

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

ACTIVISION BLIZZARD, INC.;)
ELECTRONIC ARTS INC.;)
TAKE-TWO INTERACTIVE)
SOFTWARE, INC.; 2K SPORTS,)
INC.; AND ROCKSTAR GAMES,)
INC.,) No. IPR2016-00747
)
 Petitioners,)
)
 vs.)
)
ACCELERATION BAY LLC,)
)
 Patent Owner.)

VIDEOTAPED DEPOSITION OF MICHAEL GOODRICH, Ph.D.
Costa Mesa, California
Friday, February 24, 2017

Reported by:
NANCY A. MORROW
CSR No. 11977

<p style="text-align: right;">Page 2</p> <p>1 UNITED STATES PATENT AND TRADEMARK OFFICE 2 BEFORE THE PATENT TRIAL AND APPEAL BOARD 3 4 ACTIVISION BLIZZARD, INC.;) ELECTRONIC ARTS INC.;) 5 TAKE-TWO INTERACTIVE) SOFTWARE, INC.; 2K SPORTS,) 6 INC.; AND ROCKSTAR GAMES,) INC.,)No. IPR2016-00747 7) Petitioners,) 8) vs.) 9) ACCELERATION BAY LLC,) 10) Patent Owner.) 11) 12 13 14 Videotaped deposition of MICHAEL GOODRICH, 15 Ph.D., taken on behalf of petitioners, at 16 3050 Bristol Street, Costa Mesa, California, 17 beginning at 8:50 a.m. and ending at 4:14 p.m. on 18 Friday, February 24, 2017, before NANCY A. MORROW, 19 Certified Shorthand Reporter No. 11977. 20 21 22 23 24 25</p>	<p style="text-align: right;">Page 4</p> <p>1 INDEX 2 WITNESS EXAMINATION 3 MICHAEL GOODRICH, Ph.D. 4 5 6 BY MR. LIN 6 7 8 9 EXHIBITS 10 NUMBER DESCRIPTION PAGE 11 Exhibit 10 Handwritten drawing 79 12 13 Exhibit 11 Document entitled "Computer 170 14 Networks, Third Edition" by 15 Andrew S. Tanenbaum 16 17 Exhibit 12 Document entitled "Computer 175 18 Networks, Third Edition" by 19 Andrew S. Tanenbaum, unannotated 20 copy 21 22 Exhibit 13 Handwritten document 189 23 24 25</p>
<p style="text-align: right;">Page 3</p> <p>1 APPEARANCES: 2 3 For Petitioners: 4 WINSTON & STRAWN LLP 5 BY: DAVID K. LIN 6 Attorneys at Law 7 333 South Grand Avenue, 38th Floor 8 Los Angeles, California 90071 9 (213) 615-1973 10 dlin@winston.com 11 12 For Patent Owner and the Witness: 13 KRAMER LEVIN NAFTALIS & FRANKEL LLP 14 BY: MICHAEL H. LEE 15 Attorney at Law 16 990 Marsh Road 17 Menlo Park, California 94025-1949 18 (650) 752-1716 19 mhlee@kramerlevin.com 20 21 Videographer: 22 JENNIFER WILLIAMS 23 24 25</p>	<p style="text-align: right;">Page 5</p> <p>1 Costa Mesa, California, Friday, February 24, 2017 2 8:50 a.m. 3 4 THE VIDEOGRAPHER: Good morning. We are on 5 the record at 8:50 a.m. on February 24th, 2017. 6 This is the video-recorded deposition of Dr. Michael 7 Goodrich, Volume II (sic). 8 My name is Jennifer Williams, here with our 9 court reporter Nancy Morrow. We are here from 10 Veritext Legal Solutions at the request of Winston & 11 Strawn, counsel for petitioners. 12 This deposition is being held at 3050 Bristol 13 Street in Costa Mesa. The caption of this case is 14 Activision Blizzard, Inc., et al. vs. Acceleration 15 Bay LLC, case number IPR2016-00724. 16 MR. LIN: 747. IPR2016-00747. 17 THE VIDEOGRAPHER: Oh, okay. Case Number 18 IPR2016- -- 19 MR. LIN: -- 00 -- 20 THE VIDEOGRAPHER: -- 00747. 21 Please note that audio and video recording 22 will take place unless all parties agree to go off 23 the record. Microphones are sensitive and may pick 24 up whispers, private conversations and cellular 25 interference. I am not related to any party in this</p>

