communicate with each 16:33:57
13 other. For example, Marchand describes that a user 16:34:00
14 with a Bluetooth compliant mobile phone may walk 16:34:03
15 into a room that has a printer and a laptop network, 16:34:07
16 both of which are also Bluetooth compliant. So this 16:34:11
17 is the gist of the local network which is also 16:34:18
18 called ad hoc network. 16:34:27

19 Q And generally speaking, outside of what 16:34:33
20 Marchand is saying, what would one of skill in the 16:34:37
21 art understand an ad hoc network to be? 16:34:40

22 A In general, an ad hoc network, general 16:34:51
23 terminology network, is a network that is formed in 16:34:54
24 an ad hoc fashion. It's a local area network 16:35:07

1 typically, but not necessarily constrained to that, 16:35:11
2 that user can enter that network such as an example 16:35:15
3 I use here, that somebody walks with a Bluetooth 16:35:25
4 compliant mobile phone, may walk into a room as an 16:35:32
5 ad hoc; that person was not a member of that 16:35:35
6 network, they can come in and join the network and 16:35:38
7 use a printer and laptop, et cetera. That's why 16:35:42
8 they call it an ad hoc network. 16:35:45

9 Q The ability to join the network on the 16:35:48
10 fly, if you will? 16:35:51

11 A Ad hoc fashion. It's an ad hoc definition 16:35:52
12 by itself. 16:36:03

13 Q And you mentioned that, that it describes 16:36:05
14 local devices on a Bluetooth ad hoc piconet. What 16:36:13
15 is your understanding of what a piconet is? 16:36:17

16 A That doesn't have a real clear -- it is 16:36:45
17 relative that what's called a piconet. In general a 16:36:51
18 piconet started with a Bluetooth compliant devices 16:36:59
19 that is a smaller number of devices in a local area 16:37:06
20 network connected together. May or may not be local 16:37:10
21 area network, and I have seen other nets which are 16:37:14
22 called piconets that may be outside of the realm of 16:37:18
23 Bluetooth network. 16:37:23

24 Q Sorry. Go ahead. 16:37:25

1 A That's it. 16:37:26

2 Q Bluetooth is not synonymous with piconet, 16:37:27
3 in general? 16:37:31

4 A It started that way. Are there piconets 16:37:36
5 that are outside of Bluetooth or that doesn't have 16:37:47
6 only Bluetooth network in there? I can't recall 16:37:52
7 from top of my head. 16:37:55

8 Q And when you say the piconets started out 16:37:57
9 as always being Bluetooth, was that prior to 2000? 16:38:00

10 A I believe it was around prior to 2000 or 16:38:20
11 somewhere around there the piconet, ad hoc piconet 16:38:22
12 concept was brought into the Bluetooth network 16:38:28
13 interest group. 16:38:32

14 Q That's when piconets were first discussed 16:38:34
15 with Bluetooth? 16:38:38

16 A Yeah, I can't say the top of my head and 16:38:40
17 on the fly says that piconet was a notion before 16:38:43
18 that or not. I don't know that. Right now I don't 16:38:46
19 know that. But as I said in my report, in here we 16:38:50
20 are discussing Bluetooth ad hoc piconet network that 16:38:58
21 communicate with each other. Whether that 16:39:02
22 terminology was used elsewhere before Bluetooth or 16:39:05
23 not, I don't remember. I don't recall that. 16:39:11

24 Q If I could point you to Figure 2 of 16:39:54

1 Exhibit 14143-8, which is near the end on page 23 of 16:40:00
2 the exhibit. 16:40:12

3 A Yes. I have it. 16:40:19

4 Q What is Marchand depicting in Figure 2? 16:40:24

5 A In page 5 of the Marchand reference, which 16:41:29
6 is same as page 7 of what's at the bottom, it 16:41:43
7 describes what Figure 2 is, which is an illustrative 16:41:48
8 drawing illustrating a protocol stack for a mobile 16:41:52
9 Bluetooth piconet that has been extended into the IP 16:41:55
10 wireless LAN implementing JINI and Java technologies 16:42:01
11 in accordance with the teaching of the present 16:42:06
12 invention. 16:42:08

13 Q Just for housekeeping purposes, can we 16:42:11
14 agree to refer to the page numbers at the top of the 16:42:14
15 document? 16:42:17

16 A Okay. 16:42:18

17 Q I understand it gets confusing if we go 16:42:18
18 back and forth. I know you pointed out both, but I 16:42:22
19 will clarify if we need to. But as we go forward, 16:42:25
20 if we could stick to the page number at the top. 16:42:28

21 And in that protocol stack of Figure 2 you 16:42:35
22 have both a physical layer and a link layer; is that 16:42:43
23 correct? 16:42:47

24 A Yes. 16:42:50

1 Q What is your understanding of what a link 16:42:55
2 layer is? 16:42:57

3 A In general, it's a layer that links or 16:45:49
4 connects, part of a Bluetooth network that connects 16:45:52
5 a physical layer and the information from the 16:45:58
6 physical layer and processes that for the network 16:46:00
7 transport layer or the IP layer above it. 16:46:05

8 And I described that a little bit further 16:46:24
9 in the paragraph 34 of my report, declaration. 16:46:27
10 Which is Marchand mobile gateway 33 utilizes 16:46:39
11 various -- utilizes various types of software to 16:46:43
12 implement routing and communications over the 16:46:48
13 cellular and local wireless network, such as link 16:46:52
14 layer and network layer and network transport layer, 16:46:58
15 et cetera. 16:47:03

16 Q And those layers that you just read are 16:47:40
17 shown in Figure 2. Would you agree that that 16:47:44
18 protocol stack shown there is unique to Marchand, 16:47:52
19 the Marchand system? 16:47:59

20 A The protocol stack layer in general is a 16:48:13
21 description of the various components and the layers 16:48:28
22 of a network formed in a hierarchical fashion, 16:48:32
23 bottoms up, and their description here falls within 16:48:42
24 that general network stack in terms of having the 16:48:51

1 phy layer and the link layer at the bottom and then 16:48:56
2 the application layer on top, and the services, the 16:49:01
3 operating system there. Now the exact lining, you 16:49:05
4 cannot really put that in there exactly separating 16:49:14
5 each one of them, but the idea is that you are 16:49:19
6 performing a description of the layers such that 16:49:23
7 each layer has a different functionalities in the 16:49:27
8 network of communications. 16:49:35

9 Q And what do you mean when you say in 16:49:44
10 hierarchical fashion? 16:49:47

11 A I think your question was related to is 16:49:50
12 that a general description, is that a unique 16:49:53
13 description of, that applies to Marchand in Figure 16:49:56
14 2; correct? 16:50:00

15 Q Uh-huh. 16:50:01

16 A And the answer is unique in terms of -- in 16:50:03
17 my opinion it is a relatively standard description 16:50:14
18 of how the different layers are there and their 16:50:18
19 functionalities. When I said hierarchical, what I 16:50:23
20 meant is application layer is on top and the 16:50:26
21 physical layer being on the bottom. 16:50:28

22 Q But you would agree that not every device 16:50:32
23 with a Bluetooth chipset uses that same protocol 16:50:34
24 stack; correct? 16:50:42

1 MR. MUKERJI: Objection to form. 16:50:46

2 A In general the general guidelines are 16:50:50

3 similar. The general description of the network 16:50:53

4 protocol stack would be similar to what is shown in 16:50:57

5 here. But again that's hypothetical. I can't look 16:51:03

6 at every specific Bluetooth implementation and see 16:51:07

7 how they are done. 16:51:12

8 Q Does every Bluetooth implementation 16:51:14

9 include a JINI technology layer or a Java technology 16:51:16

10 layer? 16:51:21

11 A Not necessarily, but it will have the 16:51:22

12 appropriate software and technology that would do 16:51:26

13 similar functionalities. And the same way that the 16:51:30

14 physical layer is not exactly specified the details 16:51:35

15 of it here, but one would know what is in the 16:51:40

16 physical layer, what are the functionalities. 16:51:44

17 Operating system 18 is not showing exactly 16:51:47

18 what language it is and what form of operating 16:51:50

19 system it has, but in general one would know what it 16:51:52

20 is, and they, in here the JINI and Java technology 16:51:55

21 layer is also shown and the one who is familiar with 16:51:59

22 the art will know that the JINI and Java technology 16:52:03

23 in the layer relative to the others, where they are 16:52:07

24 and how they are processing information. 16:52:11

1 Q Okay. So one would understand where a 16:52:14
2 JINI technology and a Java technology layer would 16:52:16
3 fit, but that doesn't necessarily mean that those 16:52:20
4 layers are in every Bluetooth device protocol stack; 16:52:23
5 correct? 16:52:28

6 A I was not asked to look at the specific 16:52:32
7 Bluetooth technologies available in the marketplace 16:52:38
8 and what they use in those stacks. They could be 16:52:41
9 using it, they could not be using it. This is one 16:52:44
10 representation that this, this prior art shows, 16:52:48
11 which is one way of implementing it. 16:52:53

12 And I think if you look at the, my 16:53:36
13 declaration paragraph 34, line 13, it says that -- 16:53:42
14 actually, I take it back. It is line 10. It says 16:54:01
15 that: For example, based on Marchand's disclosure, 16:54:10
16 including, for example, that the network 30 devices 16:54:13
17 such as laptop computer, printer, personal digital 16:54:16
18 assistants, are all Bluetooth compliant and 16:54:21
19 JINI/Java capable. 16:54:25

20 Q Referring to those devices you just 16:54:35
21 listed, I understand that. I'm saying are all 16:54:37
22 Bluetooth capable devices, do all Bluetooth capable 16:54:45
23 devices necessarily have a JINI technology and Java 16:54:50
24 technology layer in their protocol stack? 16:54:55

1 A It will have a technology similar to what 16:54:57
2 JINI and Java technologies have. It will have 16:55:02
3 technologies related to that. But would it have 16:55:05
4 with every device, Bluetooth device would have that? 16:55:08
5 Not necessarily. I haven't looked at all of the 16:55:10
6 Bluetooth radios and see what they use in there. 16:55:15

7 Q What is a technology similar to Java 16:55:24
8 technologies that all Bluetooth devices would have? 16:55:27

9 A In terms of JINI and Java technology? 16:55:33

10 Q No. You said that all Bluetooth devices 16:55:36
11 would have a technology similar to what Java 16:55:39
12 technologies have. I'm asking what those 16:55:43
13 technologies are? 16:55:45

14 A These will be software that are 16:55:58
15 interfacing with the operating system and the 16:56:04
16 application layer and services offered there. So I 16:56:09
17 describe that also in my declaration. For example, 16:56:13
18 in paragraph 33, the last two lines discusses that, 16:56:30
19 that it would have an operating system layer 18, a 16:56:37
20 Java technology layer and a JINI technology layer 16:56:41
21 and a JINI call control client and a SIP client in 16:56:45
22 there. 16:56:55

23 Q You would agree not all Bluetooth capable 16:57:03
24 devices have an SIP client; correct? 16:57:06

1 A SIP, which is session initiation protocol, 16:57:18
2 I can't speculate on whether all the Bluetooth 16:57:32
3 devices would have it or not. It is used, for 16:57:36
4 example, as an email or other types of session 16:57:39
5 initiation going on. I haven't look at all of the 16:57:43
6 Bluetooth systems out there. The one that I have 16:57:49
7 referenced in here, in Marchand, is capable of 16:57:53
8 performing SIP operations, SIP calls. 16:57:58

9 Q Isn't the main teaching of Marchand the 16:59:09
10 ability to use the SIP client of the gateway that is 16:59:12
11 not existent on any of the other devices in the 16:59:18
12 piconet? 16:59:22

13 MR. MUKERJI: Objection to form. 16:59:25

14 A I would not characterize it that way. I 16:59:40
15 have outlined what the main features of the Marchand 16:59:43
16 are in my declaration, which is the paragraph 25 16:59:49
17 throughout the declaration going to paragraph 34. 17:00:02
18 It's a number of different features that it offers 17:00:09
19 which are outlined there. 17:00:12

20 Q The Bluetooth standard is based on a 17:01:20
21 master/slave protocol; is that correct? 17:01:23

22 A I'm not sure what you mean by a 17:01:41
23 master/slave protocol. I don't remember of any 17:01:44
24 specific protocol called a master/slave protocol in 17:01:47

1 the IEEE definitions. 17:01:52

2 Q So when I say the words master/slave 17:01:54
3 protocol, you don't know what that means? 17:01:57

4 A I know what master/slave means. But if 17:01:59
5 you are talking about master/slave protocol, is it a 17:02:01
6 specific protocol -- I know what master/slave means, 17:02:04
7 if that's what you are asking. 17:02:12

8 Q Is Bluetooth based on master/slave 17:02:15
9 configuration? 17:02:18

10 A Bluetooth has the capability to enable 17:02:32
11 master/slave operations in the network, yes. That's 17:02:35
12 what I would characterize it as. 17:02:38

13 Q And Marchand relies on a master/slave 17:03:06
14 configuration in defining the piconet between two 17:03:09
15 Bluetooth enabled devices; is that true? 17:03:18

16 A Marchand on paragraph -- sorry -- on my 17:03:40
17 declaration, paragraph 27, I describe, the last two 17:03:43
18 lines of that paragraph, I do describe this feature 17:03:47
19 you just mentioned, that the mobile gateway 33 acts 17:03:52
20 as a Bluetooth master unit for the locally connected 17:03:56
21 services, such as laptop, printer acting as a 17:04:00
22 Bluetooth slaves-- acting as Bluetooth slaves to the 17:04:08
23 mobile phone. Sorry. 17:04:13

24 Q And in a master/slave arrangement there 17:04:15

1 can only be one master; is that true? 17:04:20

2 A Yes, it is true. 17:04:24

3 Q And in a master/slave arrangement it's the 17:04:29

4 master controls all communication between the 17:04:33

5 slaves. Is that also true? 17:04:37

6 A I would characterize it as true in 17:04:49

7 general, yes. 17:04:51

8 Q And in a master/slave arrangement in which 17:04:58

9 there are multiple slaves to that one master, those 17:05:05

10 two slaves cannot talk to each other without going 17:05:09

11 through the master; is that correct? 17:05:13

12 A In general that is true, yes. Yes, that 17:05:22

13 is true. 17:05:25

14 Q Is there a limit to the number of devices 17:05:33

15 that can be part of a Bluetooth piconet? 17:05:36

16 A Theoretically, no. But in practice, yes. 17:05:43

17 Q What is that limit? 17:05:49

18 A It depends on the number of -- it depends 17:05:52

19 on how many bits it uses for the IP address and how 17:05:55

20 many bits it has there and so forth. 17:05:59

21 Q There is no standard number defined in the 17:06:01

22 Bluetooth standard? 17:06:04

23 A I don't recall at this point off the top 17:06:05

24 of my head. But there is a physical limit to it. 17:06:07

1 Q Do you have an understanding of what a 17:06:35
2 scatternet is in the context of Marchand? 17:06:37

3 A I have to look and see if Marchand 17:06:51
4 discussed it or not. 17:06:53

5 Q Let me ask you in general. Do you have a 17:07:01
6 general understanding of what a scatternet is? 17:07:04

7 A Yes, I do. 17:07:06

8 Q What is your understanding? 17:07:08

9 A My understanding of a scatternet is a 17:07:14
10 number of local area networks that are scattered and 17:07:16
11 they are talking to each other. Or they are 17:07:25
12 scattered over a, an area and they are talking, they 17:07:30
13 are communicating with each other. 17:07:35

14 Q Is it fair to say a scatternet is multiple 17:07:42
15 independent piconets? 17:07:48

16 A I would characterize it that there are 17:08:01
17 multiple piconets or local area networks that are 17:08:03
18 communicating with each other. Independent or not, 17:08:07
19 I don't know that. I can't say off the top of my 17:08:10
20 head. 17:08:13

21 Q If I could point you to page 2 of 17:08:14
22 Marchand, and roughly around line 25, the last line 17:08:17
23 of that paragraph. 17:08:31

24 A Uh-huh. 17:08:32

1 Q Can you read that last sentence for the 17:08:33
2 record? 17:08:35

3 A Sure. It is, "multiple independent and 17:08:36
4 non-synchronized Piconets form a scatternet." 17:08:41

5 Q Is that consistent with your understanding 17:08:45
6 of what a scatternet is? 17:08:47

7 A It is, yes. Independent and 17:08:50
8 non-synchronized, I question that, but in general 17:08:53
9 it's a multiple number of piconets that are 17:08:59
10 communicating with each other. 17:09:02

11 Q What is your understanding of what 17:09:07
12 non-synchronized means? 17:09:10

13 A From this sentence I don't have a clear 17:09:12
14 understanding what that means. It can mean 17:09:16
15 different things based on how it's interpreted. Is 17:09:23
16 it synchronous that all the clocks are the same 17:09:32
17 clocks? Does it use a global clock system, use a 17:09:36
18 local clock system? There are many different 17:09:38
19 scenarios. I don't know what they mean by 17:09:41
20 non-synchronized. Neither from that one sentence 17:09:44
21 can I say what independent means unless there is a 17:09:47
22 clear description of that. 17:09:50

23 Q And so in each of those piconets within a 17:09:54
24 scatternet the master of the given piconet, they 17:10:01

1 control the clock and the synchronization; correct? 17:10:08

2 A Within them -- I think you are talking 17:10:13

3 about the architecture of the actual -- you want me 17:10:24

4 to design and engineer and discuss the architecture 17:10:27

5 of what a piconet is, I don't believe that's true. 17:10:29

6 No. That's not correct. 17:10:35

7 Q What is the role of a master in a 17:10:53

8 master/slave configured piconet? 17:10:59

9 A I can tell you in what functionalities and 17:11:34

10 how it is used in my declaration in terms of the, 17:11:37

11 the current discussions we have if you would like me 17:11:46

12 to focus on that. 17:11:49

13 Q Let me ask you a different question. 17:11:56

14 A Sure. 17:11:59

15 Q A single device could be part of multiple 17:12:05

16 piconets at the same time; is that true? 17:12:08

17 MR. MUKERJI: Objection to form. 17:12:15

18 A Theoretically speaking, if you are talking 17:12:26

19 about -- you are asking me to speculate in terms of 17:12:30

20 theoretically speaking, would a single device in a 17:12:33

21 piconet can be a member of another piconet? 17:12:37

22 Possibly can exist. It depends on the architecture. 17:12:40

23 I have to look at what it is. 17:12:49

24 Q Wouldn't the fact that you could have 17:12:52

1 multiple piconets within a scatternet, doesn't that 17:12:54
2 necessarily mean that some of those devices are 17:12:58
3 going to be on multiple piconets? 17:13:02

4 A Not necessarily. It's possible that the 17:13:10
5 piconets are communicating with each other or the 17:13:13
6 masters of the piconets are communicating with each 17:13:17
7 other. 17:13:20

8 Q In the piconet described in Marchand, 17:14:23
9 would you agree that it's the JINI/Java technology 17:14:29
10 that allows the devices to share the services, to 17:14:32
11 connect -- well, to share services? 17:14:35

12 A What I describe in my declaration, line 17:20:23
13 57, is that having the plug-in, a POSITA -- in 17:20:27
14 addition, a POSITA would have understood that 17:20:41
15 implementing Hoffman's cellular download plug-in 17:20:44
16 modules would have enabled various features to be 17:20:48
17 added, upgraded or replaced at any time, by 17:20:52
18 downloading new features and modules into the 17:21:00
19 memory. 17:21:05

20 And in paragraph 50 of my declaration, 17:21:19
21 line 6, is that discussing the plug-in based routing 17:21:30
22 software could have been implemented in Marchand's 17:21:45
23 mobile phone gateway to implement various types of 17:21:48
24 routing functions such as routing IP packets, IP 17:21:51

1 address transmission, and would have been used in 17:21:55
2 conjunction with other technologies in Marchand's 17:21:57
3 gateway 33 such as JINI, et cetera. 17:22:00

4 So it's a combination of these together 17:22:09
5 which I'm discussing in providing a, in applying 17:22:12
6 JINI technologies. 17:22:21

7 MR. HAIGHT: I object as non-responsive. 17:22:23

8 BY MR. HAIGHT: 17:22:26

9 Q I wasn't asking you about Hoffman or 17:22:26
10 router plug-ins or anything else. I'm talking just 17:22:28
11 about Marchand. 17:22:32

12 A Okay. 17:22:33

13 Q Now, let me point you to page 2 of 17:22:33
14 Marchand, around line, the last line that starts, 17:22:40
15 "the design of the JINI architecture." Do you see 17:22:53
16 that? 17:22:56

17 A Yes. 17:22:57

18 Q Could you read that sentence, and it 17:22:57
19 continues on to page 3? 17:22:59

20 A Yes, I will. "A JINI system is a 17:23:01
21 Java-technology-centered, distributed software 17:23:07
22 system designed for simplicity, flexibility and 17:23:18
23 federation. The JINI architecture provides 17:23:23
24 mechanisms for machines or programs to enter into a 17:23:27

1 federation where each machine or program offers 17:23:31
2 resources to the other members of the federation and 17:23:35
3 uses resources as needed. The design of JINI 17:23:38
4 architecture exploits the ability to move Java 17:23:43
5 programming language code from machine to machine, 17:23:48
6 and it unifies, under the notion of a service, the 17:23:51
7 user, the software, and the hardware components of 17:23:56
8 the machines themselves." 17:24:01

9 So what I would like to say in here is 17:24:09
10 that I do not in this declaration of '532, I am not 17:24:12
11 discussing the features of JINI as I just read here. 17:24:18
12 I think we are a bit spilling into other discussions 17:24:24
13 that we may have tomorrow on other patents. 17:24:28

14 I don't -- I prepared my declaration based 17:24:33
15 on the '532 patent, and in here what I'm discussing 17:24:40
16 is the features of in this case how we are using 17:24:46
17 some of the features of JINI as a, in paragraph 33, 17:24:52
18 the last line, as a JINI call control client, et 17:24:59
19 cetera. I don't believe I discuss here the features 17:25:03
20 that you are talking about right now in the patent. 17:25:09
21 At least at this point I'm not discussing it. 17:25:15

22 Q Will you turn to paragraph 33 of your 17:25:26
23 declaration? 17:25:29

24 A Uh-huh. 17:25:30

1 Q And at the end of paragraph 33 you do 17:25:37
2 identify the Java technology layer, the JINI 17:25:44
3 technology layer, and the JINI call control client 17:25:48
4 in that paragraph, do you not? 17:25:54

5 A Yes. That's the one, yes, we were just 17:26:11
6 discussing, yes. 17:26:14

7 Q And in paragraph 34 you discuss the JINI 17:26:14
8 technology layer and the Java technology layer in 17:26:18
9 the very next paragraph. Is that also true? 17:26:21

10 A Yes. In line five of the Java technology 17:26:24
11 and JINI technology I discuss the use of JINI and 17:26:28
12 Java technology. 17:26:31

13 VIDEOGRAPHER: This concludes disk number 17:27:07
14 six of the video deposition of Sayfe Kiaei, Ph.D. 17:27:09
15 The time is 5:26 p.m. We are now off the record. 17:27:17

16 (Recessed at 5:26 p.m.) 17:27:23

17 (Reconvened at 5:41 p.m.) 17:27:24

18 (1443 Exhibit Number 9 17:27:24
19 was marked for identification.) 17:27:24

20 VIDEOGRAPHER: This begins disk number 17:42:24
21 seven of the video deposition of Sayfe Kiaei, Ph.D. 17:42:26
22 The time is 5:41 p.m. We are now on the record. 17:42:34