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<p style="text-align: right;">Page 6</p> <p>1 action, nor am I financially interested in the 2 outcome in any way. 3 If there are any objections to proceeding, 4 please state at the time of your appearance, 5 beginning with the noticing attorney. 6 MR. LIN: This is David Lin with Winston & 7 Strawn representing petitioners. 8 MR. LEE: Michael Lee from Kramer Levin 9 representing Acceleration Bay and the witness. 10 THE VIDEOGRAPHER: Thank you. The witness 11 will be sworn in and counsel may begin the 12 examination. 13 14 MICHAEL GOODRICH, Ph.D., 15 having been administered an oath, was examined and 16 testified as follows: 17 18 EXAMINATION 19 BY MR. LIN: 20 Q Good morning, Dr. Goodrich. 21 A Good morn- -- 22 Q Nice to see you again. 23 A Good morning. 24 Q Would you please state your full name and 25 address for the record, please.</p>	<p style="text-align: right;">Page 8</p> <p>1 been previously entered as Exhibit 2003, which is 2 the declaration of Michael Goodrich. 3 Is that your declaration that you've 4 submitted in this case? 5 A Yes. 6 Q Do you see that there's a numbering on the 7 bottom right-hand corner of your declaration? 8 A Do you mean the Bates numbers? 9 Q Yes. 10 A Yes. I see those. 11 Q Could you turn to page 82, please. 12 A Yes. I see that. 13 Q Is that your signature? 14 A Oh, actually it's on -- yeah, page 82. Yes, 15 that's my signature. 16 Q Is your declaration accurate and complete to 17 the best of your knowledge? 18 A There are a couple of corrections that I 19 would like to make that I noticed yesterday when I 20 was reviewing it. 21 Q Okay. Let's go through them right now. 22 A All right. First, if we turn to page 26 and 23 go to paragraph 56. 24 Q One second, please. 25 A Yeah.</p>
<p style="text-align: right;">Page 7</p> <p>1 A Michael T. Goodrich, 11 Twain, T-w-a-i-n, 2 Street, Irvine, California. 3 Q You understand you're under oath today? 4 A Yes. 5 Q And you understand that even though we're 6 sitting here in a conference room your oath is the 7 same as if we were in a courtroom today? 8 A Yes. 9 Q Is there any reason why you can't give 10 correct and accurate testimony? 11 A No. 12 Q Are you taking any medications that might 13 interfere or -- or anything like that? 14 A No. 15 Q If you need a break, just let me know. 16 A Okay. 17 Q Do you understand that during breaks you're 18 not allowed to discuss the substance of your 19 testimony with anybody, including your attorney? 20 A Yes. 21 Q I'll do my best to ask clear questions, but 22 if you don't under- -- if you don't understand a 23 question that I ask, will you please let me know? 24 A Certainly. 25 Q So I'm handing the -- Dr. Goodrich what has</p>	<p style="text-align: right;">Page 9</p> <p>1 Q 26? 2 A Yeah. And then go to paragraph 56. 3 Q Okay. 4 A It says -- at the end it says, "port ordering 5 algorithm" at the end. That phrase "port ordering 6 algorithm" should instead be connected/connection. 7 Q I don't have to ask one question later today. 8 Thank you. Another one? Do you have one more? 9 A I have one more. If we go to page 46, 10 paragraph 90, that first sentence has a phrase at 11 the end say- -- that should be stricken. So the 12 sentence should only read "I understand that 13 Dr. Karger failed to consider secondary 14 considerations." The rest of that sentence should 15 be stricken. 16 Q Why? 17 A I don't -- I don't -- I think that's a 18 statement that should not have been included in this 19 declaration. As I sit here today, I don't -- I 20 don't know how that got included. 21 Q Understood. Thank you. Anything else? 22 A As I sit here today, there's nothing else 23 that I can think of. There might be minor typos, 24 but I believe their corrections should be apparent 25 from context.</p>

<p style="text-align: right;">Page 10</p> <p>1 Q Okay. Does your declaration include all of</p> <p>2 your opinions that you've formed in connection with</p> <p>3 this IPR?</p> <p>4 A Yes. They -- they comprise all of my</p> <p>5 opinions in this case as of the date that I signed</p> <p>6 it.</p> <p>7 Q Would you mind turning to Bates label</p> <p>8 page 83, Appendix A.</p> <p>9 A I'm there.</p> <p>10 Q This is your CV, correct?</p> <p>11 A That is correct.</p> <p>12 Q Is it up to date and accurate?</p> <p>13 A I believe it was as of December 12th, 2016.</p> <p>14 Q If you could turn to page Bates-labeled 110.</p> <p>15 A I'm there.</p> <p>16 Q I believe it lists your technical expert</p> <p>17 consulting.</p> <p>18 A Yes.</p> <p>19 Q And that means legal consulting?</p> <p>20 A Yes, in this case. As contrast to the</p> <p>21 section above that -- which was "Scientific</p> <p>22 Consulting."</p> <p>23 Q Is this a complete summary of all the cases</p> <p>24 that you've provided in the last few years?</p> <p>25 A Yes, as of December 12th, with respect to</p>	<p style="text-align: right;">Page 12</p> <p>1 the 12?</p> <p>2 A So all the way up till now today I've spent</p> <p>3 approximately 260 hours across all 12 cases.</p> <p>4 Q And what's your hourly rate?</p> <p>5 A My hourly rate is \$500 per hour. It does not</p> <p>6 depend on -- my compensation does not depend on the</p> <p>7 outcome of this case and I have no financial status</p> <p>8 with respect to this case.</p> <p>9 Q Great. Are you being compensated in any</p> <p>10 other ways besides your hourly rate?</p> <p>11 A No. Just my time. And again, my</p> <p>12 compensation does not depend on the outcome.</p> <p>13 Q What was the scope of the project you were</p> <p>14 asked to do?</p> <p>15 A So if we turn to page 4 in my declaration, I</p> <p>16 have a paragraph 10 that speaks to that. It begins</p> <p>17 "I have been retained as an expert on behalf of</p> <p>18 Patent Owner, Acceleration Bay LLC" or just</p> <p>19 Acceleration Bay "to provide information and</p> <p>20 opinions to the Patent Trial and Appeal Board</p> <p>21 (hereafter (sic) 'the Board') to assist in the</p> <p>22 determination of whether or not the Board should</p> <p>23 invalidate one or more of the claims of Acceleration</p> <p>24 Bay's U.S. Patent No. 6,732,147" or just the '147</p> <p>25 patent, and then go on from there to give more</p>
<p style="text-align: right;">Page 11</p> <p>1 cases that I was allowed to report. There may be</p> <p>2 some confidential cases I wasn't even allowed to</p> <p>3 report.</p> <p>4 Q Okay. Out of curiosity how did you get into</p> <p>5 expert work?</p> <p>6 A I got into it primarily because of colleagues</p> <p>7 telling me that they thought that I would have an</p> <p>8 aptitude for this kind of work and that they were</p> <p>9 doing it and that was something that they found</p> <p>10 valuable. And so when I got a call -- oftentimes I</p> <p>11 would get these calls and I would turn them down.</p> <p>12 And then after these colleagues were saying just try</p> <p>13 it out, and then I got a call from this case -- some</p> <p>14 attorneys at Sidley Austin -- that first case that</p> <p>15 was listed there -- and I said yes. And that's when</p> <p>16 I began doing this kind of work, 2011.</p> <p>17 Q Was that for slot machines?</p> <p>18 A That was, indeed, for video gaming machines.</p> <p>19 Q Very interesting. When were you first</p> <p>20 retained to work on this matter?</p> <p>21 A So with respect to this matter for</p> <p>22 Acceleration Bay, I was retained in April of 2016</p> <p>23 for a group of 12 IPR cases and this is one of those</p> <p>24 12.</p> <p>25 Q And about how much time have you spent for</p>	<p style="text-align: right;">Page 13</p> <p>1 details.</p> <p>2 Q Were you asked to determine whether the</p> <p>3 patent was valid when you were first retained?</p> <p>4 A So that was part of the scope of this work,</p> <p>5 to determine whether or not I would conclude that</p> <p>6 the patent is invalid or not and then to share my</p> <p>7 findings in this declaration.</p> <p>8 Q Sorry. So you considered both validity and</p> <p>9 invalidity in this case?</p> <p>10 A Oh, I'm not sure I understand the distinction</p> <p>11 the way you're asking that question.</p> <p>12 Q Because validity means the patent is valid</p> <p>13 and you were coming up with reasons to determine</p> <p>14 that the patent was valid; invalidity means to</p> <p>15 determine that the patent was invalid and you were</p> <p>16 asked to find reasons why the patent was invalid.</p> <p>17 So were you asked to do one or the other or</p> <p>18 did you go in to weigh the factors and come up with</p> <p>19 a conclusion?</p> <p>20 MR. LEE: Objection. Form.</p> <p>21 THE WITNESS: Yeah. I'm not sure I</p> <p>22 understand the distinction between those two. They</p> <p>23 seem like the same question. I'm just trying to</p> <p>24 determine if the answer is yes or no to the question</p> <p>25 is this patent valid or not.</p>