23 BY MR. HAIGHT: 17:42:39

24 Q Dr. Kiaei, did you discuss any of the 17:42:58

1 substance of your testimony while we were just on 17:43:00

2 break with counsel? 17:43:03

3 A No, I did not, counsel. 17:43:04

4 Q I believe you have been handed what has 17:43:07

5 been marked as Exhibit 1443-9? 17:43:09

6 A Yes, I have that in front of me. 17:43:13

7 Q Do you recognize that document? 17:43:15

8 A Yes. 17:43:16

9 Q What is Exhibit 1443-9? 17:43:17

10 A That is the -- here we go. Software 17:43:24

11 architecture for next generation routers, for router 17:43:36

12 plug-ins reference. 17:43:41

13 Q That seems to be a paper that was 17:43:48

14 published for Sigcomm '98, S-I-G-C-O-M-M? 17:43:51

15 A Yes. 17:43:57

16 Q Is that fair? 17:43:57

17 A Yes. 17:43:58

18 Q This is a document you reviewed in 17:44:07

19 preparation for your declaration; true? 17:44:09

20 A Yes, I did. 17:44:12

21 Q If we refer to this article as simply 17:44:33

22 Router Plug-ins, will you understand that? 17:44:36

23 A Yes, sir. 17:44:39

24 Q In the article Router Plug-ins, would you 17:44:40

1 agree that it describes particular software 17:45:05

2 architecture for routers? 17:45:09

3 A The router plug-in describes -- I'm 17:45:20

4 reading paragraph 35, line two, describes an 17:45:23

5 extensible and modular router software architecture 17:45:30

6 that can be dynamically upgraded -- that can 17:45:34

7 dynamically upgrade router software in an 17:45:38

8 incremental fashion. 17:45:42

9 Q And do you have a sense of what types of 17:45:47

10 routers this article is discussing? 17:45:53

11 A Yes. The software architecture of router 17:46:02

12 plug-ins -- I'm reading paragraph 36 -- allows code 17:46:08

13 modules called plug-ins to be dynamically added and 17:46:11

14 configured to the router. The plug-ins are the 17:46:15

15 modules that is adding, and the code modules or 17:46:20

16 plug-ins are loaded into the kernel of a router in a 17:46:29

17 simple yet flexible fashion. 17:46:33

18 Q Right. My question is a little bit 17:46:36

19 different. My question was what types of routers is 17:46:38

20 this article discussing? 17:46:42

21 A Oh, what types of routers? It was 17:46:43

22 discussing in general the general routers, however, 17:47:24

23 at the beginning of it it's discussing some examples 17:47:29

24 such as new functionality is being added in terms of 17:47:33

1 IP routers, et cetera. 17:47:38

2 Q What is your understanding of what a 17:47:44
3 general router is? 17:47:47

4 A I think we had that discussion earlier 17:47:49
5 this morning in terms of a router which routes 17:47:52
6 communications between two networks. 17:47:56

7 Q And in the time frame of October of 1998 17:48:13
8 did those routers -- let me ask a different 17:48:27
9 question. The very first line of the abstract says: 17:48:36
10 "Present day routers typically employ monolithic 17:48:40
11 operating systems which are not easily upgradable 17:48:43
12 and extensible." Do you see that? 17:48:47

13 A Yes, I do. 17:48:49

14 Q And present day at the time of this 17:48:50
15 article would have been around October of 1998; is 17:48:52
16 that fair? 17:48:55

17 A Yes, it is. Yeah. 17:48:56

18 Q Do you have an understanding of what a 17:49:02
19 person of ordinary skill in the art at the time of 17:49:05
20 this paper would understand a present day router to 17:49:08
21 be? 17:49:12

22 A In 1998? Yes. I have a pretty good 17:49:14
23 understanding of it. 17:49:18

24 Q What is your understanding? 17:49:19

1 A A router would be what I described in 17:49:21
2 terms of routing -- connecting the two different 17:49:24
3 networks together and routing from one network to 17:49:31
4 another network. Communications between two 17:49:34
5 networks. 17:49:35

6 Q Would it include any particular hardware? 17:49:36

7 A The specifics of the hardware depends on 17:49:45
8 the implementation, but not necessarily. 17:49:49

9 Q Do you have an understanding what a 17:49:58
10 monolithic operating system is? 17:50:00

11 A If you are referring to abstract, the 17:50:06
12 first line you just read, I presume you are talking 17:50:11
13 about that, and my understanding of what they mean 17:50:19
14 by there is monolithic in terms of -- there are 17:50:22
15 different ways to interpret this. One could be in 17:50:35
16 terms of integrated operating system. I don't know 17:50:40
17 what they exactly mean in there. But if you want a 17:50:43
18 layman description of what they are talking about, I 17:50:47
19 can describe that. 17:50:49

20 Q I'm sorry. Were you done? 17:51:21

21 A Yeah. Monolithic, yeah. 17:51:23

22 Q So in your review and study of this 17:51:28
23 reference, did you arrive at any interpretation of 17:51:32
24 what a monolithic operating system was? 17:51:34

1 A The characteristics of it from the rest of 17:51:41
2 the sentence that they are discussing in here, I 17:51:44
3 assume they meant is an operating system which is 17:51:47
4 not easily upgradeable or extensible, thereby the 17:51:50
5 name monolithic. 17:51:57

6 Q Later on in that abstract, the last 17:52:17
7 sentence, do you have an understanding of what a 17:52:20
8 monolithic best-effort kernel is? 17:52:26

9 A Again I'm going to rely on my 17:52:34
10 understanding of what this was saying, which is 17:52:42
11 discussing a -- and it's comparing the performance 17:52:48
12 of the new proposed router plug-in in various places 17:52:54
13 in the paper. What he means is that it's an 17:53:02
14 operating system which is fixed and non-extensible 17:53:17
15 and not easily upgradeable. 17:53:21

16 Q And that's referring to the kernel? 17:53:26

17 A Referring to the kernel, yes. 17:53:31

18 Q And how does a kernel relate to an 17:53:36
19 operating system, generally speaking? 17:53:49

20 A Kernel in general means -- what they are 17:54:05
21 talking about here is a very generic, general 17:54:10
22 discussion of the kernel. Whether it's, it's a 17:54:14
23 kernel of operating system or a kernel of a other 17:54:20
24 functionalities in a network system, such as other 17:54:25

1 blocks used in there and the kernel software of that 17:54:31
2 with other blocks, so it's not going in absolute 17:54:33
3 form of saying a kernel being a specific part of a, 17:54:39
4 an operating system kernel. 17:54:45

5 Q In the third sentence of the abstract it 17:54:57
6 says: "We have designed and implemented a high 17:55:00
7 performance, modular, extended integrated services 17:55:02
8 router software architecture in the NetBSD operating 17:55:06
9 system kernel." Do you see that? 17:55:13

10 A Yes, I do. 17:55:14

11 Q And this new architecture that's described 17:55:16
12 here, is that -- is that the extended integrated 17:55:24
13 services router, the EISR that's discussed 17:55:40
14 throughout this paper? 17:55:46

15 A What is discussed in this paper is the -- 17:55:54
16 in this paper it's discussing that based on the 17:56:03
17 Figure 1, and yes, it is, based on Figure 1. 17:56:06

18 Q Do you have an understanding what a NetBSD 17:56:18
19 operating system is? 17:56:23

20 A I have not encountered that before, that 17:56:35
21 specific operating system they discuss here. But 17:56:42
22 when I read the paper, I recall seeing it in there 17:56:44
23 what it was, but I don't exactly remember now but I 17:56:47
24 see that. I can look and find it for you. 17:56:51

1 Q So it refers to this NetBSD operating 17:56:56
2 system kernel? 17:57:00

3 A Correct. 17:57:04

4 Q And in Figure 1 there is a, on both sides 17:57:05
5 it's comparing a best-effort versus an EISR? 17:57:10

6 A Uh-huh. 17:57:14

7 Q And there is a, it looks like to be a user 17:57:17
8 layer and a kernel layer. Do you see that? 17:57:19

9 A Yes, I do. Yes. 17:57:23

10 Q Is the kernel part of the operating 17:57:29
11 system? 17:57:32

12 A It's not clear here that is part of the 17:57:46
13 operating system or not. It is a part of a -- for 17:57:49
14 this particular figure, excuse me, the kernel is 17:57:56
15 part of the, this particular router's operating 17:58:06
16 system or software, whatever the core of it is, yes. 17:58:13

17 Q And if I could point you to page 230 of 17:58:30
18 the Router Plug-ins article, page 6 of the exhibit. 17:58:35
19 In the, I guess it's the second full paragraph that 17:58:42
20 starts "we envision." Do you see that? 17:58:48

21 A Yes, I do. 17:58:51

22 Q The second sentence there says: "First, 17:58:55
23 our architecture fits very well into the operating 17:58:58
24 system of small and mid-sized routers." Do you see 17:59:01

1 that? 17:59:04

2 A Yes, I do. 17:59:05

3 Q So is it fair to assume that this 17:59:05

4 architecture they are describing in this article is 17:59:08

5 part of the operating system? 17:59:10

6 A Operating system of mid, small and 17:59:13

7 mid-sized routers, right. Because in general 17:59:18

8 operating system is a very generic term that is used 17:59:23

9 for many different things. 17:59:27

10 Q Sticking with that same paragraph, in the 18:00:57

11 time frame of 1998, the time of this paper, what 18:01:00

12 would one of ordinary skill in the art understand a 18:01:07

13 small router to be? 18:01:13

14 A 1998. I don't know how they measure small 18:01:32

15 and large sizes of the router and what they mean in 18:01:38

16 here. Is it based on -- it could be based on many 18:01:43

17 factors. 18:01:48

18 Q And forgive me if I have forgotten your 18:01:51

19 resume', but would you consider yourself to have 18:01:55

20 been one of ordinary skill in the art at least as of 18:01:58

21 1998? 18:02:01

22 A Yes. 18:02:02

23 Q Do you have any understanding what you 18:02:03

24 would have thought a small router would have been in 18:02:05

1 that time frame? 18:02:08

2 A 1998. It's a relative term. Even if you 18:02:10

3 were at that looking at it, if it was 1998 right now 18:02:19

4 sitting there, what was small and medium size at 18:02:23

5 that time is substantially different than what we 18:02:31

6 call small and medium if I was at that time. It 18:02:34

7 depends on the size, it depends on the company, 18:02:37

8 where I was working. 18:02:40

9 If I was at Motorola looking at mobile 18:02:43

10 phone, I would have a different definition of small 18:02:46

11 and medium size routers. If I was working on a 18:02:49

12 cable modem, I would call it differently, and if I 18:02:54

13 was working on a server, I would call it 18:02:54

14 differently. I don't think there was a standard 18:02:57

15 that says that server has the biggest one and pagers 18:02:59

16 has the smallest one. I mean how do you measure 18:03:03

17 them? By what is the criteria for measurement in 18:03:06

18 there? I would have an understanding of what it is. 18:03:11

19 But would I compare that by what? I don't know what 18:03:16

20 that is. 18:03:19

21 Q Would it be the size of a laptop? 18:03:21

22 A I -- I can't speculate that when they are 18:03:48

23 talking about size, is it physical size versus 18:03:51

24 actual numbers of lines in a software or how much 18:03:55

1 memory it takes or how big of a board it is, or how 18:03:58
2 many -- on the two different sides of the router how 18:04:03
3 many ports it has? I can give you a general idea if 18:04:11
4 you like. 18:04:16

5 Q That's what I'm asking, based on your 18:04:17
6 experience as a person who is of ordinary skill at 18:04:19
7 least in 1998. 18:04:23

8 A In 1998 it depended on the implementation. 18:04:30
9 Medium -- I can give you a rough idea of small and 18:04:38
10 medium size router, I -- it again depends on 18:04:47
11 application. Are you talking about -- can you be 18:04:53
12 more specific? Can we focus at least on ISDN, cable 18:04:55
13 modem, network router, internet router? Can you be 18:05:01
14 more specific? Then I can give you better answer. 18:05:04

15 Q What about the types of routers that are 18:05:08
16 discussed in the paper? 18:05:10

17 A In the paper it's discussing general 18:05:22
18 network architecture and the router for -- I believe 18:05:26
19 it's discussed in the application of what it is. I 18:05:29
20 don't think they had any specific routers they were 18:06:15
21 focusing on. They -- it's noisy. Let's stop for a 18:06:25
22 second. 18:06:33

23 All right. They did not go into any 18:06:51
24 specific applications, but they have examples of the 18:06:56

1 plug-ins and the system they implemented on page 18:06:59
2 237, Section six. And this is where they performed 18:07:02
3 a comparison of how to implement plug-ins and the 18:07:28
4 applications of the proposed methodology they talked 18:07:34
5 about. 18:07:40

6 The important thing about this reference 18:07:43
7 is that it teaches the art and the implementation of 18:07:45
8 a router plug-in. What was medium or small at that 18:07:51
9 time, which was implemented in here based on their 18:07:58
10 system at Carnegie Mellon, was to prove the concept 18:08:07
11 and applications and implementation of that, how it 18:08:13
12 works, compared to the monolithic routers, but the 18:08:16
13 art was taught there and that is the key teachings 18:08:20
14 of this prior art. 18:08:32

15 Q Is it your position that a person of 18:08:42
16 ordinary skill in the art reading this article would 18:08:44
17 not be able to say what a small or mid-sized router 18:08:48
18 is without additional information? 18:08:51

19 A No. That's not what I said. What I said 18:08:53
20 was that without focusing specifically and telling 18:08:57
21 me what exact application you are looking for, then 18:08:59
22 I won't be able to give you a size-wise. If you are 18:09:03
23 talking about the Telco and the routers in the, what 18:09:06
24 AT&T uses and what is their description of medium, 18:09:11

1 small, large, it's quite different than a router 18:09:15
2 that I have in my house, what's medium and big in my 18:09:19
3 house. If you focus on a specific example, I'll be 18:09:23
4 happy to tell you that. Absolute number? It's 18:09:27
5 really all relative. 18:09:31

6 Q I understand the relative nature of 18:09:32
7 referring to something as small or mid-size. My 18:09:34
8 question is how one of skill in the art would 18:09:38
9 understand that sentence that says our architecture 18:09:42
10 fits very well in the operating system of small and 18:09:44
11 mid-sized router in the context of this article? 18:09:48

12 A It's hard to speculate what they meant by 18:09:54
13 that, from what they said at the time that the paper 18:09:57
14 was written and what was their understanding of 18:10:01
15 what's a small and mid-size routers by, by the 18:10:04
16 authors, by the authors of this paper. For me it's 18:10:14
17 hard to say. 18:10:28

18 Q Let's read that very next sentence on page 18:10:30
19 230 where it says, "it is particularly well 18:10:32
20 suited" -- 18:10:35

21 A Sure. 18:10:37

22 Q -- "to the implementation of modern edge 18:10:37
23 routers that are responsible for doing flow 18:10:40
24 classification, and for enforcing the configured 18:10:42

1 profiles of differential service loads." 18:10:45

2 Do you have an understanding of what a 18:10:51
3 modern edge router is as used in this reference? 18:10:54

4 A I don't know if they are specifically 18:11:02
5 discussing -- I don't think they are talking about 18:11:03
6 specifically modern edge router as specifically for 18:11:06
7 any specific edge application, if that's what they 18:11:17
8 mean. 18:11:21

9 Q My question is a little different. My 18:11:21
10 question was whether you understand what a modern 18:11:22
11 edge router is? 18:11:25

12 A In general they are talking about at the 18:11:26
13 time of 1998, it was what's a modern router that was 18:11:28
14 at the time being used. 18:11:33

15 Q Okay. 18:11:35

16 A What is important here is, again I want to 18:11:39
17 emphasize, the fact that it's the concept that is 18:11:42
18 introduced which shows a dynamic, distributed -- a 18:11:45
19 dynamic nature of these plug-ins that is introduced 18:11:53
20 to replace what they call a monolithic, not easily 18:11:59
21 upgradeable router. That concept which is the core 18:12:06
22 concept of what they are trying to discuss and what 18:12:17
23 it is teaching, what it could be implemented at that 18:12:21
24 time is quite different than from application to 18:12:25

1 application. 18:12:30

2 Q Object again as non-responsive. My 18:12:31
3 question is what an edge router is. I'm not talking 18:12:34
4 about what's important about the article. A very 18:12:38
5 specific question of what an edge router is. Do you 18:12:41
6 not know what an edge router is in the context of 18:12:43
7 this article? 18:12:47

8 A It's not clear to me reading that sentence 18:12:57
9 what they mean by a modern edge router. If they are 18:13:00
10 talking about edge protocol, if they are talking 18:13:04
11 about edge router being a specific product that was 18:13:05
12 then available, edge is also a wireless protocol. I 18:13:09
13 don't know what they mean, if that's the one they 18:13:18
14 mean, but nowhere in the paper they talk about that 18:13:20
15 in terms of edge being the wireless protocol. 18:13:24

16 Q Again, would one of skill in the art 18:13:29
17 understand what an edge router is during the 1998 18:13:31
18 time frame? 18:13:35

19 MR. MUKERJI: Objection to form. 18:13:36

20 A I have already answered your question. 18:13:37
21 Looking at that, I don't know what they mean by 18:13:40
22 modern edge router. 18:13:42

23 Q I understand you don't. My question is 18:13:43
24 would one of ordinary skill in the art at the time 18:13:45

1 of 1998 understand what an edge router is? 18:13:48

2 A They -- there is no description of what 18:13:53

3 the sentence modern edge router, what those three 18:13:56

4 words mean. 18:14:00

5 Q Okay. Do you have a sense of -- let me 18:14:01

6 start over. 18:14:13

7 Do you have a sense of what size router 18:14:16

8 would be required to perform flow classification and 18:14:19

9 enforcing configured profiles of differential 18:14:25

10 service flows? 18:14:30

11 A Today? 18:14:32

12 Q In 1998 at the time of this article. 18:14:33

13 A We are -- I understand what it would take 18:14:49

14 to implement a various forms of router that they, 18:14:54

15 different profiles, different services flows. The 18:15:00

16 issue is that the application to application of this 18:15:06

17 could substantially be different. 18:15:09

18 As I brought up the example to you of the 18:15:11

19 modern router at the time in 1998, this was a time 18:15:14

20 that ISDN was being replaced by cable modem, and 18:15:20

21 wireless data was entering in 2G wireless protocols, 18:15:44

22 optical routers had, were available, but mostly in 18:16:00

23 the Telcos, large servers were quite different than 18:16:08

24 the servers these days. As I said, if you tell me 18:16:15

1 specific application, I'll be happy to tell you what 18:16:19
2 an approximate size or software or whatever for that 18:16:24
3 could be. 18:16:28

4 Q Router Plug-ins doesn't discuss or 18:17:26
5 implement Java technology does it? 18:17:30

6 A It does not discuss Java technology, but 18:17:36
7 the overall implementation of how the plug-ins are 18:17:46
8 used can be implemented in different softwares. 18:17:51

9 Q In the operating systems; correct? 18:18:11

10 A Router operating systems. I want to be 18:18:14
11 specific, router operating systems. 18:18:19

12 Q Sure. 18:18:23

13 A Yeah. Thank you. 18:18:23

14 MR. HAIGHT: I have no more questions at 18:18:56
15 this time. 18:18:58

16 THE WITNESS: Thank you, counsel. 18:19:02

17 MR. MUKERJI: I have no questions at this 18:19:03
18 time. This concludes the deposition. 18:19:04

19 THE WITNESS: Thank you, counsel. 18:19:08

20 VIDEOGRAPHER: This concludes the video
21 deposition of Sayfe Kiaei, Ph.D., consisting of
22 seven DVD disks. The time is 6:18:33 p.m. We are
23 now off the record.

24 (Whereupon, at 6:18 p.m., the

1 deposition of SAYFE KIAEI, PH.D.

2 was concluded.)

3 * * * * *

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

1 A C K N O W L E D G M E N T O F D E P O N E N T

2

3

4 I, SAYFE KIAEI, PH.D., do hereby acknowledge I
5 have read and examined the foregoing pages of
6 testimony, and the same is a true, correct and
7 complete transcription of the testimony given by
8 me, and any changes or corrections, if any, appear
9 in the attached errata sheet signed by me.

10

11

12

13

14

15

16

17

18

19

20 Date

SAYFE KIAEI, PH.D.

21

22

23

24

1 UNITED STATES OF AMERICA)

2 ss:

3 DISTRICT OF COLUMBIA)

4 I, ROBERT M. JAKUPCIAK, an RPR and Notary
5 Public within and for the District of Columbia, do
6 hereby certify:

7 That prior to being examined, the witness named
8 in the foregoing deposition was duly sworn to
9 testify the truth, the whole truth, and nothing but
10 the truth;

11 That said deposition was taken down by me in
12 shorthand at the time and place therein named and
13 thereafter reduced by me to typewritten form and
14 that the same is a true, correct, and complete
15 transcript of said proceedings.

16 Before completion of the deposition, review of
17 the transcript [] was [] was not requested. If
18 requested, any changes made by the deponent (and
19 provided to the reporter) during the period allowed
20 are appended hereto. I further certify that I am
21 not interested in the outcome of the action.

22 Witness my hand this 25th day of
23 March, 2016.

24 _____

1 Errata Sheet

2

3 NAME OF CASE: SAMSUNG ELECTRONICS vs. IXI IP

4 DATE OF DEPOSITION: 03/15/2016

5 NAME OF WITNESS: Sayfe Kiaei, PH.D.

6 Reason Codes:

7 1. To clarify the record.

8 2. To conform to the facts.

9 3. To correct transcription errors.