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<p style="text-align: right;">Page 14</p> <p>1 But with respect to that, my scope was to, 2 indeed, come to my own conclusions looking at the 3 evidence that was provided in this case by the 4 petitioner and their expert, look at the prior art 5 that's been asserted, look at the patent, come to my 6 conclusions, which I now have put down in this 7 declaration. 8 BY MR. LIN: 9 Q Thank you. What did you do to prepare for 10 the deposition today? 11 A So for preparation for the deposition today, 12 I met with the attorney, Michael Lee, and then 13 reviewed documents related to this case. 14 Q Okay. Now, your declaration lists various 15 materials that you've considered, correct? 16 A Yes. 17 Q Are there any materials you considered that 18 are not listed in your declaration? 19 A Not that I'm aware of as I sit here today. 20 Q Okay. This is going to be a basic question 21 but, Dr. Goodrich, what is a graph? 22 A So are you asking this in the context of the 23 patent or apart from the patent? I'm sorry. 24 Q I believe there's an overlapping area, but 25 let's start with just generally outside of the</p>	<p style="text-align: right;">Page 16</p> <p>1 And without a reference to the vertices that are at 2 the ends of that edge, there would be no way to 3 think of that edge apart from its vertice -- the 4 vertices that are at its ends. 5 BY MR. LIN: 6 Q Do you need a defined set of rules to 7 determine what a vertex is? 8 MR. LEE: Same objection. 9 THE WITNESS: So outside the patent people in 10 graph theory often have very general definitions of 11 what would be at vertex to be this basis. In some 12 mathematical circles, it's just numbers from 1 to n 13 where n would be the number of vertices in that 14 case. Another case is there are objects in some 15 object-oriented programming language. Another case 16 is -- for example, with social scientists it's 17 people are the vertices. And so it's a very general 18 concepts, again, outside of the scope of the patent. 19 BY MR. LIN: 20 Q Would you mind turning to Bates label 84 of 21 your declaration, please. I'm sorry, 85. 22 A I'm there. 23 Q I noticed between Bates labels 85 to -- you 24 have a lot of papers -- 105 you have a series of 25 papers and a lot of them seem to be applicable to</p>
<p style="text-align: right;">Page 15</p> <p>1 patent. 2 A Okay. So outside of the patent a graph is 3 generally defined as a pair of two sets. A first 4 set would be a set that's known as the set of 5 vertices, also known as nodes. These are some kind 6 of objects that you refer to as the vertices and 7 then the second set is a set of edges. And edges 8 represent pairs of vertices which could have an 9 orientation, could have a label, might themselves 10 have some sort of object-oriented representation 11 that goes with them. But the combination of these 12 two sets mathematically is generally referred to as 13 a graph. Again, strictly outside of the context of 14 the patent. 15 Q Is one vertice (sic) a graph? 16 A So it is possible to have a graph that has 17 one vertex, again, outside the context of the 18 patent. 19 Q Okay. Can you have a set of edges without 20 vertices? 21 MR. LEE: Objection. Relevance. 22 THE WITNESS: So outside the scope of the 23 patent, it would not make sense to have an edge 24 without the vertices because, as I mentioned before, 25 an edge is a representation of a pair of vertices.</p>	<p style="text-align: right;">Page 17</p> <p>1 graph theory; is that correct? 2 A I would -- I would -- I don't -- yeah, I 3 would say that that's -- that's fairly accurate. So 4 this is a listing of my publications and many of 5 them aren't related to graph theory. 6 Q So for -- on Bates-labeled page 85, bullets 7 B-1 and B-2, is that related to graph theory? 8 A Yes. Both of those books have entire 9 chapters on topics of graph algorithms. 10 Q Do you remember what it was about? 11 A Yes. So, for example, B-1 is a book on Data 12 Structures and Algorithms in Java. In this book -- 13 this is typically a book that's used in 14 undergraduate computer science major curricula and 15 we have chapters on how to represent graphs 16 abstractly, how to do searching in graphs, how to do 17 algorithms that perform tasks using graphs as their 18 input. 19 Q On Bates-labeled page 86, book chapter Ch-1 20 to Ch-7 also appear to be related to graph theory; 21 is that correct? 22 A They -- they are. But now, in this context, 23 it would be graphs that have geometric properties. 24 So all of these chapters are related to geometric 25 data structures or geometric algorithms. Where if</p>