10 Page _____ Line _____ Reason _____

11 From _____ to _____

12 Page _____ Line _____ Reason _____

13 From _____ to _____

14 Page _____ Line _____ Reason _____

15 From _____ to _____

16 Page _____ Line _____ Reason _____

17 From _____ to _____

18 Page _____ Line _____ Reason _____

19 From _____ to _____

20 Page _____ Line _____ Reason _____

21 From _____ to _____

22 Page _____ Line _____ Reason _____

23 From _____ to _____

24

25 _____

0	64:22 65:1,8,17 66:3, 10,20,22,23 67:3,16,18, 23 68:6,8,23 69:3 70:7, 10,18,19 71:4,19,24 72:14 73:1 74:15,18,19, 23 75:16 77:2 79:6,13, 20 80:15,19,21 81:3,10, 21,24 82:5 83:15,20 84:5,8,14 85:5,16 87:10 88:1 89:23	28:15 155:13	1998 169:7,15,22 174:11,14, 21 175:2,3 176:7,8 179:13 180:17 181:1, 12,19
017 120:11		14143-8 151:1	1999 122:6 124:7 134:1
1	107 53:6,19 54:8,15 57:6 75:18 76:4 79:8 81:12 82:6,24 83:15 84:6,7,12 85:18 87:10 88:2	1425 6:18	1:30 96:21
10 95:6 115:20 155:14	10:20 41:23	1443 14:1 15:22 21:11 31:17 118:6 121:15 132:19 134:24 135:7 146:18 166:18	1:30:44 96:20
100 50:17 84:3	10:20:08 41:21	1443-1 13:24 15:8	1:55 96:22
101 51:21 55:13 62:5 67:13	10:34 41:24	1443-2 15:21 16:6	1:55:17 97:1
102 38:14,17 39:3 41:2 59:7 67:8 116:19 117:2	10:34:34 42:3	1443-3 21:10,16 22:10	2
103 59:17,19,22 60:11,15 67:10,14 71:20 72:9 73:13	11 66:18 121:22 122:22	1443-4 31:16,21 32:1 50:14	2 15:22 22:16 73:10 95:24 125:4 141:14 150:24 151:4,7,21 152:17 153:14 160:21 164:13
104 38:18,20,21 39:4 41:1 59:1,8,10 60:14 61:6 62:22 63:17 64:21 65:9 66:3 67:5,10 70:5,14,20 71:2 72:8 117:1	110 52:8 54:23 57:5 62:1 83:4,10 84:8	1443-5 118:5,12	2.4 84:12,14,17 99:12 121:24
105 41:1 52:8 53:17,21 54:16 55:7 66:10,11 67:18 70:6,15 73:7,11 74:16 75:18 76:4 79:9 81:6,22 83:1,5 85:19 117:1	111 52:9 57:3 62:3 63:16 64:23 65:2 68:10 70:8 71:6	1443-6 121:14,19 130:7	20 64:13 67:2 69:12,16,18 70:4 73:9 75:3 81:8
106 50:23 51:5 52:3,4,5,6 53:10,11,15,17 54:1,5, 9,16,20 57:15 61:20,24 62:14,19 63:13,15	115 41:4 116:14 117:4	1443-7 132:18,24 135:3 136:15 140:9 141:15 144:10	2000 28:4,5 122:8,11,13,17 150:9,10
	116 53:16,20,24 57:14 75:18 81:5,12,22 82:10 84:7,9 115:1	1443-8 146:17,22	20005 6:19
	11:43 73:24	1443-9 167:5,9	2002 28:5
	11:43:03 73:22	15 6:10 26:5 30:7,9 48:12	2004 28:14
	12 95:15 104:15	150 6:14	2015 10:9
	12:33 74:1,4	16 66:19	2016 6:10
	13	18 154:17 156:19	20850 6:15
		19 52:5 53:14 56:24 61:24 68:9 73:6 75:14 79:9 81:2,20	20th 122:13,16
		1980s 131:6	
		1987 28:14	

<p>21 6:14 79:13 82:2 112:4 140:13</p> <p>22 65:10</p> <p>23 43:1 151:1</p> <p>230 173:17 178:19</p> <p>237 177:2</p> <p>24 32:19,22 33:11,22 37:13 38:8 40:1,14 42:16 43:9 44:16 45:20 47:20,24 48:21 50:12 59:4 62:7 94:24</p> <p>25 147:9 157:16 160:22</p> <p>2663 114:1,7 133:1 136:11, 22 145:8,10,19,22</p> <p>27 112:7 158:17</p> <p>28 113:24 147:18</p> <p>29 84:1 87:8 93:22 94:11</p> <p>2:42 117:16</p> <p>2:42:52 117:14</p> <p>2:45 117:6</p> <p>2G 181:21</p> <hr/> <p style="text-align: center;">3</p> <hr/> <p>3 17:16 21:11 28:16 59:4 62:8 121:7 128:3,7 131:13 136:10 144:11 147:13,23 164:19</p> <p>30 147:18,20 155:16</p>	<p>306 101:15</p> <p>31 49:15 148:8</p> <p>33 140:16 147:22 148:11 152:10 156:18 158:19 164:3 165:17,22 166:1</p> <p>34 94:4 108:1 152:9 155:13 157:17 166:7</p> <p>35 89:18 168:4</p> <p>36 22:10 168:12</p> <p>37 121:3</p> <p>3:01 117:17</p> <p>3:01:04 117:18</p> <p>3:33 132:11</p> <p>3:33:17 132:10</p> <p>3:37 132:12</p> <p>3:37:46 132:15</p> <p>3A 89:24 90:1</p> <hr/> <p style="text-align: center;">4</p> <hr/> <p>4 21:2 28:16 31:17 88:12 89:8,9,14,21 90:2,10, 13,14,15,18 91:17 93:11,18 96:10 97:11 100:11 101:1 103:20 106:24 107:3,23 122:18 127:22 128:16</p> <p>403 95:5,7,11 104:17,20 105:2</p> <p>404 53:18 75:6,9,11,13,17</p>	<p>79:20 81:15 85:19 94:2, 6,10,12,13,14 108:3,18 115:21,23</p> <p>406 79:14 82:5 89:1,5 93:19 94:1,2,3,6,7 107:22 108:2 115:24 116:7</p> <p>407 94:23 95:1,2</p> <p>41 84:10</p> <p>43 119:3</p> <p>44 120:20</p> <p>4:11 146:5</p> <p>4:11:08 146:3</p> <p>4:27 146:6</p> <p>4:27:16 146:9</p> <hr/> <p style="text-align: center;">5</p> <hr/> <p>5 66:6 67:22 84:1 87:12 108:11,15,19 110:2 111:7 113:13 114:11 115:22 118:6 120:23 121:5,6 151:5</p> <p>5.4 99:13</p> <p>50 114:23 140:13 163:20</p> <p>500 89:23 91:7,11,21 106:7, 9,21</p> <p>501 95:18 96:5,6 97:14,20 98:12 100:12 105:3</p> <p>502 91:15,16 92:3 95:18 97:14,17 98:10 100:12 105:3</p>	<p>503 91:14,16 92:1 95:18,19, 21 97:14 98:10 100:12, 17 101:12 105:3</p> <p>504 95:14,15 104:3,15 105:1</p> <p>52 66:6 67:22</p> <p>532 21:18,21 22:1 29:9 32:8,9 36:16,21 38:9, 13,16,24 40:18 44:9 45:2,6 46:7 47:3 49:7 50:3,14,15 51:14 53:22 54:6,13 59:2,6 60:15 61:4,19 62:18 65:15 66:2 68:5,24 72:4,20 73:15 74:15 75:7,21 76:6,13,22 79:5 80:7 81:1,7 83:23 84:2 85:13,15 86:17 87:3,16, 23 88:12 89:17 97:24 98:15 108:11 110:23 112:3 113:21 114:21,22 115:16,17 116:18,21,23 135:13 139:6,23 165:10,15</p> <p>55 114:13,23</p> <p>550 111:5,9,12,17 112:8,14, 23 113:4</p> <p>551 114:21</p> <p>552 110:16</p> <p>553 113:15</p> <p>56 91:6</p> <p>57 91:6,22 95:20 163:13</p> <p>580 110:2,3,6 115:12</p> <p>59 91:22</p> <p>590 79:15 115:13,22 116:5</p>
--	--	--	---

<p>5:26 166:15,16</p> <p>5:41 166:17,22</p> <hr/> <p style="text-align: center;">6</p> <hr/> <p>6 66:17,19 68:2 121:15 144:9 163:21 173:18</p> <p>6,622,017 118:17,18</p> <p>60 101:11</p> <p>62 40:19 116:24</p> <p>63 115:5</p> <p>64 113:24 136:8,10</p> <p>662,017 118:13</p> <p>6:18 182:24</p> <p>6:18:33 182:22</p> <hr/> <p style="text-align: center;">7</p> <hr/> <p>7 64:15 69:14 70:3 73:10 89:4,17 91:5,22 95:20 96:3 101:11 132:19 144:24 151:6</p> <p>7,295,532 21:22 32:2</p> <p>70s 131:6</p> <hr/> <p style="text-align: center;">8</p> <hr/> <p>8 59:3 87:7 93:21 94:24 95:6,14 104:14 114:22 125:20,21,23 146:18</p> <p>802 128:12</p>	<p>802.11 122:5 125:22 126:7,10, 15,17 129:9,15,18,24 130:8,16,23</p> <p>802.11b 122:2 126:6,18 127:5,7</p> <p>802.11b-1999 121:21</p> <hr/> <p style="text-align: center;">9</p> <hr/> <p>9 95:6 112:3 114:14 166:18</p> <p>98 167:14</p> <p>9:13:09 6:11</p> <hr/> <p style="text-align: center;">A</p> <hr/> <p>a.m. 6:11 41:21,23,24 42:3 73:22,24</p> <p>abide 34:7</p> <p>ability 149:9 157:10 165:4</p> <p>able 24:16 45:12 48:16 53:24 55:2 80:16 83:16 86:1,11 145:16 177:17, 22</p> <p>absolute 172:2 178:4</p> <p>Absolutely 13:3 71:17</p> <p>abstract 50:16 51:8,9,20 52:13, 22 55:2,9 56:16 63:10 65:13 68:16 92:17 102:8 104:8 105:4,22 107:5,9 111:15 136:15, 21,24 137:1,21,22 145:12 169:9 170:11 171:6 172:5</p> <p>abstraction 53:4 95:16 104:4,6,8,</p>	<p>11,15,16,20 105:1,9,11</p> <p>academic 19:15 30:12,18</p> <p>accepted 124:9,11</p> <p>access 93:6 110:14 114:24 115:6,7 121:22 127:8, 17,24 128:17,21,23 129:4,10,16,18,19 130:9 131:2,11,18,19, 23</p> <p>accessible 64:22 70:7,17 71:3</p> <p>accidentally 33:7</p> <p>accurate 17:5,10,21</p> <p>acronym 106:20 110:10 128:22 129:6,14</p> <p>acronyms 127:12 129:12,13</p> <p>act 116:2 147:11</p> <p>acting 51:5 158:21,22</p> <p>activity 19:22</p> <p>acts 158:19</p> <p>actual 100:10 127:22 162:3 175:24</p> <p>ad 119:17,20,21 147:6,7, 13,16,18,20,24 148:4, 12,18,21,22,24 149:5,8, 11,14 150:11,20</p> <p>ADAL 17:18</p> <p>added 75:6,8,10 81:14 94:6 108:2 163:17 168:13,24</p> <p>adding 168:15</p>	<p>addition 19:17 81:9 82:12 148:9 163:14</p> <p>additional 17:21 75:4 81:9,12 177:18</p> <p>additions 16:15 17:8</p> <p>address 110:9 111:1 113:18 114:3,4,8,12,16 115:8 133:3 135:1,14 136:1 137:3,11 138:2,3,4,9 139:16,24 140:17 141:6 142:11,19 144:16,18,20 145:1,12 159:19 164:1</p> <p>addresses 114:17 135:16 136:2,12 137:4,12,14 138:13 139:2 141:24 142:5 144:17 145:13</p> <p>adds 79:14</p> <p>adopted 125:18 126:5</p> <p>ADSL 17:18</p> <p>advising 19:24</p> <p>agencies 22:19 24:10</p> <p>ago 8:2 9:6,8 25:19,22 26:19 43:22</p> <p>agree 31:15 47:13 51:13 61:19 62:19 63:17,24 64:24 76:23 84:20 91:18,19 100:20 101:17,19 102:18,23 104:16 110:21 116:1,17 120:12 123:15 129:4 137:7,20 138:12 142:21 147:7 151:14 152:17 153:22 156:23 163:9 168:1</p> <p>agreed 18:12 104:3 124:20,21</p>
---	--	---	--

<p>ahead 28:7 103:18 149:24</p> <p>air 103:9</p> <p>air-link 121:5</p> <p>algorithms 98:3 99:3,10</p> <p>allocation 110:19</p> <p>allow 77:23 79:21 105:14 106:24</p> <p>allowing 115:22</p> <p>allows 104:16 105:1 115:7 119:12 163:10 168:12</p> <p>alluded 135:10</p> <p>alternative 66:21,22 67:9 87:14</p> <p>alternatively 30:17</p> <p>ambiguities 56:2,12</p> <p>ambiguous 37:10 49:3</p> <p>America 6:6</p> <p>analog 20:8</p> <p>analysis 37:20 40:3,5,10 48:6,11 50:3 138:18</p> <p>analyze 60:20 142:22 144:8</p> <p>analyzed 86:21</p> <p>annotations 128:12</p> <p>annual 24:14</p> <p>answer 8:13,17,18,23 9:19</p>	<p>12:5,6,7 13:13,17 33:9 46:3,4,17,18,19 47:17, 19 53:21 60:19,22,23 72:11 76:9 78:20 89:12 108:21 139:11,20,21 153:16 176:14</p> <p>answered 139:19 142:12 180:20</p> <p>answers 8:10</p> <p>antenna 63:20 64:7,9</p> <p>anymore 66:16</p> <p>apologize 14:8 54:11 56:14 66:19, 22 116:22 135:8</p> <p>Appeal 6:9</p> <p>Apple 6:6,24 23:23 25:9,12,16 26:6,17</p> <p>application 76:16 79:16 142:17,19 143:4,9 153:2,20 156:16 176:11,19 177:21 179:7,24 180:1 181:16 182:1</p> <p>applications 141:24 143:6,11 144:21 145:17 176:24 177:4,11</p> <p>applies 153:13</p> <p>apply 145:17</p> <p>applying 164:5</p> <p>appreciate 12:8 61:17 90:8</p> <p>appropriate 108:8 154:12</p> <p>approximate 182:2</p> <p>Approximately 28:7</p> <p>arbitration</p>	<p>10:13,15</p> <p>architecture 50:17 51:11 58:21 61:9 63:1 68:14 72:16 78:5, 22 80:18,21 83:21 84:23,24 85:3 86:21,22 89:23 90:9 91:21 100:24 105:14,16 107:8,18 111:24 143:10,11 162:3,4,22 164:15,23 165:4 167:11 168:2,5,11 172:8,11 173:23 174:4 176:18 178:9</p> <p>architectures 57:18 72:1</p> <p>area 20:13,24 30:12,18 38:21 50:18,21,24 51:6, 7,12 52:11,19 53:9,13, 20,23,24 54:5,8,15,22, 23 55:7,15,17 56:4,7, 19,20,23 57:8,12,13,20, 22,23,24 58:12 59:10, 14,18 62:2,4,21 63:5 69:7 73:5 74:16,20 77:1,4 79:22,23 80:6, 12,15,17,23 83:4,16 84:21 85:6,7,11,12,23, 24 86:1,9,11,12,19 87:5 88:3 115:2 148:24 149:19,21 160:10,12,17</p> <p>areas 20:15,17,19,23 30:4</p> <p>aren't 38:4 53:24</p> <p>Arizona 26:24 28:8</p> <p>arranged 106:24 108:19 109:13</p> <p>arrangement 108:24 158:24 159:3,8</p> <p>arrive 33:17 170:23</p> <p>arrived 31:1</p> <p>art 30:8 31:6,14 33:20 34:20 45:1,5,9,21 46:12 47:14 48:8,13 49:1</p>	<p>55:16 56:19 60:4,10,18, 20 75:21 76:7,14 92:14 98:16 107:14,16 111:17,18 114:1 122:18 133:2 134:20 139:1,6, 23 140:15 142:16 145:16 148:5,21 154:22 155:10 169:19 174:12, 20 177:7,13,14,16 178:8 180:16,24</p> <p>article 167:21,24 168:10,20 169:15 173:18 174:4 177:16 178:11 180:4,7 181:12</p> <p>ascribe 35:5,8 36:5,12 47:22 48:23</p> <p>aside 15:18</p> <p>asked 58:21 68:4 94:18 155:6</p> <p>asking 8:9 11:24 13:14 46:20 78:19,21 79:10 90:13 98:14,15 109:9 126:23 127:11 143:17,18 156:12 158:7 162:19 164:9 176:5</p> <p>asks 8:17</p> <p>aspects 20:21 61:9</p> <p>assignment 145:1</p> <p>Assistant 18:5</p> <p>assistants 155:18</p> <p>Associate 16:23 18:7,8,21 20:11</p> <p>associated 137:18</p> <p>assume 8:13 111:10 114:11 125:12 171:3 174:3</p> <p>AT&T 58:11,17,22 177:24</p>
---	---	---	--

<p>attempt 135:17 136:3 137:5,6,8 141:18</p> <p>attempts 137:17 142:10</p> <p>attention 40:17 88:11 112:2 141:22 144:9</p> <p>attorney 39:15 40:2 44:4,5</p> <p>August 134:1</p> <p>authors 178:16</p> <p>available 155:7 180:12 181:22</p> <p>average 22:21 23:1 26:4</p> <p>Awards 17:6</p> <p>aware 16:11 22:6 29:7 58:16 108:21 129:9 133:20</p> <hr/> <p style="text-align: center;">B</p> <hr/> <p>bachelor 30:17</p> <p>back 18:4 42:5 43:20 56:11 59:5 68:8 69:12 72:12 74:6 79:5 82:3 83:14 89:6 94:17 95:20 97:3 102:16 113:13 116:13 117:21 131:5 135:19 136:7 146:11 151:18 155:14</p> <p>back-end 38:15</p> <p>backbone 38:18,20 39:4 41:1 50:19 55:12 59:1,8,10, 12,21 60:5,11,14,21 61:3,20,22 62:21 63:17, 23 64:21 65:2,9,18 66:3 67:5,6,8,10,17,20 70:5, 14,20 71:2,20 72:8 73:11 117:1</p>	<p>background 48:14,15,16</p> <p>backing 42:24</p> <p>bad 14:11 90:2,6</p> <p>band 50:18 52:19 53:20 57:12 61:10 115:2</p> <p>bandwidth 79:3 122:1</p> <p>BAP 110:9,10,11 114:20,22</p> <p>base 63:19 64:2,3 99:10</p> <p>baseband 27:8 96:6 97:20,24 98:5,12,17,18,21,22 99:5,7,8,10,11,15,23 100:1 101:14,20 102:7, 23 103:8,19 105:2,15</p> <p>basebands 96:5,6 104:18</p> <p>based 26:3 27:20,21 30:6 31:3 34:18 36:14 37:12 39:23 40:9 44:8 45:23 47:11 61:18 64:24 72:6 78:18 87:6,9,17,24 91:22,23 129:18 138:18 142:4 143:18 155:15 157:20 158:8 161:15 163:21 165:14 172:16, 17 174:16 176:5 177:9</p> <p>basic 114:8 136:11</p> <p>basis 123:3</p> <p>beginning 10:8 40:14 93:21 95:14 168:23</p> <p>begins 6:3 42:1 74:2 91:7 96:23 132:13 146:7 166:20</p> <p>behalf 7:3,18</p>	<p>behaving 115:10</p> <p>believe 10:8 21:2 22:10,15 25:19 27:22 32:23 33:11 37:14 41:14 42:20 54:18,21 62:8 70:12 72:13 78:17 109:23 113:22 122:14 126:10 133:17 134:22, 24 139:19 150:10 162:5 165:19 167:4 176:18</p> <p>believed 49:11</p> <p>belong 133:18</p> <p>best 8:10 16:19 17:5 22:8 25:5 26:11,13 36:23 49:18,19 89:11 119:19 125:17 126:3 131:5 145:21</p> <p>best-effort 171:8 173:5</p> <p>better 89:10 134:5 176:14</p> <p>big 176:1 178:2</p> <p>biggest 175:15</p> <p>bilateral 34:6</p> <p>bit 10:22 13:16 31:4 38:3 55:4 137:15 152:8 165:12 168:18</p> <p>bits 159:19,20</p> <p>black 89:15</p> <p>Blackberry 24:6,7 25:10,12,17 26:6,17</p> <p>blacked-out 97:11</p> <p>block 52:15 87:11 95:21</p>	<p>97:17 108:16 110:1,16, 17 111:5,6,12,17 113:14 114:21</p> <p>blocks 76:1 97:13 105:20 107:6 108:24 111:14 172:1,2</p> <p>Bluetooth 57:9 84:12,14,17 93:3,5 99:12,14,20 100:3 110:14 114:24 115:6 119:23 120:2 134:14, 16,17 148:12,14,16 149:3,14,18,23 150:2,5, 6,9,12,15,20,22 151:9 152:4 153:23 154:6,8 155:4,7,18,22 156:4,6, 8,10,23 157:2,6,20 158:8,10,15,20,22 159:15,22</p> <p>board 6:9 176:1</p> <p>bodies 123:12</p> <p>body 39:18,20 40:7 45:9,10, 11,18 46:16 47:10 123:15 126:5 127:2</p> <p>bold 126:1</p> <p>books 29:5</p> <p>borrow 93:17</p> <p>bottom 59:4,6 95:20 97:14 110:3 113:9 122:15 151:6 153:1,21</p> <p>bottoms 152:23</p> <p>box 104:20 106:6,9</p> <p>boxes 89:15 97:11</p> <p>boy 12:10</p> <p>break 8:20,24 41:16 42:7,11</p>
--	--	--	--

<p>71:10 73:19 74:8,14 96:14 97:7 117:8,23 146:1,14 167:2</p> <p>breaking 51:2 117:12</p> <p>brief 113:24</p> <p>briefly 9:9,16 19:1 27:12 32:13 55:17</p> <p>broad 44:12</p> <p>broader 37:21</p> <p>broadest 33:7,12 34:12 35:22 37:15,19 38:2 42:17 44:16 50:11 62:9</p> <p>broke 97:9</p> <p>brought 108:7 150:12 181:18</p> <p>brush 30:4</p> <p>Bs 127:3</p> <p>bullet 128:16</p> <p>bunch 89:15</p> <hr/> <p style="text-align: center;">C</p> <hr/> <p>cable 175:12 176:12 181:20</p> <p>call 55:15 86:24 99:11 101:23 104:9 105:10 107:24 122:2 127:5 143:6 146:24 149:8 156:21 165:18 166:3 175:6,12,13 179:20</p> <p>called 7:11 27:9 75:5,8 81:14 112:4 120:24 148:18 149:17,22 157:24 168:13</p>	<p>calling 98:10 100:16,17 102:18,23 104:7 116:22 126:17</p> <p>calls 157:8</p> <p>can't 23:3 35:10 49:12,22 64:11 89:14 91:17,23 102:9 139:15 140:4 150:6,16 154:5 157:2 160:19 175:22</p> <p>capability 158:10</p> <p>capable 108:9 155:19,22 156:23 157:7</p> <p>cardinal 127:22</p> <p>careful 111:3</p> <p>Carnegie 177:10</p> <p>carrier 38:17,20 39:3 41:1 50:19 59:1,8,9,21 60:5, 10,14,21 61:3,20,21 62:21 63:16 64:21 65:1, 9,17 66:3 67:4,6,10,17, 19 70:5,14 71:2,20 72:8 73:10 117:1 129:4</p> <p>case 6:9 10:13 15:11 17:2 79:4 82:23 127:21 165:16</p> <p>cases 16:24 79:4 144:6</p> <p>cause 126:19</p> <p>caused 112:21</p> <p>caution 9:20</p> <p>CDMA 73:15 103:14,16,22 127:13</p> <p>cell</p>	<p>52:14 53:9</p> <p>cellular 32:18 33:3,16 34:15,20 35:18 36:2 37:9,18 38:11,21 39:1,4,22 50:19 52:9 55:3,5,11 57:3,13,16,19 58:4,5,8, 12,13,18 59:11,15,16 61:21 62:2,13,15 63:16 64:3,10,22,23 65:2,18, 19 66:4,12,13,14,20,24 67:24 68:1,7,9,11 69:1, 5,8 70:6,7,11,15,17,20, 22 71:3,5,6,7,19 72:24 73:2,4,5,8,12,14 92:1 95:21 97:14 98:6,11 100:16 101:8,13,15,19, 21 102:12,18,20,21,24 103:3,10,14,20 119:7,8, 12 120:24 121:4,8 147:22 152:13 163:15</p> <p>center 18:14,19 19:3,5,7,8,13, 16 23:5,6,10,14,16,22 24:11,13,15,17,21,24 25:9,18,20,24 26:14,23</p> <p>certain 32:4 143:19</p> <p>certainly 13:12</p> <p>certificate 14:5</p> <p>certified 6:13</p> <p>cetera 22:20 62:5 99:4,24 121:11 126:2 149:7 152:15 164:3 165:19 169:1</p> <p>chain 93:2</p> <p>challenged 32:5 36:16,20 45:6 46:7 47:3 48:9 49:2,6,10 50:2,6 51:14</p> <p>chance 16:4</p> <p>change 18:15 41:12 55:23 122:24 132:6</p>	<p>changed 16:20 17:6</p> <p>changes 16:15 26:3 123:2,6</p> <p>characteristics 144:23 171:1</p> <p>characterize 157:14 158:12 159:6 160:16</p> <p>chipset 153:23</p> <p>Church 6:14</p> <p>circles 63:20 64:8</p> <p>circuits 20:8</p> <p>circumstances 77:22 144:6</p> <p>claim 38:5 39:20 40:3,5 42:10,16 46:1,15,16,22 47:23 49:3,5,13,21,23 50:7 51:17 143:23</p> <p>claiming 142:16</p> <p>claims 28:20 32:4 36:16,21 39:5,11,18 40:9 44:9,17 45:2,6,12,16,17,22 46:1,2,7,10 47:3,7,9,15 48:9 49:2,6,10,14,15,16 50:3,6,9 51:14,18,22 61:4</p> <p>clarification 11:23</p> <p>clarify 12:4 26:12 61:14,15 66:8 151:19</p> <p>clarity 33:8</p> <p>class 20:5,7,8 53:1 131:7</p> <p>classes 19:20,21 20:2,5 51:10 52:24</p>
---	--	--	--

classification 178:24 181:8	comma 64:15	compared 177:12	132:8 166:13 182:18,20
clear 8:11 12:6 20:12 21:20 56:5,22 60:2 63:8 90:12 105:10 106:3 108:14 118:15 125:14 149:16 161:13,22 173:12 180:8	comment 81:19 134:8	comparing 171:11 173:5	conclusion 38:22 47:15
clearly 137:16	comments 133:6,7	comparison 177:3	conditions 77:11 143:20
client 115:7 156:21,24 157:10 165:18 166:3	commitment 18:20	compatibility 80:8	Conference 6:17
clock 161:17,18 162:1	committee 124:10,12,22 125:13 126:6	compilation 55:14	confidential 10:2 58:23
clocks 161:16,17	communicate 53:8 54:8,15 55:2 62:20 71:19 80:16 83:16 84:6 85:12 86:1,12 87:1,4 88:1 92:16 104:17 105:2 108:5 148:12 150:21	complete 17:1	confidentiality 9:22
close 13:10,16 69:22	communicates 121:7	completed 26:22	configuration 52:13 54:3,18 57:8,10 58:20 61:7 62:16 63:3 71:23 77:14 91:3 92:12 110:8 130:1 131:12 158:9,14
code 165:5 168:12,15	communicating 84:16 85:4 88:8 104:22 148:10 160:13,18 161:10 163:5,6	compliant 148:14,16 149:4,18 155:18	configurations 57:17 60:24 63:12 72:19 129:23
coding 99:4	communication 20:21 27:9 30:16,21 55:13 58:2 76:1 77:11, 23 91:14 92:1,2 97:15, 18 98:2,11 99:15 100:16,18 101:5,7,12, 13,20 103:21 105:14 107:10 116:14,18 130:15 159:4	component 32:17 33:14 37:8 38:10, 12,24 39:21 76:2 87:24 101:14,21 102:7 103:22 112:8,14,20,24 113:1,4, 5,20 114:23 115:6 135:12	configured 83:10 113:5 147:11 162:8 168:14 178:24 181:9
column 40:17 66:6,7,17,19 67:22 68:1 84:1 87:7 89:4,17 91:5,22 93:21 94:24 95:6,14,20 96:3 101:11 104:14 112:2 114:14,22 115:20	communications 10:4,19,20 19:3 20:18 27:5 50:20 53:2,19 75:17 76:3 77:3,6,9,13 79:2,7,21 80:10,22 85:18,20,22 86:8,18,23 88:6 95:22 96:1 99:9 102:22 121:8 130:17 152:12 153:8 169:6 170:4	components 33:1 34:13 35:16,24 37:16 52:16 56:8,10 62:11 73:2 75:5,7 77:19 79:15 81:13 88:16 92:18,20,21 93:1 95:8 99:22 100:23 104:2 107:1 108:18 123:16,18 152:21 165:7	confirm 14:10 15:3
columns 128:13	combination 41:2,9 117:2 164:4	computer 30:13,14,19,20 67:1 155:17	confusing 151:17
combination 41:2,9 117:2 164:4	come 23:23 24:1 34:16 39:23 47:14 48:20 139:13 149:6	concentration 30:16	congestions 112:21
comes 23:1 24:9,10 102:13 103:1	companies 123:14 134:15	concept 105:21 130:15 150:12 177:10 179:17,21,22	conjunction 164:2
comfortable 136:9	company 6:5 134:6 175:7	conclude 38:22 91:23 144:3	connect 53:24 59:16 63:13 77:1 83:2 109:17 131:9,10 137:11 163:11
coming 23:4,6 93:3,9 102:14 105:12 112:15	compare 175:19	concluded 40:10	connected 32:18 37:9 39:22 51:11 54:4 57:13 59:8 61:22 65:1 67:13 68:11,13,18, 19 69:4 72:8,10,14 76:17 78:17 80:13 103:12 109:21 112:22 147:21 149:20 158:20
		concludes 41:19 73:20 96:18	connecting 56:7,10 57:6 59:13 63:16,21,22 68:23 72:2

109:19 116:7,9 138:2 170:2	29:17	18:6 27:10 28:1 30:23 33:4 41:10 42:13,18 44:11 46:8 47:4 50:8 53:10 54:2 57:20 65:3 72:24 73:4 74:21,22,24 75:1,9 84:18 85:14 86:2,13 88:3 94:8 97:18,21 100:2 102:20 103:15,23,24 104:4 118:17,18 119:24 120:6 122:5,23 125:19 134:2 135:2 136:7 137:24 138:10 151:23 153:14, 24 155:5 156:24 157:21 159:11 162:1,6 173:3 182:9	court 6:13 7:6,7 29:8 135:23
connection 23:6,11,17,18,23 24:11, 13 52:8,9 57:2,3,5,14, 24 58:5,18 59:24 60:2, 11,21 61:6 62:1,2 63:3, 6 65:7,8,17 66:2 68:10, 12,14 69:1,6 73:2,5 78:24 83:19	context 53:22 60:15 75:23 76:1, 19 77:7,10 111:7 113:20 114:21 116:17 134:12 142:23 160:2 178:11 180:6	correctly 30:22	cover 14:5
connections 63:7 65:7 67:12 68:17 70:19 72:2 119:12	continual 124:6	correspond 24:24	covers 96:9
connectivity 115:9	continue 18:13,19 41:6 124:1	corresponding 92:4	created 134:15
connects 58:4 59:13,22 60:5,14 61:20 63:18 68:6 74:16 152:4	continues 22:17 113:3,8 164:19	couldn't 39:10	criteria 175:17
consider 37:5 48:7 58:11 131:1 138:22 174:19	contract 26:3	counsel 6:19 7:13,16,21 8:16 9:4,15 11:1,5,9 13:19 14:4 21:17,23 22:3,11, 14,23 31:12 33:6,10,24 42:6,8 43:7,9 74:7,10 97:4,7 117:22,24 120:8 121:20 133:1 146:12, 14,15,23 167:2,3 182:16,19	critical 30:11 31:7,14 48:13
consideration 48:24	controls 116:19 159:4	counsels 11:17	cross-referencing 89:3
considerations 133:4 135:2 137:18	conventional 109:11	country 27:17	Cs 127:4
considered 32:16 99:15	conversations 10:24	couple 13:20 17:1 26:22 85:16 117:10	CSMA 127:8,10,13,17 128:15, 21
consistent 35:19 36:4,7 47:21 161:5	Cooper 6:12	coupled 33:3,16 34:15 35:17 36:2 37:18 38:17,20 39:3 50:23 52:6,8,11 53:12 54:4 57:1,2,11 59:7,10 61:24 62:2,12, 14 64:21 66:10 67:4,5, 8,10,13,17,18,23 68:9 70:5,11,14,19 71:2,7 73:1,4,11 84:7 119:14	CSMA/CD 128:17 129:10
consisting 182:21	cooperative 23:15		current 162:11
consists 50:18 55:10 98:24 99:2	copies 88:15,20 90:5		currently 16:21 19:20 25:24 26:2, 6 29:8
constrained 149:1	copy 16:7 88:12		curriculum 19:22
construction 42:10,12	copyright 122:15		customers 58:18
construed 35:22	core 81:17 173:16 179:21		CV 16:11 21:1
consultancies 17:5 21:5,8	corner 133:23		<hr/> D <hr/>
consultant 21:2 27:24	corporate 147:21		D.C. 6:19 9:8
consulted	correct 9:6 14:22 16:9 17:15		daisy-chain 131:9
			DARPA 22:20
			Dash 135:5
			data 181:21

database 17:23	definition 31:1,13 56:5,22 91:2 92:5 100:17 101:17 102:5,6 104:10,24 105:11 114:2,10 115:18 136:9 149:11 175:10	74:3 96:19,24 132:9,14 146:8 166:14,21 182:18,21	designed 27:8 164:22 172:6
date 9:7 16:16 28:5 30:11 31:7,15 48:14 134:1	definitions 158:1	depositions 9:21 11:23 12:2,12	detail 54:7,14 98:9
Dave 6:12	degree 30:15,17,18	describe 9:9,16 13:14 19:1 27:12 38:7 54:7,14,17 55:17 68:5,12,24 69:9 72:9 75:15 79:13 81:2,6 87:23 90:18 101:3 111:9,11 119:20 120:4 137:17 156:17 158:17, 18 163:12 170:19	detailed 133:13
day 21:24 34:6 169:10,14, 20	demarcate 51:1	described 39:7,13,21 48:12 51:18, 19 56:23 65:9 72:4 90:11 104:23 113:22 115:17 120:13 136:10 139:7,9 140:1,9 147:17 152:8 163:8 170:1 172:11	details 19:14 43:21 44:1 45:13, 14 52:20 58:16,19 60:1, 9,19,21 61:6 64:4 68:2 69:4,9 72:13,16 80:7 84:11 87:19 88:22 91:24 92:15 107:10 111:9,11,23 114:14 129:14,24 133:21 137:9 154:14
days 8:6 11:13,19 12:9,10, 17,18 13:20 32:10 181:24	demodulations 99:4	describes 53:14 57:7 65:16 66:2, 18 67:1,5 72:13 75:7 84:22 85:3 87:8,9,21 89:13 112:17,19 114:1, 4,7,14 115:4,20 116:24 119:4,7 125:4,5,20 129:2 138:1 140:7 147:10,24 148:11,13 149:13 151:7 168:1,3,4	developing 19:10,12
dealing 49:17 77:12,20 82:17	depended 176:8	describing 45:13,15 65:12 67:18 86:16 90:19 100:15 136:13 174:4	device 38:11 39:1 50:22 51:4,5 52:3,4,5,6,11 53:10,11, 15,17 54:1,5,9,16,20 57:1,14,15 61:20,24 62:14,19 63:13,15 64:22 65:1,8,17 66:3, 10,20,22,23 67:16,23 68:6,8,23 69:3 70:7,10, 17,18,19 71:3,19,24 72:14,15 73:1 74:15,18, 19,23 75:16 77:1 79:6, 8,13,20 80:4,14 81:3, 10,12,20,24 82:5,6 83:20 84:5,8,13 85:5,16 87:10 88:1 89:23 95:8 103:8,10,19 153:22 155:4 156:4 162:15,20
deals 100:10	dependent 143:4	description 38:12 51:8,20 52:15,23 54:22 55:10,19 56:16 60:2 61:19 65:13 81:4 90:14 93:23 98:10 100:14 107:6 113:7,9, 24 114:15 116:5,21,23 119:2,15 138:20 152:21,23 153:6,12,13, 17 154:3 161:22 170:18 177:24 181:2	devices 32:18 33:2,15 34:14 35:16 36:1 37:8,17 39:22 53:4,19 62:11 75:18 76:4 77:4,24 78:24 79:1,8,22 80:17 81:23 82:8,9 85:4,18, 22,24 86:8,10 87:21 120:14,17 130:13 131:10 137:11,18 141:18 142:10 144:22 147:7 148:11 149:14, 18,19 155:16,20,22,23 156:8,10,24 157:3,11 158:15 159:14 163:2,10
decent 117:11	depending 46:15 76:16 82:18 86:22	descriptions 51:22 55:1 111:13	
declaration 16:9 21:18 22:7,16 27:8 28:16,18,24 29:14,21 30:2,6 31:10 32:12,15 33:19,23 34:1 36:14 37:20 40:11 42:13,21 44:6,7,8,19,21,22 46:8, 9,24 47:1,19 48:3 49:4, 18 50:7 52:6 56:24 59:4 64:14 69:13 70:4 75:2, 15 78:3 79:13 113:23 118:14,22 119:4 120:20 133:2 135:11 136:8 138:6 139:9 140:13 147:3,10,18 148:8 152:9 155:13 156:17 157:16,17 158:17 162:10 163:12,20 165:10,14,23 167:19	depicted 38:18 52:20 59:1,21 62:3 65:4	design 162:4 164:15 165:3	
declared 40:11	depicting 50:15 89:21 151:4		
define 131:18 137:19	depiction 63:8		
defined 148:5 159:21	depose 34:7		
defines 137:15	deposed 8:1 9:6 10:6		
defining 127:24 158:14	deposition 6:4,16 7:19 9:10,11 10:5,23 11:4,6,7,10,21, 24 12:5,11,20 15:11,15 17:3 41:20 42:2 73:21		

<p>DHCP 110:8,21</p> <p>DHCP/PPP 110:16</p> <p>diagram 51:15 52:21 61:18 62:17 87:11 90:10,15 100:11 103:20 108:16, 17</p> <p>diagrams 52:15</p> <p>didn't 13:1 29:24 36:15,19 37:5 40:2,4 44:18 46:5 109:5</p> <p>different 11:15 13:19 21:4 28:13 34:3 44:17 54:19,20 55:1 56:7,10 63:4 72:1, 18 76:1,15 77:24 80:1 82:18 89:6 90:21 91:3 92:18,21 93:7,8 99:2 101:8 102:10 103:12,21 105:6,19 122:7,19 123:14,18 124:13,15 126:21 138:5 139:5,13, 22 144:21 147:11 153:7,18 157:18 161:15,18 162:13 168:19 169:8 170:2,15 174:9 175:5,10 176:2 178:1 179:9,24 181:15, 17,23 182:8</p> <p>differential 179:1 181:9</p> <p>differentiations 23:9</p> <p>differently 175:12,14</p> <p>dig 55:4</p> <p>digital 102:13 119:8 155:17</p> <p>direct 24:18 40:17 65:7 82:13 88:11 112:2 144:9</p> <p>direction 19:15</p>	<p>directly 23:5 25:12 33:2,15 34:11,14 35:17 36:1 37:17 38:10 62:12,14 63:22 67:17 68:18</p> <p>director 18:14,19 19:2,8 23:14</p> <p>disagree 136:16</p> <p>disclose 119:17</p> <p>disclosure 38:10,23 120:3 155:15</p> <p>discuss 15:13,15 37:1,13 38:19 42:7,22 44:18,20 46:24 47:20 48:5 50:10 74:9 87:14 97:5 109:5 117:23 119:22 120:10 127:19 140:14 145:8, 19,22 146:13 147:23 162:4 165:19 166:7,11, 24 172:21 179:22 182:4,6</p> <p>discussed 40:13 42:16 44:22 50:6 74:18 87:7 88:5 119:17 123:24 131:13 142:14 143:13 145:12 148:8 150:14 160:4 172:13,15 176:16,19</p> <p>discusses 68:2 69:3 80:9 84:2,10 87:11 121:9 124:24 125:1,7 126:2 156:18</p> <p>discussing 18:18,24 21:19 37:3 41:13 62:6 68:4 69:6 78:18 93:22 113:3 120:1 135:12 141:1 144:6 145:10 150:20 163:21 164:5 165:11, 15,21 166:6 168:10,20, 22,23 171:2,11 172:16 176:17 179:5</p> <p>discussion 74:17 82:4 125:6 126:14 142:22 169:4 171:22</p> <p>discussions</p>	<p>10:13,14 31:11 37:13 44:17,21 123:19 130:2 142:15 162:11 165:12</p> <p>disk 6:3 41:19 42:1 73:20 74:2 96:18,23 132:8,13 146:7 166:13,20</p> <p>disks 182:22</p> <p>disputing 61:14</p> <p>distance 55:21</p> <p>distinguish 56:19</p> <p>distributed 164:21 179:18</p> <p>District 29:8</p> <p>dividing 52:1,10</p> <p>doctor 15:12 42:5 97:3 117:21</p> <p>document 16:4,5 31:10,23,24 118:21 122:4,14 123:9, 22 124:9,16 125:1,16, 22 127:9,20 129:1 130:20 134:12 135:13, 15 136:1 137:17 138:8 139:8 140:5,6 147:2 151:15 167:7,18</p> <p>documents 12:21,23 13:4,6,8,11,14 28:17,19,23 29:12</p> <p>DOE 22:20</p> <p>doesn't 14:23 37:6 59:24 64:4, 11 67:15 80:7 87:23 91:24 98:9 111:11 119:17 120:4 142:24 143:20 145:8 149:16 150:5 155:3 163:1 182:4</p> <p>doing 17:11,19 43:20 48:10 76:19 79:10 87:1,17</p>	<p>108:10 111:7,17 113:20 139:5,10,14,22 142:13 143:14,16 178:23</p> <p>domain 80:11,12 82:19,21 93:7 114:9,17,18 136:12,13 138:14 139:2,3,17</p> <p>domains 80:11 82:18 83:4 142:5</p> <p>don't 8:11 9:7,20 10:12,23 14:13 15:9 17:14,22,24 25:4,15 26:2,15 28:5 29:4 41:14 43:21,24 44:22 48:2,3 54:18,21 60:13 64:5 65:21,24 66:5,8,15 70:12,13 71:8,12 72:13 73:18 87:15,16,18 88:4,9 93:10 99:8 101:17,19 103:6 104:7,11,13 105:18 107:5 108:12 109:4,20,23 110:11 111:8 117:6 120:1 122:19 123:4 126:13,19 128:22,24 129:1,6,14, 21,23 130:3,4,11,22 132:4 133:13,20 134:17,22 136:18 138:14 143:7,13,16,24 150:18,23 157:23 158:3 159:23 160:19 161:13, 19 162:5 165:14,19 170:16 172:23 174:14 175:14,19 176:20 179:4,5 180:13,21,23</p> <p>dot 126:17</p> <p>dotted 59:23 60:1 63:8,18</p> <p>download 119:10,12 163:15</p> <p>downloaded 120:15 121:10</p> <p>downloading 38:24 39:2 163:18</p> <p>downloads 120:23</p> <p>Dr 7:15 9:19 14:10,20</p>
--	---	---	--

31:20 74:6 132:17 146:11 166:24	edited 31:4,8	eliminated 87:20	28:8
draft 31:11 33:22 43:19 124:17,19 125:10,12, 14,16	editing 125:21 126:1	email 157:4	engagements 21:5 24:23 28:9
drafting 33:23	edition 121:21 124:6	embodiment 40:19,24 41:4 66:9,11, 13,21,23 67:3,7,9,23 84:3,5,11 89:24 101:12 112:22 115:20 116:24	engineer 143:15 162:4
drafts 34:1	editorials 17:8	embodiments 39:7,12	engineering 30:13,14,19
draw 52:9	editors 123:13	emphasize 105:4 179:17	English 77:15
drawing 151:8	edits 43:19 44:3 124:4 125:17	emphasizing 30:13,18	enter 149:2 164:24
dropping 112:20 113:4	educational 48:15	employ 169:10	entering 181:21
DTI 6:13 7:7	effect 18:10	enable 82:5 158:10	entire 16:2 106:6 118:10
duly 7:11	effort 20:13	enabled 66:24 79:1 158:15 163:16	entirety 31:22 144:4
Dupont 6:17	eight 12:17,18 26:5	enablers 86:23	entity 113:6
DVD 182:22	EISR 172:13 173:5	enables 76:23 85:19,21 86:8,18 95:7 114:24	environment 78:11
dynamic 110:8,19 179:18,19	either 17:22 26:6,18 33:2,15 34:14 35:17 36:1 37:17 62:12 73:15 78:3 103:5 125:11	enabling 87:9,24	envision 173:20
dynamically 168:6,7,13	elaborate 148:9	encompass 130:16	equipment 119:13
<hr/> E <hr/>	electrical 30:13,19	encompassing 32:24 33:13 34:13 35:15,23 37:16 62:10	equipments 57:17
earlier 69:14 83:6 93:22 103:13 135:11 169:4	electromagnetic 64:7	encountered 172:20	equivalent 113:1
early 28:4	Electronics 6:5,6	ended 25:21	error 14:6 17:16 145:4
easier 91:1	element 57:21,22 90:19 93:19 94:1,7,14,23 95:2,5,11, 14,15,19,24 116:14	ends 26:4	errors 22:7
easily 46:11 169:11 171:4,15 179:20	elements 55:11 57:15,16 58:1,6 59:18 63:2,14 70:16 77:13 89:1,5 90:17 91:16 93:11,13 95:18 96:9 100:12 111:20	energy 20:22,23	et 22:20 62:5 99:4,24 121:11 126:1 149:7 152:15 164:3 165:18 169:1
edge 178:22 179:3,6,7,11 180:3,5,6,9,10,11,12, 15,17,22 181:1,3		enforcing 178:24 181:9	everybody 123:22
		engaged	exact 9:7 10:12 28:5 43:12,24 68:14 153:3 177:21
			exactly 20:12 29:4 52:9 112:18

<p>127:9 128:22 129:6,14 137:9 144:3 153:4 154:14,17 170:17 172:23</p> <p>EXAMINATION 7:13</p> <p>examined 7:12</p> <p>example 53:17 57:9,20 75:16 98:5,17 108:7 111:13 121:6 144:5 147:19 148:13 149:2 155:15,16 156:17 157:4 178:3 181:18</p> <p>examples 147:24 168:23 176:24</p> <p>exception 16:21</p> <p>exchanging 145:3</p> <p>exclude 130:23</p> <p>excluding 45:19 100:3</p> <p>exclusive 24:21</p> <p>excuse 98:4 119:19 145:23 148:7 173:14</p> <p>execution 95:7</p> <p>exercise 93:12 97:10 108:13</p> <p>exhibit 13:23 14:1,5,17,20,21 15:8,21,22 16:3,6 21:9, 11,16 22:10 31:17,21, 22 32:1 50:14 118:6,10, 12 121:14,15,19 132:18,19,24 134:24 136:15 140:9 141:14 144:10 146:18,22 151:1,2 166:18 167:5,9 173:18</p> <p>exhibits 13:21</p>	<p>exist 79:2 162:22</p> <p>existent 157:11</p> <p>expect 34:6</p> <p>experience 30:21 134:9 176:6</p> <p>expert 9:14 10:16,17 16:24 33:21 34:1,7 39:16 48:11,19 98:16</p> <p>expertise 30:4</p> <p>explain 8:13 46:6,9 47:24</p> <p>explained 42:12 72:6</p> <p>explanation 45:7 47:7,24</p> <p>explicitly 120:10</p> <p>exploits 165:4</p> <p>extended 94:5 108:1 115:18 151:9 172:7,12</p> <p>extensible 168:5 169:12 171:4</p> <p>extension 115:23 121:24</p> <p>extent 20:9</p> <p>external 114:9,18 136:12 137:13 138:3,14 139:3 147:12 148:10</p> <p>extra 19:22</p> <hr/> <p style="text-align: center;">F</p> <hr/> <p>fact 124:24 125:18 131:8 162:24 179:17</p>	<p>factors 61:12 174:17</p> <p>faculty 20:14 24:3,16 25:18 26:19</p> <p>fail 88:22</p> <p>fair 8:14,24 9:13 29:23 36:14,19 47:6 55:5 91:20 94:14 95:2,11,15, 21 96:6 103:4,5 109:13 124:3,5 135:14,20,24 160:14 167:16 169:16 174:3</p> <p>fairly 94:7</p> <p>fall 143:2</p> <p>falls 152:23</p> <p>familiar 8:4 129:15 142:14,24 154:21</p> <p>familiarize 29:2,18</p> <p>family 128:8 131:14</p> <p>far 16:11</p> <p>fashion 111:8 148:24 149:11 152:22 153:10 168:8,17</p> <p>FC 133:19</p> <p>feature 158:18</p> <p>features 157:15,18 163:16,18 165:11,16,17,19</p> <p>federal 22:19 24:10</p> <p>federation 24:20 164:23 165:1,2</p> <p>fee 24:14</p>	<p>feel 10:1 16:2 31:21 118:10 136:8 141:21</p> <p>field 30:3 33:21 34:19,20 48:12,19 138:2</p> <p>fifth 81:3</p> <p>figure 38:18 50:13,14,16,17 51:3,15,19,23 52:3,21 53:4,6 54:4 55:8,9 56:15 59:1,8,13,21 61:18 62:3,18 63:7,10, 15,20,23 65:4,6 70:23 73:13 74:15,21 76:24 80:2 83:14 84:2 87:12 88:11,18 89:7,9,11,14, 21,24 90:2,10,13,14,15, 18 91:1,17 93:11,15,18 94:19 96:10,15 97:11 100:11 101:1 103:20 104:19 106:23 107:3,23 108:11,15,19 110:2,4,7 111:7 113:13 114:11 115:22 116:13 147:13 150:24 151:4,7,21 152:17 153:13 172:17 173:4,14</p> <p>file 28:21</p> <p>final 124:1</p> <p>finalizing 43:20</p> <p>find 113:23 172:24</p> <p>finding 17:19</p> <p>fine 14:15 15:1 17:24 93:16 123:5 145:6 146:2</p> <p>finish 71:9</p> <p>finished 96:16 115:11</p> <p>first 7:11 13:22,23 31:11 32:21 37:13 39:16</p>
--	---	---	---

<p>40:22 43:19 52:23 63:6 91:9 105:1 122:15,16 126:12 136:14,15,23 150:14 169:9 170:12 173:22</p> <p>Fish 6:17,23 11:17</p> <p>fit 155:3</p> <p>fits 173:23 178:10</p> <p>five 8:2 9:6 21:4 22:16,18 28:14 40:18 59:6 126:12 132:14 166:10</p> <p>five-minute 71:10 146:1</p> <p>fixed 171:14</p> <p>flavors 137:20,23 144:22</p> <p>flexibility 164:22</p> <p>flexible 168:17</p> <p>flip 22:9</p> <p>flow 178:23 181:8</p> <p>flows 181:10,15</p> <p>fly 143:15 149:10 150:17</p> <p>focus 19:14 20:15,16 44:13 114:2 139:4,6,21,22 162:12 176:12 178:3</p> <p>focusing 176:21 177:20</p> <p>follow 39:10</p> <p>following 135:22 144:22</p> <p>follows 7:12 128:1</p>	<p>forgive 174:18</p> <p>forgot 106:20 110:9 143:3</p> <p>forgotten 174:18</p> <p>form 35:9 37:11 38:6 39:8 46:13 47:8,16 51:16 56:21 58:14 60:7,16 62:23 64:9 69:2 71:21 75:4 76:8 78:1,13 81:13 84:6,9 86:3 90:16 98:8 129:11 134:7 138:16 139:18 142:6 143:8 154:1,18 157:13 161:4 162:17 172:3 180:19</p> <p>format 102:14,19 109:13,16,24 123:21,22</p> <p>formatting 126:2</p> <p>formed 148:23 152:22</p> <p>forms 138:5 181:14</p> <p>forth 29:5 43:20 55:22,24 60:12 61:1,7 68:2 78:17 80:9 102:16 108:10 109:22 111:22 123:20 127:4 128:13 151:18 159:20</p> <p>forward 123:7 151:19</p> <p>forwarding 145:2</p> <p>Foundations 19:11</p> <p>four 11:23 12:12,17 13:19, 22,23 26:15,20,21 38:9 49:17 92:3 96:24 110:11 132:9</p> <p>fourth 53:13 75:3 125:7 141:17</p> <p>frame</p>	<p>28:6 43:23 169:7 174:11 175:1 180:18</p> <p>frank 17:22 127:18 129:7</p> <p>free 16:2 31:21 118:10 141:21</p> <p>frequencies 27:21 55:20 99:17</p> <p>frequency 27:20 98:20,22,23 99:11,12,13,23 100:1</p> <p>front 13:11 125:15 167:6</p> <p>full 173:19</p> <p>function 78:9</p> <p>functionalities 99:3 140:17 153:7,19 154:13,16 162:9 171:24</p> <p>functionality 81:18 99:5 168:24</p> <p>functions 163:24</p> <p>funded 22:19 23:22 25:9,12</p> <p>funding 19:7 22:21 24:8,13 26:22</p> <p>further 45:6,22 46:10 147:17 152:8</p> <p>Furthermore 95:1</p> <hr/> <p style="text-align: center;">G</p> <hr/> <p>gain 114:24 115:9</p> <p>gateway 51:5 53:11 54:5,21,24 67:16 74:19 79:22 85:6 140:16 147:11,22 148:10 152:10 157:10 158:19 163:23 164:3</p>	<p>general 9:11 10:3 44:1,5 46:3, 17,18,19 47:19,23 48:10 53:12,21 56:3 60:22,23 69:3 71:1 72:12 75:24 76:18 77:7, 10 78:8,20,22 80:9 82:17 84:19 86:24 92:15 98:15 99:9 103:24 106:21 107:17 110:18 111:8,10 112:13 114:15 119:2,15 126:23 127:4 129:21 130:11, 18,19 131:3 133:12 134:13 137:7,18 141:5 145:11,15 148:22 149:17 150:3 152:3,20, 24 153:12 154:2,3,19 159:7,12 160:5,6 161:8 168:22 169:3 171:20,21 174:7 176:3,17 179:12</p> <p>generalize 126:9</p> <p>generally 75:21 76:5,12 78:19,21 118:24 124:23 127:11 135:12 141:7 148:19 171:19</p> <p>generation 167:11</p> <p>generic 98:10 102:8 107:18 111:14 131:3 171:21 174:8</p> <p>geographical 55:22</p> <p>George 7:2,17</p> <p>getting 10:1 13:16 33:24</p> <p>gigahertz 84:13,14,17 99:12,13 122:1</p> <p>gist 148:17</p> <p>give 9:2 14:12 46:3,17,18 47:18 49:24 60:23 78:19 98:4,5 136:6 139:11 176:3,9,14</p>
--	--	--	--

<p>177:22</p> <p>given 143:11 161:24</p> <p>glad 17:18</p> <p>global 161:17</p> <p>globally 137:13 138:4</p> <p>go 8:5,7 17:23 49:13 56:11 59:5 60:9 64:14 66:15, 18 69:12,20 72:17 78:3 80:7 87:18 88:16 93:12, 21 94:23 95:19 98:9 103:18 108:12 110:15 112:18 113:12 123:7 128:4 136:6,7 140:5 149:24 151:17,19 167:10 176:23</p> <p>goes 19:23 67:11 82:3 99:4 131:5 136:13 145:4</p> <p>going 13:9,16,21 15:20 18:4, 22 25:7 41:15 47:18 58:9,20 63:9,11,19 64:8,10 66:6 68:7 69:5 71:20 78:19 80:5 87:5 89:10,12 90:6 94:17 96:14 103:9 113:13 114:2,10 118:4 121:13 122:1 132:17 141:22 145:5 146:16 157:5,17 159:10 163:3 171:9 172:2</p> <p>good 6:22 7:15,16 14:13 41:7 94:16 96:13 100:15 143:3 169:22</p> <p>GPRS 73:16 101:14,20,24 102:7,19,20,21,23 103:22</p> <p>GPS 17:12,13 93:3</p> <p>graphics 95:1,2</p> <p>great</p>	<p>41:17 117:13</p> <p>Greene 6:23</p> <p>Griffin 7:4</p> <p>ground 8:6</p> <p>group 17:18 133:8,10,11,13, 15,19,20 134:5,16 150:13</p> <p>groups 134:10,13</p> <p>GSM 73:15</p> <p>guess 13:22 21:4 104:12 126:16 173:19</p> <p>guidance 43:2,10,14,16 44:10 45:20</p> <p>guidelines 34:8 154:2</p> <hr/> <p style="text-align: center;">H</p> <hr/> <p>Haight 7:2,14,17 12:3,14 13:18 14:7,9,15,18 15:1,2,20 16:1 21:9,14 31:16,19 34:3,9,10 36:13 41:15 42:4 54:12 70:1 71:11, 14 73:18 74:5 90:12,15 96:17 97:2 117:11,20 118:4,9 120:9 121:13, 17 132:6,16,22 140:21, 22 145:23 146:2,10,21 164:7,8 166:23 182:14</p> <p>halfway 22:12 128:7</p> <p>Hamilton 7:3,4</p> <p>hand 15:20 118:4 121:13 132:17 146:16</p> <p>handed 21:15 31:20 121:18 167:4</p>	<p>handheld 103:10</p> <p>handing 145:23</p> <p>handle 18:23</p> <p>handset 66:20 119:9,11,13 120:21,23 121:5,6</p> <p>happen 42:7 74:8 146:13</p> <p>happening 99:10</p> <p>happens 87:19 103:6</p> <p>happy 46:18 131:24 178:4 182:1</p> <p>hard 18:21 178:12,17</p> <p>hardware 20:20 52:16 61:11 95:7 107:8,19 143:12 165:7 170:6,7</p> <p>haven't 58:19 100:15 156:5 157:5</p> <p>Hawaii 27:3</p> <p>head 105:18 127:18 130:3,10 131:24 140:3 150:7,16 159:24 160:20</p> <p>headed 144:11</p> <p>hear 143:3</p> <p>help 19:13</p> <p>helpful 44:14</p> <p>helps 94:22 134:10</p> <p>hesitate 126:10</p>	<p>hierarchical 109:13,16,23 152:22 153:10,19</p> <p>hierarchy 109:3</p> <p>high 50:16 51:8,9,20 52:22 53:3 55:9 56:16 58:9 63:11 65:13 87:11 108:17 111:14 147:5 172:6</p> <p>higher 30:15,18</p> <p>higher-speed 121:24</p> <p>history 28:21</p> <p>hit 9:24</p> <p>hoc 119:18,21 147:6,7,13, 16,18,20 148:1,4,12,18, 21,22,24 149:5,8,11,14 150:11,20</p> <p>Hoffman 118:14 119:1,4,7,17,22 120:1,2,4,10,11,13,19 164:9</p> <p>Hoffman's 163:15</p> <p>home 148:1</p> <p>home-based 78:11</p> <p>honest 9:3</p> <p>hook 116:11</p> <p>hooks 79:15 109:17 115:13, 15,18,22 116:1,4</p> <p>hookups 79:15</p> <p>host 110:8,19 137:5,6</p> <p>hosts</p>
--	--	---	---

<p>135:18 136:4 144:19</p> <p>hour 41:16 96:14</p> <p>hours 12:13,16,18</p> <p>house 69:23 178:2,3</p> <p>housekeeping 151:13</p> <p>hypothetical 35:11 37:22 45:24 46:4, 14 49:12 78:10,15 84:24 139:11,12 144:7 154:5</p> <p>hypothetically 49:21 86:20 140:2</p> <hr/> <p style="text-align: center;">I</p> <hr/> <p>I'll 7:18 8:9 9:20 14:13 15:11 34:3 46:18 65:20 89:11 121:11 178:3 182:1</p> <p>I'm 6:12 7:17 8:4 13:9,16, 21 15:20 17:18,19 18:1, 22,23 19:4,8 21:3 25:15 33:6,9 35:2,12 39:15,16 40:2 42:14 43:7,15 44:3,12 46:20,23 47:18 48:10,11 53:10 58:9,16, 20 61:14,15,16 65:12 66:6 68:3 69:19 78:8, 18,19,21 79:10 81:17 82:12 86:16 88:2 90:4 98:14,15 100:3 102:4 106:8,18 108:21 109:6, 9 110:13 114:2,10 115:10 117:11 118:4 120:8,16 121:13 122:1 123:3 126:11 127:11 128:2 130:20 132:17 133:17 134:11 135:6 141:22 142:14,24 143:17 145:5,23 146:16 155:21 156:12 157:22 164:5,10 165:15,21 168:3,12 170:20 171:9 176:5 180:3</p>	<p>ICMP 145:4</p> <p>idea 133:12 138:1 153:5 176:3,9</p> <p>identification 14:2 15:23 21:12 31:18 118:7 121:16 132:20 146:19 166:19</p> <p>identified 43:8,9 53:5 62:20 97:13 104:3 107:21 134:24</p> <p>identifies 137:23</p> <p>identify 134:19 137:19 166:2</p> <p>identifying 97:10</p> <p>IEEE 17:7,23 29:5,17 121:20 125:2,5 126:5 128:12 130:6 133:19 158:1</p> <p>illustrated 89:23 96:5</p> <p>illustrates 84:3 89:22</p> <p>illustrating 151:8</p> <p>illustrative 151:7</p> <p>imagine 27:4</p> <p>implement 107:4 130:8 140:16 143:7 152:12 163:23 177:3 181:14 182:5</p> <p>implementation 55:20 86:15 87:6,13 106:17 108:6,8 116:4,6 141:3,7,9,13 143:12 154:6,8 170:8 176:8 177:7,11 178:22 182:7</p> <p>implemented 80:19 81:1 82:19 83:22 85:9 93:5 112:1 114:5 127:7 129:22 130:12 137:10 143:5,21 163:22</p>	<p>172:6 177:1,9 179:23 182:8</p> <p>implementing 80:22 144:1 151:10 155:11 163:15</p> <p>implements 129:10</p> <p>important 48:7 111:23 177:6 179:16 180:4</p> <p>impossible 88:14</p> <p>include 73:7 154:9 170:6</p> <p>included 38:21 49:4</p> <p>includes 59:11,18 62:3,4 64:22 66:12 67:24 68:1 70:6, 15,21 71:3 73:11,13 84:12,14 91:11 112:23 113:4 115:22</p> <p>including 20:19 22:20 28:20 138:6 155:16</p> <p>incompatible 80:5</p> <p>inconsistent 35:1,4,14 36:8,9,11 48:22</p> <p>incorrectly 14:21</p> <p>incremental 168:8</p> <p>independent 54:1 160:15,18 161:3,7, 21</p> <p>indicate 70:10 124:16 142:3</p> <p>indicates 130:7</p> <p>indication 124:8 125:14</p> <p>indirect 65:7</p>	<p>indirectly 33:2,15 34:15 35:17 36:1 37:18 39:3 62:12, 14 63:22 68:19</p> <p>individual 108:4</p> <p>Indranil 6:22</p> <p>industries 23:2</p> <p>industry 19:9,10 22:19 23:4,6,15 24:9,14 25:2,4 48:16</p> <p>inform 89:20</p> <p>information 58:23 108:9 110:22,24 111:2,3,4 133:14 145:3 152:5 154:24 177:18</p> <p>informed 43:1,6</p> <p>infrastructure 107:9</p> <p>initiation 157:1,5</p> <p>inside 51:21 58:17</p> <p>installed 53:18 75:16 81:11</p> <p>Institute 27:2</p> <p>instruct 13:16</p> <p>instructions 126:1</p> <p>Instruments 28:10</p> <p>integrated 170:16 172:7,12</p> <p>Intel 27:24 134:14</p> <p>interact 107:15</p> <p>interacting 19:9</p>
---	---	--	--

<p>interest 150:13</p> <p>interface 52:17 92:22 95:1,3 107:1 116:2,10,11</p> <p>interfaces 79:16 116:12</p> <p>interfacing 51:21 156:15</p> <p>internal 67:6,19</p> <p>internally 52:15</p> <p>internet 50:19 51:22 55:12 58:2 59:17,19,22 60:6,11,14, 22 61:7,22 62:4 67:10, 14 68:6,13,23 69:4 70:23 71:19 72:3,9,14, 18 73:13 88:19 102:16 110:20 119:14 121:11 176:13</p> <p>interpret 32:16 35:11 48:8 49:1, 20 170:15</p> <p>interpretation 33:8,13,17 34:12,16,22, 24 35:3,7,23 36:4,17,22 37:12,15,19,22 38:2 39:24 41:13 42:17 43:13,16 44:16 45:22 46:10 47:2,21 48:20 50:11 62:10 104:21 126:20 142:7 170:23</p> <p>interpretations 125:10</p> <p>interpreted 32:24 33:12 36:24 37:14,24 42:22 62:9 161:15</p> <p>interrupt 13:2 17:24 71:13</p> <p>introduce 6:20</p> <p>introduced 179:18,19</p> <p>invention 40:20 41:1,5 66:10,11,</p>	<p>14,21,23 67:3,7,9,24 84:4,5,12 90:1 112:23 115:21 117:1 151:12</p> <p>investigation 132:3</p> <p>invited 17:9</p> <p>involved 24:4,5 61:11 123:1</p> <p>IP 6:7 7:3 10:13 38:14 41:5 58:3 87:9,24 110:20,22,24 111:1,2,4, 10 112:8,11,14,15,19 113:1 114:4,8,17 115:1, 2,8 133:3 135:1,16 136:2,12 137:3 138:13 139:2,16 141:24 142:11,19 144:17 145:13 147:12 151:9 152:7 159:19 163:24 169:1</p> <p>IPR 9:12,17,18 10:10 13:23 16:9 32:5 134:21 148:6</p> <p>IPR2015-01443 6:9 12:20</p> <p>IPR2015-1443 15:11,14</p> <p>ISDN 176:12 181:20</p> <p>isn't 37:6 124:17 157:9</p> <p>isolated 137:11 138:2</p> <p>issue 42:10 102:5,6 103:12 123:24 181:16</p> <p>issues 20:23 44:5 78:23 79:4 123:24</p> <p>it's 12:17 14:6 18:21 22:15 23:6,7,15 24:17,18 27:15,17 32:3 35:11 45:13,15,24 46:14 49:11,15 51:19 52:22 55:13,23 56:6,10 57:2, 23 59:12 60:24 61:8,13</p>	<p>63:7,9,22 64:8,10 67:18,20 68:10,13 69:5, 6,7,13,22 71:6 72:18 76:17 78:6,15 79:10,19, 21 80:19,21 82:19 83:22 84:23 86:20 87:19 88:4 90:19 91:20 92:17 94:4 98:20,23 102:16 103:3 104:24 105:10 108:22 109:10, 23 111:23,24 122:8,23 124:2,3,6,12 127:21,22 129:7 131:10 134:1 136:17 137:9 138:7 139:5 141:11 143:4,5 144:7 145:14 148:24 149:11 152:3 157:18 159:3 161:9,15 163:4,9 164:4 168:23 171:11, 13,22 172:2,16 173:5, 12,19 175:2 176:17,19, 21 178:1,4,12,16 179:17 180:8</p> <p>item 17:16</p> <p>items 62:20 78:2</p> <p>its 26:23 31:22 60:11 85:3 98:21 110:23 119:23 140:16</p> <p>ITU 133:19</p> <p>IV 127:21</p> <p>IXI 6:7 7:3,4,18</p> <hr/> <p style="text-align: center;">J</p> <hr/> <p>Jakupciak 7:7</p> <p>January 122:13,16</p> <p>Java 120:5,7,11 151:10 154:9,20,22 155:2,23 156:2,7,9,11,20 165:4 166:2,8,10,12 182:5,6</p>	<p>Java-technology-centered 164:21</p> <p>JINI 120:5,7,10 151:10 154:9,20,22 155:2,23 156:2,9,20,21 164:3,6, 15,20,23 165:3,11,17, 18 166:2,3,7,11</p> <p>JINI/JAVA 145:19,22 155:19 163:9</p> <p>job 24:19 100:15</p> <p>join 149:6,9</p> <p>joined 25:17 28:8</p> <p>joining 24:20</p> <p>jointly 31:5,8</p> <p>journal 17:20</p> <p>jump 13:9</p> <p>junior 51:10 52:24 53:1</p> <hr/> <p style="text-align: center;">K</p> <hr/> <p>keep 11:24 123:21 126:16,19</p> <p>kernel 168:16 171:8,16,17,18, 20,22,23 172:1,3,4,9 173:2,8,10,14</p> <p>Kevin 6:23</p> <p>key 177:13</p> <p>Kiaei 6:4 7:10,15 9:19 14:10, 20 31:20 41:20 42:2 73:21 74:3,6 96:19,24 132:9,14,17 146:8,11 166:14,21,24 182:21</p>
--	--	---	--

<p>know 8:21 9:20 10:2,12 16:17 20:9 25:16,17 26:2,18 34:2 49:14 60:13,18,20 61:3 92:14 99:8 103:6 104:7,11 109:20 110:11 111:19,24 124:23 125:1 126:13 128:22 129:1 132:4 133:21 134:8,17 136:18 150:18,19 151:18 154:15,19,22 158:3,4,6 160:19 161:19 170:16 174:14 175:19 179:4 180:6,13, 21</p> <p>knowledge 17:6 22:8 23:21 25:5 26:11,13 30:3 31:4 34:19 36:23 125:17 126:4</p> <p>known 126:7 127:8</p> <hr/> <p style="text-align: center;">L</p> <hr/> <p>label 94:7,14 95:2,11,15,21 96:6</p> <p>labeled 110:1 111:5 115:13 116:14</p> <p>labeling 96:15</p> <p>labels 91:17 93:11</p> <p>lack 134:5</p> <p>ladder 109:21</p> <p>LAN 50:23 52:6,11 53:12,16, 20,23 57:1,5 62:1 75:18 76:4,24 80:11 81:5,11, 12,21 82:6,9,24 83:3,4, 9 84:7,9 85:1,22 86:9 103:10 114:24 115:6,7, 9,10 121:22 122:2 151:10</p> <p>language 44:5 46:2,15 47:23 48:8</p>	<p>49:2,3,22 123:16 136:23 137:22 154:18 165:5</p> <p>laptop 67:1 78:11 148:15 149:7 155:17 158:21 175:21</p> <p>large 174:15 178:1 181:23</p> <p>larger 133:15</p> <p>late 131:6</p> <p>layer 91:12,21 92:5,21 93:4, 7,8 95:16 98:2,24 99:2, 21 100:5,7,8,9,10,13,24 101:4 102:13,17,24 103:3,19 104:2,4,6,8, 12,15,16,20,23 105:1,8, 9,11,15 106:4,5 107:19 108:7 113:14 115:12 121:23,24 128:17 140:10,24 141:4,8,10, 11,12 151:22 152:2,3,5, 6,7,14,20 153:1,2,7,20, 21 154:9,10,14,16,21, 23 155:2,24 156:16,19, 20 166:2,3,8 173:8</p> <p>layers 91:3 92:7,11,15 104:21 105:18 106:24 107:1,14 108:20 109:12 152:16, 21 153:6,18 155:4</p> <p>layman 170:18</p> <p>leading 20:13</p> <p>leads 38:22 123:8</p> <p>left 33:7 50:20,24 51:1,6 52:2,19 55:3,5 57:11 67:11 83:1,11,13 89:2 109:21</p> <p>legal 6:13 10:12</p> <p>lend 144:20</p>	<p>let's 13:18 41:16 59:5 65:14 66:5,18 69:12 77:17 79:5 94:10 106:21 108:11 126:22 176:21 178:18</p> <p>letters 13:22,23</p> <p>level 20:8 30:7 50:16 51:8,9, 10,20 52:15,22 53:1,3 55:2,10 56:16 58:9 63:11 65:13 87:11 105:14 108:17 109:19 111:15 147:5</p> <p>licensing 10:14</p> <p>likewise 84:13 113:4</p> <p>limit 159:14,17,24</p> <p>limited 39:6,12</p> <p>line 34:23 38:8,9,19 40:14, 18 52:2,10 53:14 55:24 59:4,6,9,23 60:1 62:7 63:8,18 64:15 65:10 66:6,18,19 67:2,22 69:14,16,17,18 70:3 73:9,10 75:3 79:13 81:3 82:3 84:1,10 89:18 94:4,11,24 95:6,15,20 96:3 101:11 104:15 105:1 108:1 112:3,7 114:7,13,23 115:5,19 116:23 121:9 130:13,16 132:2 136:10,15,21,24 147:23 155:13,14 160:22 163:12,21 164:14 165:18 166:10 168:4 169:9 170:12</p> <p>lines 32:21 63:23,24 66:7 75:15 89:16 91:6,22 92:4 93:22 101:4,6 156:18 158:18 175:24</p> <p>lining 153:3</p> <p>link 151:22 152:1,13 153:1</p>	<p>links 152:3</p> <p>list 16:24 28:17</p> <p>listed 28:23 29:20,24 155:21</p> <p>litigation 29:8,13</p> <p>litigation-related 21:6,7</p> <p>little 10:22 31:4 38:3 41:15 55:4 89:2 108:13 137:15 152:8 168:18 179:9</p> <p>live 140:10</p> <p>lives 140:24 141:3</p> <p>LLC 6:7</p> <p>loaded 32:17 33:1,14 34:13 35:16,24 37:8,16 39:21 62:11 101:9 168:16</p> <p>loading 38:10,12,13</p> <p>loads 179:1</p> <p>local 50:21 51:7,12 53:19,23 54:22,23 56:20 57:8 74:20 75:18 76:4 77:3 79:8,22 80:15,23 81:12 82:6,9 84:21 85:5,6,11, 18,24 86:11,19 87:20 114:6 147:13,18,20,24 148:1,11,17,24 149:14, 19,20 152:13 160:10,17 161:18</p> <p>locally 158:20</p> <p>located 6:18</p> <p>location 55:22 93:6</p>
---	---	--	--

<p>locations 105:19</p> <p>long 11:14</p> <p>longer 103:3</p> <p>look 14:13 16:2 17:23 29:12 49:13,24 51:12,17 52:5 53:13 58:21 64:13 65:6, 20 66:5,17 72:10 75:14 79:12 83:24 89:10 90:17 122:14 125:21 128:24 138:23 139:4, 21,22 140:4,7,20 141:14 142:22 144:4 154:5 155:6,12 157:5 160:3 162:23 172:24</p> <p>looked 30:5 32:9 40:7 58:19 107:11 156:5</p> <p>looking 20:22 27:7 29:1 39:17, 19 40:9 45:11 57:4 66:17 83:14 87:7 89:11, 13 98:19 102:9 116:6 123:3 125:3 130:10 138:18 145:15 175:3,9 177:21 180:21</p> <p>looks 173:7</p> <p>lot 87:18 111:22 133:13</p> <p>lower 92:17 99:24 104:23 127:21</p> <p>lower-most 106:4 110:1</p> <p>Lucent 133:23 134:6</p> <p>Luckily 108:12</p> <p>lunch 74:8</p> <hr/> <p style="text-align: center;">M</p> <hr/> <p>MAC</p>	<p>121:22</p> <p>machine 165:1,5</p> <p>machines 164:24 165:8</p> <p>main 52:10 157:9,15</p> <p>majority 19:23 24:8</p> <p>making 44:13 71:1</p> <p>manage 19:6</p> <p>managed 41:3 52:17 117:3</p> <p>manager 38:14,17 39:2 41:2 50:19 55:12 58:2 59:7, 14 61:10,11 62:4 67:8 113:6 116:19 117:2</p> <p>manages 95:7</p> <p>managing 19:12</p> <p>mapped 135:16 136:2 137:4 144:18 145:14</p> <p>marathon 8:20</p> <p>March 6:10</p> <p>Marchand 141:1 146:24 147:5,9, 14,24 148:11,13,20 151:4,5 152:10,18,19 153:13 157:7,9,15 158:13,16 160:2,3,22 163:8 164:11,14</p> <p>Marchand's 140:16 147:20 155:15 163:22 164:2</p> <p>mark 13:18,21 15:21 21:9 31:16 118:5 121:14 146:17</p> <p>marked</p>	<p>14:2 15:7,23 21:12 31:18,21 93:18 118:7, 12 121:16 130:7 132:20,23 146:19 166:19 167:5</p> <p>marked-up 124:17,19</p> <p>marketplace 155:7</p> <p>marking 132:18</p> <p>markings 123:11</p> <p>Maryland 6:15</p> <p>master 158:20 159:1,4,9,11 161:24 162:7</p> <p>master's 30:12,15</p> <p>master/slave 129:19,22,24 130:3,5,8, 12,24 131:1,4,7 157:21, 23,24 158:2,4,5,6,8,11, 13,24 159:3,8 162:8</p> <p>masters 163:6</p> <p>material 99:1</p> <p>matter 6:5 9:17 10:10 15:14,16 97:6</p> <p>maturity 26:23</p> <p>mean 13:1 17:24 25:2 35:15 40:4,6,16 43:17 45:22 49:12 76:15 77:5,9 82:21 83:7 92:1,2 99:8 101:3,6 104:11 105:23 111:10 112:13 114:11 122:12 123:4 124:13 129:12 138:9 143:20 144:2,3 153:9 155:3 157:22 161:14,19 163:2 170:13,17 174:15 175:16 179:8 180:9,13, 14,21 181:4</p>	<p>meaning 19:22 24:14 76:7,14 77:15 112:15 116:12 125:8 148:5</p> <p>means 35:13 40:13 55:18 62:13 77:18 97:24 100:1,3 102:9 111:4,19 112:19 158:3,4,6 161:12,14,21 171:13,20</p> <p>meant 40:6 73:3 82:22 83:4,9 99:23 100:2 107:4 120:13 143:9 153:20 171:3 178:12</p> <p>measure 174:14 175:16</p> <p>measurement 175:17</p> <p>mechanism 68:24</p> <p>mechanisms 164:24</p> <p>media 95:16 102:15 104:4,6,7, 11,15,20 105:1,9,11 127:7,17 128:21,23 129:10,15,18,19 130:9 131:2,11,22</p> <p>medium 121:22 131:19 175:4,6, 11 176:9,10 177:8,24 178:2</p> <p>meet 11:5,9 123:15</p> <p>meeting 11:11,12 123:23</p> <p>meetings 11:16,20 27:3</p> <p>Mellon 177:10</p> <p>member 24:15 26:10,11,18 85:5, 6 149:5 162:21</p> <p>members 25:24 26:7 165:2</p> <p>membership</p>
---	---	---	---

<p>24:14 25:20,21 26:17</p> <p>memory 18:1 29:6 129:7 131:8, 10 163:19 176:1</p> <p>mention 140:12</p> <p>mentioned 9:5 15:17 17:2 23:2,10 26:20 27:8,23 29:17 34:21 37:4 40:12 59:12 61:23 64:2 109:4 110:15 149:13 158:19</p> <p>Mesmer 7:4</p> <p>method 87:24 128:17 135:15 136:2 137:3 140:19 144:17 145:13</p> <p>methodologies 87:15 88:5 98:3 138:21</p> <p>methodology 177:4</p> <p>methods 119:21 143:15</p> <p>microphone 143:2</p> <p>microrouter 53:18 74:24 75:6,8,10, 13,16,20,24 76:2,6,13, 18,23 79:6,7,14,19,20, 23,24 80:14 81:1,14,18 82:1 83:15 85:17,19,21, 23 86:7,10,18 87:8,9, 12,18,22 88:7 93:23 94:6,12,13,15 108:3,17, 19 109:12 113:20 115:21,23</p> <p>Microsoft 134:15</p> <p>mid 174:6</p> <p>mid-size 178:7,15</p> <p>mid-sized 173:24 174:7 177:17 178:11</p> <p>middle</p>	<p>33:6 141:10</p> <p>million 22:21 23:1</p> <p>mind 14:13,18 65:21,24 66:5, 8 70:13 71:8,9 93:14 128:24 146:1</p> <p>minutes 65:21 71:16 94:18</p> <p>misinterpret 36:10</p> <p>missed 120:8</p> <p>missing 14:4 17:1</p> <p>misspoke 56:15</p> <p>mistaken 25:15</p> <p>mistakes 22:7</p> <p>mobile 119:7,9,13 120:20,23 121:5,6 140:16 145:8 147:10 148:14 149:4 151:8 152:10 158:19,23 163:23 175:9</p> <p>model 106:15</p> <p>modem 66:24 175:12 176:13 181:20</p> <p>modern 178:22 179:3,6,10,13 180:9,22 181:3,19</p> <p>modified 140:15</p> <p>modular 168:5 172:7</p> <p>modulations 99:3,24</p> <p>modules 119:10 120:24 121:10 163:16,18 168:13,15</p> <p>monitor 6:11</p>	<p>monitored 41:4 117:4</p> <p>monolithic 169:10 170:10,14,21,24 171:5,8 177:12 179:20</p> <p>month 18:11 122:24 123:1</p> <p>months 8:2 9:6,8 10:7 43:22</p> <p>morning 6:22 7:15,16 32:13 169:5</p> <p>Motorola 27:9,14 175:9</p> <p>mouth 109:7</p> <p>move 94:10 165:4</p> <p>Moving 28:15 95:5</p> <p>Mukerji 6:22,23 9:19,24 11:22 12:4 13:5,9 14:3,12,19 29:10 33:5,24 34:5 35:9 36:7 37:11 38:6 39:8,14 46:13 47:8,16 51:16 54:11 56:21 58:14 60:7, 16 62:23 69:2,22 71:21 76:8 78:1,13 86:3,14 90:12,16 96:13 98:8 117:8 120:7 129:11 134:7 135:19 138:16 139:18 142:6 143:8 154:1 157:13 162:17 180:19 182:17</p> <p>multiple 121:1 129:4 136:18 139:1,9 159:9 160:14, 17 161:3,9 162:15 163:1,3</p> <hr/> <p style="text-align: center;">N</p> <hr/> <p>name 6:12 7:17 23:18 171:5</p> <p>names 127:13</p> <p>NAPT</p>	<p>138:7,9</p> <p>NAT 110:8 113:15,17 114:5, 8,11,12,15 133:3 135:1, 12 136:11,13 137:10, 17,20,24 138:1,6,15,19, 20,22 139:1,5,7,15,22 140:5,9,23 141:2,18 142:4,10,14,24 143:7, 13 144:11,22</p> <p>National 19:11</p> <p>nature 9:9,11 178:6 179:19</p> <p>near 151:1</p> <p>necessarily 64:5 106:16 109:23 131:11 141:3 143:20 149:1 154:11 155:3,23 156:5 163:2,4 170:8</p> <p>necessary 46:6</p> <p>need 8:20,21 26:12 61:2 66:15 73:3 78:12 79:6 82:13,14 83:20 84:18 117:8 123:18 132:6 151:19</p> <p>needed 36:17,21 63:2 77:23 79:11,20 165:3</p> <p>neither 58:22 161:20</p> <p>Netbsd 172:8,18 173:1</p> <p>nets 149:21</p> <p>network 36:2 38:11,13,15,19,21, 22 39:1,4,23 41:3 50:18,21,24 51:6,7,11, 12 52:12,18,19 53:9,13, 21,23 54:1,5,9,15,22 55:3,5,7,15,17 56:4,7, 20,23 57:8,12,13,16,19, 20,22,23,24 58:3,5,8, 12,13,17 59:9,11,14,15, 16,18 61:21 62:2,4,13,</p>
---	---	--	--

<p>21 63:5 64:3,22 65:18 66:4,12 67:4,6,19,24 68:1,7 69:1,7 70:6,11, 15,17,20,23 71:3,24 73:5,8,12 74:16,20,21 77:1,4 79:22,23 80:6, 15,17,23 81:11 82:5,9 83:5,10,17 84:22 85:6, 7,12,13,23,24 86:2,9, 11,12,19 87:5,10 88:1,3 89:5 91:4 92:18 94:5,8 105:17 106:1,3,8,9,23 107:9,19,21,22 108:1,2 109:2,10,11,16,18 110:2,3,5,9,18,22 111:3 113:14,18 114:3,4,6,12, 16 115:2,12,18 116:3,7 117:3 119:21 120:2,24 121:4,7 129:23 130:13 131:7,11 133:3,8,10 134:4 135:1,14 136:1 137:3 138:9 139:24 140:11 141:5,6,9 144:16 145:12 147:6,7, 12,13,16,18,19,20,21, 22 148:1,9,10,15,17,18, 21,22,23,24 149:2,6,8, 9,20,21,23 150:6,12,20 152:4,6,13,14,22,24 153:8 154:3 155:16 158:11 170:3,4 171:24 176:13,18</p> <p>networking 20:18,20 30:16,21 91:2 115:23 133:19 145:11, 15,17</p> <p>networks 32:19 33:3,16 34:15 35:18 37:9,18 62:15 69:5 119:18,23 147:12 148:1 160:10,17 169:6 170:3,5</p> <p>never 25:16 26:10,11</p> <p>new 163:18 168:24 171:12 172:11</p> <p>night 17:11</p> <p>nine 43:22</p>	<p>noisy 176:21</p> <p>non-extensible 171:14</p> <p>non-responsive 140:21 164:7 180:2</p> <p>non-synchronized 161:4,8,12,20</p> <p>Northwest 6:18</p> <p>Notice 15:10</p> <p>noticed 17:11,12</p> <p>notion 92:17 102:8 150:17 165:6</p> <p>NSF 18:14 19:2 22:20 23:6, 10,22 24:9</p> <p>nuanced 38:4</p> <p>number 6:4,9 14:1,17 15:11,22 16:15 17:16 19:4,5,13 21:11,22 31:17 41:19 42:1 44:15 58:3 73:20 74:2 75:3 96:18,23 118:6,13,16 121:15 126:22 132:8,13,19 134:15 144:11 146:7,18 149:19 151:20 157:18 159:14,18,21 160:10 161:9 166:13,18,20 178:4</p> <p>numbers 126:13 151:14 175:24</p> <hr/> <p style="text-align: center;">O</p> <hr/> <p>object 8:16 38:6 39:8 62:23 69:2 76:8 78:1 86:3 140:21 164:7 180:2</p> <p>objection 35:9 37:11 39:14 46:13 47:8,16 51:16 56:21 58:14 60:7,16 71:21</p>	<p>78:13 86:14 90:16 98:8 129:11 134:7 138:16 139:18 142:6 143:8 154:1 157:13 162:17 180:19</p> <p>obligations 9:22</p> <p>obtain 115:7</p> <p>obviously 11:1 141:8</p> <p>occur 11:11</p> <p>October 169:7,15</p> <p>offered 47:1 156:16</p> <p>offering 142:8</p> <p>offers 157:18 165:1</p> <p>office 6:8 29:6 147:19</p> <p>Oh 56:14 69:18 110:13 120:19 143:2 144:13 168:21</p> <p>Ohio 27:1</p> <p>okay 8:7 15:10 46:5 62:17 63:15 64:13 65:11 66:5 69:18 72:20 73:7,14 78:8 79:5,18 85:8 87:23 89:19 94:7,9,21 96:12 99:18 103:13 106:8,12 113:11,13 118:15 120:19 128:4,11 135:9 137:1 143:3 151:16 155:1 164:12 179:15 181:5</p> <p>old 16:14</p> <p>one-to-one 23:5,7 24:18,21 25:1 27:18 57:23</p> <p>ones</p>	<p>17:21 32:4 36:24 48:2,4</p> <p>ONR 22:20</p> <p>operate 107:6</p> <p>operates 83:11</p> <p>operating 95:6,12 98:23 104:17 105:2,15 153:3 154:17, 18 156:15,19 169:11 170:10,16,24 171:3,14, 19,23 172:4,8,19,21 173:1,10,13,15,23 174:5,6,8 178:10 182:9, 10,11</p> <p>operation 137:17</p> <p>operations 83:12 157:8 158:11</p> <p>operator 41:4 55:13 58:2 116:15, 18 117:4</p> <p>opinion 35:21 37:10 38:3 39:5, 11 44:24 45:4 49:24 61:2 89:20 92:6 98:16 153:17</p> <p>optical 181:22</p> <p>order 61:3 115:8</p> <p>ordinary 30:8,10 31:6,14 35:8 45:1,5,9,21 47:14 48:7, 13 49:1 55:16 56:19 60:4 75:20 107:13,16 111:16,18 138:24 169:19 174:12,20 176:6 177:16 180:24</p> <p>organization 133:16,18</p> <p>original 33:23</p> <p>OSI 105:20,23 106:14,19</p> <p>outlined</p>
--	---	--	---

39:24 119:3 142:15 144:24 157:15,19	paggers 175:15	particularly 178:19	Pepper 7:2,3
outside 24:24 25:9 34:2 47:17 58:15 60:7 62:23 71:21 75:21 76:5,8,12 78:13 86:3 102:15 103:9 129:16 138:17 148:19 149:22 150:5	pages 14:4	passed 108:9	perform 181:8
over-the-air 119:9,11 121:1	paper 167:13 169:20 171:13 172:14,15,16,22 174:11 176:16,17 178:13,16 180:14	patent 6:7,8 7:13 17:13 21:18, 21,22 22:1 28:20 29:9 32:2,4,8,9 36:21 38:9, 13,16,24 39:6,12,17,18, 19,20 40:7,8,10,18 43:23 45:6,10,11,13,15, 18 46:7 47:3,10,11 49:7,14,16 50:3,14,15 53:22 54:6,13,17 56:3, 6,12 57:7 59:2,7 60:15 61:4,19 62:18 65:15,20 66:2,6 68:5,15,24 69:11 72:5,20 73:15 74:15 75:22,23 76:2 78:3 80:7 81:1,5,7 83:24 84:2 85:13,15 86:17 87:3,16 88:12 89:12,13,18 97:24 98:15 107:7 108:11 110:23 111:14 112:3 113:21 114:14, 19,21,22 115:16,17 116:18,21,23 118:13,16 119:1,2,16,20 120:3,11 135:13 139:6 146:24 165:15,20	performance 171:11 172:7
overall 19:12,15 20:13 26:15 31:5,13 51:10 63:11 107:7 133:19 138:1 143:10 182:7	papers 29:5,18	patents 9:17 17:10,13 110:11 165:13	performed 177:2
OWNER 7:13	paragraph 22:16,18 27:7 28:15 30:7,9 32:19,22 33:11, 22 34:24 37:4,13 38:8 40:1 42:16,24 43:8 45:20 47:20 48:12,21 50:12 52:5 53:14 56:24 59:4 61:24 62:7 64:13 67:2,21 68:9 69:12,16, 18 70:4 72:7 73:6,9 75:2,14 79:9 81:2,8,20 82:2 87:8,22 91:6 94:1, 11,24 107:12 112:6 113:8,10,24 114:13 115:5 119:3 120:20 125:6,7,23,24 128:6 131:13,17 132:2 135:11 136:8,10 140:13 141:17,21 143:18 144:2,10,12,14 147:9, 17 148:8 152:9 155:13 156:18 157:16,17 158:16,17,18 160:23 163:20 165:17,22 166:1,4,7,9 168:4,12 173:19 174:10	pays 24:14	performing 153:6 157:8
P	part 8:11 39:10 58:5,8 64:3, 10 84:21 121:21 122:22 125:18 133:18 141:24 142:12,19 152:4 159:15 162:15 172:3 173:10, 12,13,15 174:5	payload 145:4	performs 110:7
P.C. 6:17	participated 133:11	PCS 121:9	period 28:4,11
p.m. 74:1,4 96:20,21,22 97:1 117:14,16,17,18 132:10,11,12,15 146:3, 5,6,9 166:15,16,17,22 182:22,24	particular 15:16 29:19 38:16 44:15 59:6 91:13 114:7 116:4 140:10,24 141:4 142:9 148:4 168:1 170:6 173:14,15	PDA 66:24 78:12	periods 28:13
packet 112:8,11,15,20 145:4		Pedersen 7:5	person 30:10 31:6,13 35:8 44:24 45:4,8,20 47:13 48:7,13,24 60:18,20 98:15 107:13,16 111:16,18 138:24 140:15 145:15 149:5 169:19 176:6 177:15
packets 41:5 53:15,16 81:5,21, 22 82:1,7,12,13,15 111:11 113:2 145:3 163:24		pen 93:17 94:18	personally 25:11 58:16 134:19
page 14:24 15:4,6 21:2 22:10,13,16,17 28:16 59:3 64:15 69:14 70:3 73:10 113:24 122:15, 16,18 125:4,20,21,22, 23,24 127:21,22,23 128:3,4,7,15,16 131:13 136:14,22 140:13 141:14 144:9,24 151:1, 5,6,14,20 160:21 164:13,19 173:17,18 177:1 178:18		pencil 93:17	perspective 57:4
		pending 8:23 29:8	PH.D 7:10
			Ph.d. 6:5 41:20 42:2 73:22 74:3 96:19,24 132:9,14 146:8 166:14,21 182:21
			phone 52:14 53:9 103:10 147:10 148:14 149:4 158:23 163:23 175:10
			phones 145:8
			photocopied 14:21
			photocopying 14:6

<p>phrase 33:5 47:2 50:7</p> <p>phy 99:21 100:4,7 101:4 102:13,17,24 107:19 108:7 121:23 141:8 153:1</p> <p>physical 91:12,21 92:5 93:4,8 98:2,24 99:2,21 100:8, 9,10,12,24 101:4 103:3 104:2,21 105:8 106:5 121:23,24 128:17 141:8 151:22 152:5,6 153:21 154:14,16 159:24 175:23</p> <p>picky 123:4</p> <p>piconet 148:12 149:14,15,17,18 150:2,11,17,20 151:9 157:12 158:14 159:15 161:24 162:5,8,21 163:8</p> <p>piconets 149:22 150:4,8,14 160:15,17 161:4,9,23 162:16 163:1,3,5,6</p> <p>picture 52:14</p> <p>pieces 88:17</p> <p>pin 127:15</p> <p>place 6:16 42:21 140:12</p> <p>places 105:6 139:9 171:12</p> <p>please 6:20 8:8,12,21 36:18 76:10 86:6 91:10 103:18 127:14,20 135:20 144:15</p> <p>plug-in 79:14 109:20 121:10 140:20 163:13,15,21 168:3 171:12 177:8</p> <p>plug-ins 38:14 39:2 75:5,8</p>	<p>79:17,19 81:14,16 82:3, 4 89:5 94:6,8 107:21 108:2,4 109:20,22 115:19,24 116:2,7 119:10 120:12,14,24 121:4 140:14,19 141:2, 12 164:10 167:12,22,24 168:12,13,14,16 173:18 177:1,3 179:19 182:4,7</p> <p>point 9:24 23:3 25:7 37:2,5 51:2 88:9 89:17 91:5 104:14 117:12 124:11, 22 127:9,14,20 128:16 136:14 141:22 144:8 150:24 159:23 160:21 164:13 165:21 173:17</p> <p>pointed 69:13 135:11 151:18</p> <p>points 77:21 78:7</p> <p>Polytechnic 27:2</p> <p>poor 92:5</p> <p>port 138:9</p> <p>portion 96:15 135:22</p> <p>portions 123:9,10</p> <p>ports 176:3</p> <p>POSITA 35:1,4,10 36:5,11 47:22 48:1,22 49:8,20 50:1 139:13 140:14 163:13, 14</p> <p>position 177:15</p> <p>positions 16:20</p> <p>possibilities 80:20</p> <p>possibility 58:7 139:12</p> <p>possible</p>	<p>49:21 72:1,19 127:1 134:4 163:4</p> <p>Possibly 162:22</p> <p>potential 37:21</p> <p>power 56:9</p> <p>PPP 110:8,21</p> <p>practice 159:16</p> <p>preclude 130:4,23</p> <p>preface 136:20 137:2</p> <p>prefer 127:5</p> <p>preference 126:16</p> <p>prep 11:24</p> <p>preparation 10:23 11:5 12:23 28:18 29:13 118:22 147:3 167:19</p> <p>preparations 12:22 13:15</p> <p>prepared 165:14</p> <p>preparing 11:3,10,20 28:24</p> <p>prepping 12:1</p> <p>prescribed 140:19</p> <p>present 6:20 11:15,18 19:7 40:19,24 41:5 66:9,11, 14,21,23 67:3,7,9,24 84:4,5,11 85:24 86:10 89:24 112:23 115:21 117:1 151:11 169:10, 14,20</p> <p>President 16:22,23 18:7,8,21</p>	<p>20:11</p> <p>presume 63:19 64:7 99:6 170:12</p> <p>pretty 92:5 99:1 104:8 169:22</p> <p>previous 67:21 124:4 127:23</p> <p>primarily 11:17 19:14 20:12 145:10</p> <p>primary 20:16</p> <p>primes 127:4</p> <p>print 88:19</p> <p>printer 148:15 149:7 155:17 158:21</p> <p>printers 131:5,9</p> <p>prior 10:5 33:20 34:20 47:7 97:5 114:1 122:18 133:2 134:20 139:6,23 142:16 150:9,10 155:10 177:14</p> <p>private 58:3 114:9,17 136:12 137:12 138:3,14 139:2, 17 147:21</p> <p>privileged 11:1 13:15</p> <p>probably 34:2 89:3 101:9</p> <p>problem 13:3 90:7 102:11</p> <p>problems 104:10</p> <p>procedures 68:19</p> <p>proceeding 9:12,14 32:5 43:3</p> <p>proceedings 8:5 13:20</p>
--	---	---	---

<p>process 16:21 31:12 43:20</p> <p>processes 152:6</p> <p>processing 154:24</p> <p>processor 101:15</p> <p>product 13:11 180:11</p> <p>Professional 17:7</p> <p>professor 18:13,18 19:18,19 25:1</p> <p>profile 110:14 115:6</p> <p>profiles 179:1 181:9,15</p> <p>program 79:16 165:1</p> <p>programming 119:9,11 121:1 165:5</p> <p>programs 164:24</p> <p>project 23:5,8 24:2,18,22</p> <p>projects 19:5,10,12 27:24</p> <p>promoted 16:22</p> <p>promotion 18:5,10,15</p> <p>proposals 19:24</p> <p>proposed 171:12 177:4</p> <p>protocol 66:15 73:16 90:11,19, 24 91:2,13,21 92:5,8, 11,21 101:5 102:20,21 103:7,14,16,22 105:18 106:1,2,4,6,10,11,13, 15,21,22,23 107:14,17, 22 108:20 109:2,10,11 115:1,3 127:8,17 128:21 129:10,18,20</p>	<p>130:8,9 140:11,24 141:4 142:1,12,20 151:8,21 152:18,20 153:23 154:4 155:4,24 157:1,21,23,24 158:3,5, 6 180:10,12,15</p> <p>protocols 82:20,23 83:7,8 181:21</p> <p>prove 177:10</p> <p>provide 8:13 43:2,10 44:10 58:18 82:5,8 86:23 110:22 135:17 136:3 137:5,6 141:18 142:10</p> <p>provided 42:12 43:13,16 45:20</p> <p>provides 110:19 164:23</p> <p>providing 81:11 116:10,11 144:18 164:5</p> <p>public 139:16</p> <p>publications 17:20</p> <p>published 122:13,16 124:12,21 167:14</p> <p>pull 90:4</p> <p>pulled 90:5</p> <p>purpose 8:19 126:24</p> <p>purposes 151:13</p> <p>put 13:11 14:16 93:11 109:6 143:3 153:4</p> <p>putting 14:21</p> <hr/> <p style="text-align: center;">Q</p> <hr/> <p>QDSS 127:13</p>	<p>quality 112:24</p> <p>quarterly 123:3</p> <p>question 8:12,14,18,22,23 9:20 11:15 12:5 13:5 24:6 29:10 34:4,11 35:11 36:18 37:23 38:3 45:24 46:4,15 49:12 59:20 60:18 61:16 65:23 66:8 67:1,15 68:4,21 70:3 72:12 76:10 78:15 79:18 80:1 84:24 86:6 89:7 90:21 101:8 109:9 118:11 123:8 124:13 134:10 135:19,24 139:12 140:23 142:13 153:11 161:8 162:13 168:18,19 169:9 178:8 179:9,10 180:3,5,20,23</p> <p>questioning 71:9,13</p> <p>questions 8:9 11:2 89:12 117:10 125:8 126:3 182:14,17</p> <p>queue 112:16</p> <p>queuing 112:15,16,24 113:1</p> <p>queuing/dropping 112:9,12</p> <p>quick 39:10 132:7</p> <p>quite 178:1 179:24 181:23</p> <p>quote 32:16 70:6,7 144:11</p> <p>quoted 72:7</p> <hr/> <p style="text-align: center;">R</p> <hr/> <p>radio 27:10,13,14,15,17,19, 20,21 50:22 54:24 57:1 64:9 72:15,16 80:3 84:8 91:14 92:2 95:24 98:12 100:18 103:9</p>	<p>radios 27:15,16 156:6</p> <p>range 50:22 52:7,18 54:24 57:1,2,5 62:1 80:3 84:8</p> <p>ranges 26:5</p> <p>read 30:22 39:19 40:7,22 47:1,9 64:18 66:7 70:13 73:10 81:20 88:14,18 89:9 91:9,17 116:5 120:21 128:9,11 132:1 136:23 137:23 140:5 141:21 144:2,14 152:16 161:1 164:18 165:11 170:12 172:22 178:18</p> <p>reading 45:9 47:15 69:10 87:16 92:3 114:22 137:2 168:4,12 177:16 180:8</p> <p>reads 95:6</p> <p>ready 31:23 119:5 120:21</p> <p>real 132:7 149:16</p> <p>real-time 93:8</p> <p>really 55:19 56:22 63:1 68:21 76:21 78:4 79:4 105:12 136:17 153:4 178:5</p> <p>realm 135:16 136:3 137:4,12, 13 138:4 144:18 145:14 149:22</p> <p>reask 54:9</p> <p>reason 9:2 29:16,20 81:24 82:2,7 130:23</p> <p>reasonable 33:8,13 34:12 35:23 37:15,19 38:2 42:17 44:16 50:11 62:9</p> <p>reasonably 37:24</p>
---	--	--	---

<p>reasons 80:12</p> <p>recall 11:16 13:1,4,6 15:9 23:3 25:5 28:22 32:20 43:21 44:23 87:15 88:4 92:8 97:11,15 107:23 120:1 129:21 150:6,23 159:23 172:22</p> <p>receive 18:5 101:7,15,21,23 102:2,12,24</p> <p>receiving 66:13</p> <p>recessed 41:23 73:24 96:21 117:16 132:11 146:5 166:16</p> <p>recognitions 17:7</p> <p>recognize 15:7 16:3,5 21:15 31:23,24 75:21 118:11 121:18 132:23 139:1 146:22 167:7</p> <p>recollect 131:6</p> <p>recollection 69:11 119:19 128:20 145:21</p> <p>recommendation 31:3,5</p> <p>reconvened 41:24 74:1 96:22 117:17 132:12 146:6 166:17</p> <p>record 6:12 14:19 15:10 33:9 40:23 41:22 42:3 64:19 73:23 74:4 90:1,4 96:20 97:1 117:15,19 132:10, 15 144:15 146:4,9 161:2 166:15,22 182:23</p> <p>reducing 112:21</p> <p>refer 21:24 105:7 107:3 151:14 167:21</p>	<p>reference 32:19 38:13 39:2 122:17 125:23 133:2,22 134:19,20 136:11 146:24 151:5 167:12 170:23 177:6 179:3</p> <p>referenced 157:7</p> <p>references 29:1,3,18 30:1,3,6 138:19,21 139:23 140:7</p> <p>referred 74:23 92:7 94:11 97:20 118:14 135:13</p> <p>referring 21:22 31:9 35:20 45:16 46:23 51:3 56:13,14,15 68:3 72:21 94:17 100:7 155:20 170:11 171:16, 17 178:7</p> <p>refers 72:20 98:22 145:2 173:1</p> <p>reflect 14:19</p> <p>reflected 53:4</p> <p>refresh 128:20</p> <p>refreshed 29:6</p> <p>regard 18:16</p> <p>regarding 38:24 90:14 125:8</p> <p>registered 137:13 138:4</p> <p>relate 171:18</p> <p>related 9:17 10:18 12:20 20:19, 23 29:9 68:22 153:11 156:3</p> <p>relates 37:3</p> <p>relating 12:19</p>	<p>relationship 92:10 129:19,22 130:5, 12,24 131:4</p> <p>relationships 92:13 131:8</p> <p>relative 149:17 154:23 175:2 178:5,6</p> <p>relatively 153:17</p> <p>relied 30:2</p> <p>relies 158:13</p> <p>rely 29:24 138:15 171:9</p> <p>remember 9:7 17:22 25:16 26:16 28:5 29:4 43:24 69:10 74:17 87:16 88:9 94:21, 22 129:6,14,24 130:4, 11 150:23 157:23 172:23</p> <p>remembering 129:12</p> <p>remnants 25:6</p> <p>remote 113:6 121:2,3</p> <p>remove 80:14</p> <p>removing 14:20</p> <p>Rensselaer 27:1</p> <p>repeat 36:18 39:9 65:24 76:10 86:6</p> <p>repeated 135:23</p> <p>rephrase 8:12</p> <p>replace 179:20</p> <p>replaced 163:17 181:20</p>	<p>report 43:18,21 49:19 140:1 142:15 143:13 144:4 150:19 152:9</p> <p>reporter 7:6 135:23</p> <p>Reporting 6:14 7:7</p> <p>represent 6:21</p> <p>representation 116:20 155:10</p> <p>representatives 123:14</p> <p>represented 51:14</p> <p>representing 6:24</p> <p>represents 110:6</p> <p>requests 133:6,7</p> <p>require 85:1</p> <p>required 181:8</p> <p>requirements 31:13</p> <p>requires 85:1</p> <p>research 16:22,23 18:5,14 19:5, 12,15,23,24 20:11,13, 15,16,23 22:18,21 23:8, 16,22 24:23 25:9,11</p> <p>researcher 19:4</p> <p>researchers 20:15</p> <p>resources 165:2,3</p> <p>respect 9:22 43:3,14</p> <p>respectfully 105:3</p>
--	---	--	---

<p>responsibilities 18:15 19:2,19 20:1,10</p> <p>responsible 19:9 112:8,14 178:23</p> <p>rest 8:21 103:6 109:22 113:7 171:1</p> <p>result 24:15</p> <p>resume' 16:7,8,12,18 17:19 174:19</p> <p>review 12:21,23 16:4 29:12 31:21 32:23 33:11 50:2 118:10 170:22</p> <p>reviewed 13:12 28:17,20 32:7,11 118:21 147:2 167:18</p> <p>reviewing 28:22 48:18,19</p> <p>Revisiting 42:10</p> <p>RF 27:20,21 98:20 114:1,7 136:22</p> <p>RFC 133:1,5,7 145:8,10,19, 22</p> <p>Richardson 6:17,24 11:18</p> <p>right 17:16 18:9 22:13 23:18 49:15,23 50:21 51:2,7 52:2,12,20 53:5 54:23 72:23 73:18 82:11 83:17 93:24 109:6 112:18 117:9 128:15,16 135:3 140:3 150:18 165:20 168:18 174:7 175:3 176:23</p> <p>right-hand 133:23</p> <p>Robert 7:6</p> <p>Rockville 6:15</p>	<p>role 10:15 18:22 25:1 162:7</p> <p>roles 19:18 20:10</p> <p>Roman 127:21</p> <p>room 6:18 8:21 148:15 149:4</p> <p>rough 176:9</p> <p>roughly 8:2 10:7 12:16,18 13:7 28:11 95:5,20 112:3 160:22</p> <p>route 53:19 72:17 75:17 76:3 77:5,9,10,13 78:6 79:7 82:14 83:2 85:17</p> <p>router 76:20 77:23 78:9,12 80:9 82:13,14,17 83:2, 15,20 84:18 85:1,13 87:5,20 114:5 140:14, 18,19,20 141:2,12 164:10 167:11,22,24 168:3,5,7,11,14,16 169:3,5,20 170:1 171:12 172:8,13 173:18 174:13,15,24 176:2,10, 13,18 177:8,17 178:1, 11 179:3,6,11,13,21 180:3,5,6,9,11,17,22 181:1,3,7,14,19 182:4, 10,11</p> <p>router's 173:15</p> <p>routers 167:11 168:2,10,19,21, 22 169:1,8,10 173:24 174:7 175:11 176:15,20 177:12,23 178:15,23 181:22</p> <p>routes 77:3,18 169:5</p> <p>routing 53:15,16 81:5,9,21,23 82:7,12 88:6 110:8 111:5,9,10,17,19,20,21, 22,23 112:4,8,14,23 113:4 135:17 136:4</p>	<p>137:5,6 140:17,18 142:11 143:7 144:19 145:1,2,3 152:12 163:21,24 170:2,3</p> <p>RPI 27:2</p> <p>rules 8:6</p> <hr/> <p style="text-align: center;">S</p> <hr/> <p>S-i-g-c-o-m-m 167:14</p> <p>sake 11:23 126:14 133:5</p> <p>Samsung 6:5,6,24 24:1,2 25:10, 12,17 26:17,18</p> <p>Sayfe 6:4 7:10 41:20 42:2 73:21 74:3 96:19,24 132:9,14 146:8 166:14, 21 182:21</p> <p>saying 36:3 38:2 40:9 68:1,10 100:7 104:13,24 105:7 106:9 137:8 138:7 141:18 142:9 148:20 155:21 171:10 172:3</p> <p>says 22:18 33:7 40:19 41:9 45:11 64:20 66:19 67:22 69:15 70:4,13,21 84:4 94:4,24 96:3 101:11 104:15 110:7 112:7 115:1,5 119:4 122:16 126:1 127:23 128:7,8,17 131:14,18 132:1 137:2 141:23 143:19 150:17 155:13, 14 169:9 172:6 173:22 175:15 178:9,19</p> <p>scattered 160:10,12</p> <p>scatternet 160:2,6,9,14 161:4,6,24 163:1</p> <p>scenario 54:7,14</p>	<p>scenarios 54:20 161:19</p> <p>science 19:11 30:12,14,20</p> <p>scope 34:2 35:13 47:17 58:15 60:8 62:24 71:22 76:5, 9,13,22 78:14,17 86:4 134:20 138:17</p> <p>scribbly 89:15</p> <p>second 14:23 15:4,6 64:15 69:14,17,18 70:3 83:24 112:6 114:7 125:6,24 126:15 128:16,24 131:17 136:6 148:7 173:19,22 176:22</p> <p>section 21:1 46:23 112:4,7 129:1 177:2</p> <p>security 148:2</p> <p>see 17:14,16,23 22:22 27:16 28:17 30:8,9 35:5,6 40:20 43:4 51:17 64:16 65:23 70:8 76:24 90:18 94:1 95:8 104:3 107:24 109:11 110:1,3 111:5 112:4,5,9 113:15 115:13 116:15 130:4,22 131:14,19 133:22,24 139:7 140:6 141:19 142:1,9,23 144:5,12 154:6 156:6 160:3 164:15 169:12 172:9,24 173:8,20,24</p> <p>seeing 89:13 130:11 172:22</p> <p>seemly 53:8</p> <p>seen 105:6 149:21</p> <p>semester 20:3,7</p> <p>send 101:23 102:2</p>
---	--	--	---

<p>sending 72:15</p> <p>sends 77:19</p> <p>senior/graduate 20:8</p> <p>sense 18:2 22:24 129:4 168:9 181:5,7</p> <p>sensitive 127:3</p> <p>sent 16:16 102:16</p> <p>sentence 22:18 35:20 40:11,13, 22 43:12 64:18 69:13 70:12 91:9 131:17 141:23 161:1,13,20 164:18 171:2,7 172:5 173:22 178:9,18 180:8 181:3</p> <p>separating 99:7 153:4</p> <p>serve 78:9</p> <p>server 38:14,17 39:3 41:2 51:21 55:12,13 58:1,3 59:7,14 61:10,11 62:5 67:8,13 70:24 110:21 116:19 117:2 121:2,3 175:13,15</p> <p>servers 50:19,20 181:23,24</p> <p>serves 74:19</p> <p>service 14:6 38:14 89:5 94:5,8 107:21 108:2,4 112:24 113:5 115:19 121:9 165:6 179:1 181:10</p> <p>services 6:14 7:7 81:11 82:6,9 87:22 94:5 108:1 109:17,18 110:2,3,6,18 113:14 115:12,23 116:3,8 121:8,9 147:6 153:2 156:16 158:21 163:10,11 172:7,13</p>	<p>181:15</p> <p>session 157:1,4</p> <p>set 15:18 82:23 83:7 140:11</p> <p>seven 38:9 131:18,22 135:5 166:21 182:22</p> <p>share 144:22 147:6 163:10,11</p> <p>shared 133:21</p> <p>short 27:15 50:22 52:7,18 54:23 57:1,2,5 62:1 80:3 84:8 96:14</p> <p>short-range 91:14 92:2 95:24 97:17 98:7,12 100:18</p> <p>shoulder 14:14</p> <p>show 51:9 52:24 60:1 104:22</p> <p>showing 63:7,23 64:8 89:8 108:15 154:17</p> <p>shown 51:23 54:3 55:11 59:13 65:5 73:13 87:7 103:20 104:19 105:5,21 108:18 109:24 126:1 147:13 152:17,18 154:4,21</p> <p>shows 50:17 52:14 59:23 63:10,15,24 64:6 70:23 87:12 155:10 179:18</p> <p>side 19:15 50:20,21 52:2 53:5 57:11 82:24 83:1</p> <p>sides 173:4 176:2</p> <p>Sigcomm 167:14</p> <p>signal 54:24 55:12,23,24 56:8, 9 64:23 70:8 71:5,6,7</p>	<p>93:9 98:19 102:13,14, 18 103:4</p> <p>signaling 79:3 82:20 93:3 99:9,24</p> <p>signals 50:22 52:7 63:16 64:9 65:2,19 66:13,14 69:8 72:15,17,21,24 73:14, 16 77:19 80:2,3,5,8 82:22 83:6,12 84:8 93:4 100:10 101:8,16,22,24 102:24</p> <p>signature 22:12</p> <p>significance 108:23 123:11</p> <p>signify 109:2</p> <p>similar 30:14 108:20 154:3,4, 13 156:1,7,11</p> <p>simple 168:17</p> <p>simplicity 164:22</p> <p>simply 167:21</p> <p>simultaneously 112:22</p> <p>single 162:15,20</p> <p>singly 41:2,9 117:2</p> <p>SIP 156:21,24 157:1,8,10</p> <p>sir 97:22 118:20 125:3 146:20 147:4 167:23</p> <p>sirens 69:19</p> <p>sitting 16:17 22:6 60:13 127:16 129:8 140:3 175:4</p> <p>situation 76:20,21 143:22</p>	<p>six 8:2 9:6 10:7 12:17 27:7 66:7 146:7 166:14 177:2</p> <p>size 175:4,7,11,21,23 176:10 181:7 182:2</p> <p>size-wise 177:22</p> <p>sizes 174:15</p> <p>skill 30:8,11 31:6,14 35:8 45:1,5,21 46:12 47:14 48:7,13 49:1 55:16 56:19 60:4,18 75:20 76:7,14 98:16 107:13, 16 111:16,18 138:24 140:15 145:15 148:5,20 169:19 174:12,20 176:6 177:16 178:8 180:16,24</p> <p>skilled 33:21 45:9 60:10,20 92:14</p> <p>skimmed 32:14</p> <p>skipped 118:16</p> <p>slaves 158:22 159:5,9,10</p> <p>slaves-- 158:22</p> <p>slide 52:23</p> <p>small 173:24 174:6,13,14,24 175:4,6,10 176:9 177:8, 17 178:1,7,10,15</p> <p>smaller 149:19</p> <p>smallest 175:16</p> <p>SNF 23:15</p> <p>software 20:20 32:17 33:1,14 34:13 35:15,24 37:7,16</p>
--	--	---	---

<p>38:10,12,24 39:21 52:16 53:16,18 61:12 62:10 75:4,5,7,17 76:3 79:15 81:4,9,10,13,21 82:4 85:16,17 87:11,13 89:22 90:9 91:7,11,12, 14,15,20 92:1,3,4 95:8, 22 96:1,4,7 97:15,18,21 98:1,3,11,12 100:16,18, 24 101:7,12,13,14,20 102:7,23 103:7,21 105:17 107:8,19 108:9 112:20,24 113:1,5 114:23 115:6 119:10,13 120:23 140:18 143:12 152:11 154:12 156:14 163:22 164:21 165:7 167:10 168:1,5,7,11 172:1,8 173:16 175:24 182:2</p> <p>softwares 182:8</p> <p>sold 27:16</p> <p>solution 141:23 142:11,17,18 143:19,24</p> <p>solutions 142:4,8 143:21</p> <p>somebody 76:18 149:3</p> <p>Sony 28:10</p> <p>sorry 13:1 21:21 33:9 35:2 36:10 39:9 40:6 42:15 43:15 44:12 46:20 53:10 54:23 57:15 59:5 66:18 69:19,21 76:11 79:15 80:11 85:1 86:6 88:2,10 91:6 103:17 106:1,9 110:13 113:17 114:23 116:21 120:8, 16,18 121:2 122:23 128:2 135:6 136:21 137:1 142:18 143:1 149:24 158:16,23 170:20</p> <p>sort 13:13 54:24 93:12 97:10</p>	<p>Sounds 94:16</p> <p>sources 121:11</p> <p>space 95:8</p> <p>span 28:12,13</p> <p>speaking 76:5,12 124:23 148:19 162:18,20 171:19</p> <p>special 76:6,14</p> <p>specialist 6:13</p> <p>specific 23:7 29:16 39:6,12 46:21 47:23 48:4 49:5, 13,23 68:16 70:18 78:2 86:17 123:21 124:14 125:11 126:24 127:14 143:11 144:5 154:6 155:6 157:24 158:6 172:3,21 176:12,14,20, 24 178:3 179:7 180:5, 11 182:1,11</p> <p>specifically 8:17 12:19 15:13 16:18 42:22 43:9 48:21 62:7 67:16 68:22 70:20 72:9, 20 116:14 120:2 126:15 130:21 131:22 138:19 177:20 179:4,6</p> <p>specification 28:21 39:7,13 45:23 54:6,13 62:18 65:15,16 66:1 89:3 121:23 122:3</p> <p>specifications 47:15 128:18</p> <p>specifics 10:24 44:14 60:23 68:17 76:21 77:12 92:13 170:7</p> <p>specified 50:11 154:14</p> <p>speculate 35:10 48:3 58:9,20 64:12 98:13,14 104:12 134:18 139:11,14</p>	<p>143:14,17 157:2 162:19 175:22 178:12</p> <p>speculation 58:9</p> <p>speed 79:3 93:7</p> <p>spent 11:20</p> <p>spilling 165:12</p> <p>sports 27:15,18</p> <p>stack 90:11,20,24 91:2,21 92:6,8,11,17,22 101:5 103:7 105:17 106:1,2,4, 6,10,11,13,15,21,22,23 107:14,17,22 108:20 109:2,10,11 140:24 141:4,7,12 151:8,21 152:18,20,24 153:24 154:4 155:4,24</p> <p>stacked 92:19 109:3</p> <p>stacks 91:13 155:8</p> <p>staff 19:13</p> <p>stamped 127:22</p> <p>stand 106:19 113:17 133:6</p> <p>standard 33:13 35:23 37:15 62:10 121:21 122:5 124:17,20,21 125:9,19, 24 126:4,7,8,9,15,17,22 127:7,22 128:12 129:9 130:7 134:14 153:17 157:20 159:21,22 175:14</p> <p>standards 17:15,17 123:1,12,15, 17 124:7 125:2,5,6 126:12 127:2,24 128:8 131:14,18</p> <p>stands 128:23 129:3 133:7</p>	<p>start 35:2 45:2 70:2 77:17 128:6 145:24 181:6</p> <p>started 134:14 149:18 150:4,8</p> <p>starting 13:10 40:18 69:17 89:18 93:18 94:11 101:11 104:14 112:3,7 115:19 127:23 135:20</p> <p>starts 64:15 141:17 164:14 173:20</p> <p>state 26:24 27:1 28:8 32:23 43:1</p> <p>stated 32:15 37:20 40:1 44:15 50:10 73:6</p> <p>statement 24:19 34:21,22,23 44:1, 12,15 50:10 61:23 64:24 65:3,9 68:8 71:1 73:6 79:9,12 84:20 103:24 130:19 131:4 136:7,16 137:7,20</p> <p>statements 44:2,6 65:5 136:18</p> <p>states 6:7 38:16 59:7</p> <p>stating 49:20</p> <p>station 63:19 64:2,3 119:8</p> <p>Steve 7:4</p> <p>stick 106:21 126:22 151:20</p> <p>sticker 14:20</p> <p>Sticking 174:10</p> <p>stop 41:8 121:12 145:5 176:21</p> <p>strategy 19:16</p>
---	--	---	--

<p>Street 6:14,18</p> <p>strength 56:9</p> <p>strengths 55:23</p> <p>strike 45:2 70:2 116:22 123:16,17,24</p> <p>strike-throughs 123:10 124:3</p> <p>strong 27:5</p> <p>structure 143:18</p> <p>students 19:6,24 24:17</p> <p>study 170:22</p> <p>subject 9:16 10:3 15:13,16 97:6</p> <p>submit 129:3</p> <p>submitted 16:8</p> <p>substance 42:8 74:9 117:24 167:1</p> <p>substantial 123:6</p> <p>substantially 175:5 181:17</p> <p>sufficient 38:5</p> <p>Suite 6:14</p> <p>suited 178:20</p> <p>sum 13:14</p> <p>summer 8:3 17:3 27:3</p> <p>supplement 122:5,20 123:2 124:18 125:18 130:6</p>	<p>supported 130:2</p> <p>supposed 89:8</p> <p>sure 8:4,10 12:3 18:3,22 19:1 23:20 25:16,17 33:6 36:19 40:24 42:14 61:17 64:20 65:22 68:3, 21 71:11 76:12 77:8,17 86:7 88:17 91:11 93:13 94:23 100:2,6 109:8 120:22 122:19,21 123:3 128:10,14 130:20 133:17 144:16 157:22 161:3 162:14 178:21 182:12</p> <p>surveillance 148:2</p> <p>swear 7:8</p> <p>sworn 7:12</p> <p>synchronization 162:1</p> <p>synchronous 161:16</p> <p>synonymous 150:2</p> <p>system 27:6,9,19 50:17 51:8,10 53:1 56:17 57:12 63:2, 3,4,5 64:11 76:17 77:14 78:6,23 80:19 83:22 84:3 85:2 95:7,12 103:6 104:17 105:2,15 111:24 130:22 143:7,10 148:2 152:19 153:3 154:17,19 156:15,19 161:17,18 164:20,22 170:10,16,24 171:3,14,19,23,24 172:4,9,19,21 173:2,11, 13,16,24 174:5,6,8 177:1,10 178:10</p> <p>systems 20:18,19,21,22 30:17, 21 51:13 58:10 80:16 130:15 157:6 169:11 182:9,10,11</p>	<hr/> <p>T</p> <hr/>	<p>151:11 157:9 179:23</p> <p>teachings 177:13</p> <p>technical 10:17 21:8 30:15 39:16 44:4 48:11 126:6</p> <p>technologies 120:11 127:24 131:19, 23 133:23 134:6 151:10 155:7 156:2,3,8,12,13 164:2,6</p> <p>technology 10:18 21:20 120:5 131:2 140:18 145:20 154:9,12,20,22 155:2, 23,24 156:1,7,9,11,20 163:9 166:2,3,8,10,11, 12 182:5,6</p> <p>Tektronics 28:10</p> <p>Telco 177:23</p> <p>Telcos 181:23</p> <p>telecommunication 41:3 96:4,7 97:21 98:1, 17,18 117:3</p> <p>telecommunications 91:12,13 98:6</p> <p>telephone 119:8 121:7</p> <p>tell 12:1 76:17 77:15 134:9 162:9 178:4 181:24 182:1</p> <p>telling 177:20</p> <p>temperature-control 148:3</p> <p>ten 26:5</p> <p>term 32:16,24 33:12 35:5,8, 22 36:5,12 37:7,14 38:5 41:13 43:8,10,14 45:19 47:22 48:23 50:5 62:8 75:19,20 76:6,13</p>
		<p>take 8:20 18:10 41:16 89:6 95:19 96:14 146:1 155:14 181:13</p> <p>taken 7:19</p> <p>takes 176:1</p> <p>talk 10:2,22 30:7 46:21 65:14 70:18 78:11 93:4 137:9 142:23 159:10 180:14</p> <p>Talkabout 27:9,12,14</p> <p>talked 67:22 177:4</p> <p>talking 22:2 27:18 42:11,14,15 67:20 74:14 82:24 88:17 93:13 99:19 105:24 107:10 111:21 126:21 127:10 130:20 136:17,19,20,21 141:2 158:5 160:11,12 162:2, 18 164:10 165:20 170:12,18 171:21 175:23 176:11 177:23 179:5,12 180:3,10</p> <p>talks 17:9 89:22 127:10 137:10,16 138:5</p> <p>tapes 132:6</p> <p>taught 177:13</p> <p>TDMA 73:16</p> <p>teach 20:7 87:3 119:22 120:4</p> <p>teaches 119:3 120:19 147:5,9 177:7</p> <p>teaching 19:19,21 20:2,6 119:1</p>	

105:13 106:18 148:4 174:8 175:2	12:8 14:3 15:18,19,24 21:13 22:4,5 23:19 30:23 33:10 41:17 42:6 47:18 74:7,12,13 81:19 84:1 94:16 97:4 100:9 101:10 115:11 117:22 118:2,3,8,19,20 132:21 135:8 145:6,22 146:12, 20 182:13,16,19	96:19 97:13 144:23 181:3	transceiver 84:17
terminal 83:19 84:12 110:22 112:22 114:24 115:7 120:14,17	theoretically 159:16 162:18,20	tie 79:5	transceiver/receiver 84:13,15
terminals 50:21 53:6,23 54:8,15 57:6 76:24 80:4,10,15 82:24 83:1,15 84:6,7 85:11 87:4,10 88:2 115:9	thermostat 148:3	time 6:11 7:24 8:16,20 10:6 11:20 12:1 19:23 28:4, 6,11,13 30:11 32:7,11 41:21 42:3 43:23 49:18 73:22 74:4 96:13,20 97:1 103:2 117:6,14,18 120:21 124:20,21 125:13 126:5 131:7 132:10,15 134:6 146:3, 9 162:16 163:17 166:15,22 169:7,14,19 174:11 175:1,5,6 177:9 178:13 179:13,14,24 180:18,24 181:12,19 182:15,18,22	transfer 82:1
terminated 25:19	they're 68:3	times 7:22,23 89:9	translate 138:13 139:2,16 142:5
terminology 10:12 21:21 29:2,19 42:23 46:24 49:11 62:6 63:10 68:17 100:6,19 104:9 105:5 133:4,5 135:2 137:19 148:23 150:22	thing 26:12 52:10 93:14 102:11 106:11 122:8, 10,18 123:4 144:7 177:6	titled 21:1 133:3	translates 114:8,16 136:11
terms 36:16,20 37:3 43:3 44:9 46:6,11 48:1 50:10 65:3 76:19 77:18 81:9,20 82:4 86:17 88:5,7 136:9 138:2 142:8,13 143:9 144:24 152:24 153:16 156:9 162:10,19 168:24 169:5 170:2,14,16 180:15	things 18:17,23 34:5 39:23 48:15,17 51:1 58:4 67:12 70:24 76:15 88:7 102:10 125:11 126:21 161:15 174:9	title 135:1	translation 110:9 113:18 114:3,13 135:15 136:1 137:3 138:10 139:8 140:1,17 141:5,6 144:17 145:2, 13
test 18:1 129:7	think 13:10,16,19 23:10 34:1 35:20 36:15,20 46:5 48:6 52:1 61:23 71:15 88:24 89:2 90:5 93:22 94:10,21 96:9 103:13 104:13 108:12 109:4 113:6 117:4 118:15 122:9 135:10 137:15 153:11 155:12 162:2 165:12 169:4 175:14 176:20 179:5	today 6:10 7:1,18 8:6,9 9:3 10:23 15:13 16:17 21:19 22:6 60:13 127:16 129:8 146:14 181:11	translations 144:20
testified 7:12	thinking 126:11	today's 8:19 11:6,7,10	translator 114:5,16 133:3 135:1
testimony 9:3 42:8 74:9 97:6 117:24 135:23 146:14 167:1	third 75:3 82:2 141:22 172:5	tomorrow 165:13	transmission 98:21 164:1
Texas 28:9	third-party 121:2,3	top 22:16 63:20 92:19 105:18 107:22 115:19 125:1 127:18 130:3,10 131:24 140:3 150:7,16 151:14,20 153:2,20 159:23 160:19	transmit 101:7,15,21 102:12,24 121:4
text 15:3,5	thought 44:10 174:24	total 12:6 13:14 40:2,5,6	transmitted 66:14
textbook 99:1	three 7:23 11:13,19 12:10,17 25:8,14,19,21 26:18 28:6 38:8 74:3 92:3	Trademark 6:8	transmitting 66:12
textbooks 29:6		traditionally 137:10	transparent 135:17 136:4 137:5,6 142:10 144:19,24 145:1
Thank 8:8,15 9:1,5,23 10:3			transport 152:7,14
			Trial 6:8
			tried 88:19 89:10
			true 158:15 159:1,2,5,6,12, 13 162:5,16 166:9 167:19
			truthful 9:3
			try 8:10,12 16:19 78:10

<p>93:10 127:15</p> <p>trying 18:1 35:12 47:11 61:15 78:6,8 81:17 82:12 90:4,18 93:6 102:4 106:18 109:6 134:11 179:22</p> <p>Tuesday 6:10</p> <p>turn 22:15 50:13 64:15,20 69:15 70:5,14 71:1 73:10 108:11 116:13 165:22</p> <p>Tuscan 27:1</p> <p>two 11:12,19 12:10 18:11 22:17 25:19,21 26:18 30:20 32:21 38:8 42:1 52:18 73:21 75:15 77:13,20,24 78:7 79:1,8 80:8,10,11,13 81:23 82:8,18 84:16 85:20 88:8 116:12 142:5 147:11 156:18 158:14, 17 159:10 168:4 169:6 170:2,4 176:2</p> <p>two-way 27:16,17</p> <p>type 27:19 57:9 79:2 80:18 103:14 121:9 131:2</p> <p>types 29:3 101:24 103:16 131:18,22 132:2,4 152:11 157:4 163:23 168:9,19,21 176:15</p> <p>typically 93:8 149:1 169:10</p> <p>typos 17:19</p> <hr/> <p style="text-align: center;">U</p> <hr/> <p>U.S. 21:22 29:8 32:2 118:16</p> <p>Uh-huh 53:7 64:17 92:20 119:6</p>	<p>128:19 141:16 153:15 160:24 165:24 173:6</p> <p>umbrella 68:15</p> <p>unclear 37:10</p> <p>undergraduate 53:1</p> <p>underline 123:19</p> <p>underlined 123:10</p> <p>underlines 124:4</p> <p>understand 8:11 14:3 22:1 34:9 35:12,13,15,19 38:1,5 45:1,5,12,14,21 48:1, 14,16 50:1 60:5,10 61:4 65:14 79:10 81:16,17 82:11 88:12,21,22 90:3 92:14 102:4 106:18 107:14,17 111:17 122:4 123:23 126:24 129:8 134:11 145:16 148:21 151:17 155:1,21 167:22 169:20 174:12 178:6,9 179:10 180:17,23 181:1,13</p> <p>understandable 110:12</p> <p>understanding 15:12 32:3,6 33:20 34:19 35:1,4,14 36:5,11 37:24 39:17 40:12 45:8, 17 47:22 48:22 49:19 55:7 58:24 59:3 75:12 78:9 80:24 89:1,4,7 90:23 97:23 106:14 108:14 110:5,16 111:6 112:11 113:19 114:20 115:15 118:24 127:6,16 131:21 133:9 147:15 149:15 152:1 160:1,6,8, 9 161:5,11,14 169:2,18, 23,24 170:9,13 171:7, 10 172:18 174:23 175:18 178:14 179:2</p> <p>understood 8:14 40:8 46:12 47:6,9,</p>	<p>10,12 163:14</p> <p>unifies 165:6</p> <p>unique 137:13 152:18 153:12, 16</p> <p>unit 158:20</p> <p>United 6:7</p> <p>units 120:18</p> <p>Universal 17:17</p> <p>universities 26:15,16,20</p> <p>university 16:20,24 20:14 23:15 26:14,24 27:1,2</p> <p>unquote 148:3</p> <p>unregistered 137:12 138:3</p> <p>up-converted 98:19</p> <p>up-to-date 16:12,13,16</p> <p>update 16:18</p> <p>upgradable 169:11</p> <p>upgrade 120:13,16,18 168:7</p> <p>upgradeable 171:4,15 179:21</p> <p>upgraded 163:17 168:6</p> <p>upper 89:1 92:17 104:23 133:22 141:10,12</p> <p>use 8:21 54:16 72:2 83:15 105:13 115:8 119:23 120:5 123:21 125:5 141:24 142:11,19</p>	<p>149:3,7 155:8 156:6 157:10 161:17 166:11</p> <p>useful 43:2,10 44:10</p> <p>user 95:1,3 113:6 119:12 148:13 149:2 165:7 173:7</p> <p>uses 119:9 153:23 159:19 165:3 177:24</p> <p>utilizes 152:10,11</p> <p>utilizing 140:18</p> <hr/> <p style="text-align: center;">V</p> <hr/> <p>vague 51:4 100:17,19 107:5</p> <p>variations 144:20</p> <p>variety 54:19 75:24 99:2</p> <p>various 22:19 23:1 24:16 27:24 48:15 52:16 63:14 81:11 82:5,8 121:11 137:19,23 138:5 152:11,21 163:16,23 171:12 181:14</p> <p>Verizon 58:13,17,22</p> <p>versa 83:3</p> <p>version 121:20,21 122:6,8,11, 23 124:1,5,9</p> <p>versus 6:7 51:2 99:12 103:22 173:5 175:23</p> <p>vertically 107:1</p> <p>vice 16:22,23 18:7,8,21 20:11 83:3</p>
--	---	---	---

<p>video 6:3,4,11,13,16 41:20 42:2 74:3 96:19,24 132:9,14 146:8 166:14, 21 182:20</p> <p>VIDEOGRAPHER 6:3 7:6 41:19 42:1 73:20 74:2 96:18,23 117:14,18 132:8,13 146:3,7 166:13,20 182:20</p> <p>videotaped 73:21</p> <p>view 28:21 33:19,20 39:18 45:10,17 49:8 62:8 140:14</p> <p>viewed 145:11</p> <p>virtually 119:14</p> <p>vitae 16:7</p> <p>VP 18:5</p> <hr/> <p style="text-align: center;">W</p> <hr/> <p>waiting 69:19</p> <p>walk 148:14 149:4</p> <p>walkie-talkie 27:18</p> <p>walks 149:3</p> <p>WAN 41:1 52:8 53:17 55:7 57:3,16 59:10 64:21 66:10,11 67:3,5,18,20, 22,24 68:2,9,11,15,22 69:7 70:6,11,14,16,22, 23 71:2,7 73:1,2,7,11, 12 75:18 76:4 77:4 79:9 81:6,22 83:2,3,11,12 85:18 115:1,10 117:1</p> <p>want 10:8,22,23 11:2 12:13</p>	<p>14:16 41:5 46:3,18 48:3 55:4 56:11 71:12 78:11 88:11,16 93:10 94:18 100:2 104:13 105:3 123:3 126:19 128:9 140:4 143:14 162:3 170:17 179:16 182:10</p> <p>wanted 122:19</p> <p>Washington 6:19</p> <p>wasn't 59:20 68:21 79:18 141:1 164:9</p> <p>watch 117:7</p> <p>watermark 125:11,15</p> <p>wave 27:15</p> <p>waves 64:8</p> <p>way 41:12 56:18 57:7 62:19 68:5 87:3,17 89:11 90:1 104:19 105:4,21 106:24 124:15 126:19 139:13, 15 150:4 154:13 155:11 157:14</p> <p>ways 87:1 138:13 139:1,5,10, 22 140:2,3,6 142:13 143:14 144:1 170:15</p> <p>we've 41:13,15 96:14</p> <p>website 90:6</p> <p>welcome 42:5 74:6 94:20 97:3 117:21 146:11</p> <p>well-known 76:19 130:15 131:8</p> <p>went 11:3 37:1 39:10 43:19 97:9</p> <p>what's 15:7 21:15 31:15,20</p>	<p>51:20 58:17 63:9,11,21 65:5 72:17 74:23 76:18 78:16 81:4,22 92:10 93:18 98:17 103:9,11 111:12 118:11 121:18 132:23 149:17 151:6 178:2,15 179:13 180:4</p> <p>white 69:23 89:15</p> <p>wide 38:21 50:18 52:19 53:9, 13,20,24 54:5,8,15 55:7,15,17 56:4,6,19,23 57:11,20,22,23,24 58:12 59:10,14,18 62:2, 4,21 63:5 69:7 74:16,20 77:1 79:23 80:6,12,17, 22 83:16 85:12,23 86:1, 9,12,19 87:4 88:3 115:2</p> <p>width 61:11</p> <p>Wifi 99:12,14,20 100:4 103:10 126:8,9,17,20 127:5</p> <p>wire 55:24 130:13,16,18</p> <p>wired 38:19 59:9</p> <p>wireless 10:4,18,20 18:14 19:3 28:10 34:19 50:24 51:6, 11 52:7,11,18,19 53:1 55:24 56:4 57:2,5,13 58:11 62:1 66:24 67:4, 19 71:24 72:15,21 73:5, 12 77:4 83:4 87:21 102:15 115:2 121:7,22 122:2 130:13,18,22 145:17 147:12,13,19 151:10 152:13 180:12, 15 181:21</p> <p>withdraw 77:6</p> <p>witness 7:1,8,11 9:14,23 10:16 12:8 14:12,16,23 15:24 16:24 21:13 33:21 36:9 41:17 71:8,12 117:6,9, 13 118:8 132:21 143:2 145:24 146:20 182:16,</p>	<p>19</p> <p>WO2001/076154 147:1</p> <p>Won 6:23</p> <p>won't 177:22</p> <p>word 134:5</p> <p>words 38:4 109:6 158:2 181:4</p> <p>work 13:11 19:6 23:8 24:16, 19 78:18 107:18 134:20 142:17,24 144:7</p> <p>working 12:16 17:18 19:11 20:14,22 25:18 43:7,24 84:22 133:8,10,12,15, 20 134:4,5,10,13,16 175:8,11,13</p> <p>works 61:3 141:23 142:18,24 143:19 177:12</p> <p>world 119:15</p> <p>wouldn't 14:18 61:2 71:9 109:15 162:24</p> <p>wrap 71:15</p> <p>write 94:19</p> <p>writing 19:24 43:18 49:19</p> <p>written 33:10 46:1,16 178:14</p> <p>wrote 31:10</p> <hr/> <p style="text-align: center;">Y</p> <hr/> <p>yeah 42:20 44:20 63:24 88:9, 15,18 90:3,7,22 96:11, 17 111:2 117:4 122:10, 22,23 124:7 128:9</p>
--	--	---	--

135:5 145:7 150:16
169:17 170:21 182:13

year

16:14 22:21 23:1 25:2,
4,7 28:7

years

25:8,14,19,21 26:19
30:20 127:3

Yep

14:7 127:15

Yesterday

32:13

Yoon

6:23

you'll

22:1

you've

16:4 47:1