<p style="text-align: right;">Page 18</p> <p>1 we're talking about a graph in this case, it would 2 be a graph that would not only have vertices and 3 edges but with the added property that those 4 vertices and edges have geometric attributes such as 5 a point in the plane or a point in the three 6 dimensions that would be representing a vertex. 7 Q Why does the field of graph theory exist? 8 Sorry, strike that. 9 Why did you write these chapters or papers on 10 graph theory? 11 A Oh, yeah. So as we highlighted, I have 12 roughly over 300 publications in the general areas 13 of algorithm and data structure design. And as we 14 highlighted earlier, many of them touch on graph 15 theory or have graph theory as a component of that 16 subject matter. And in a nutshell, the reason why 17 that comes up is because the concept of graphs is a 18 very powerful concept that can be used in a lot of 19 concepts. It can be used in the geometric concepts 20 like we see here on page 86, but also in social 21 science circles where vertices represent people and 22 edges could represent relationships such as 23 friendship. And I have some papers also in that 24 domain where edges would represent people who have 25 friendship relationships.</p>	<p style="text-align: right;">Page 20</p> <p>1 using a tree-structured -- 2 A Right. So that would be an instance where 3 graph theory would be a topic of the paper as -- 4 among others. This is actually primarily databases 5 paper. But graph theory also comes in with respect 6 to this tree structure that is a relationship where, 7 in this case, nodes in this data structure have 8 relationships with other nodes that form this 9 topological structure we call a tree. 10 Q Could you please explain the topological 11 structure of a tree? 12 A Certainly. So in this case we're talking 13 about a relationship that can be modeled as a 14 graph -- again, using this term in its general sense 15 outside the scope of the patent -- where two nodes 16 have a relationship that often would be drawn as a 17 line. And this graph has the property that there 18 are no cycles. There's no way to -- between any two 19 nodes in this structure, there's exactly one path to 20 go from one node to the other through a bunch of -- 21 one or more edges. 22 In addition, in this case, there's one 23 particular node that is identified as the root node. 24 And with respect to an orientation with respect to 25 that -- that root node every other node has one</p>
<p style="text-align: right;">Page 19</p> <p>1 Q So certain geometric shapes have certain 2 properties? 3 MR. LEE: Objection. Form. 4 THE WITNESS: I'm sorry, I'm not 5 understanding that question. It seems too broad for 6 me to understand what that means. 7 BY MR. LIN: 8 Q Okay. Let's turn to page 87. 9 A I'm there. 10 Q Journal papers J-1 to J-15, those also -- oh 11 J-1 to J-34 appear -- J-38, excuse me, seem to be 12 related to graph theory; is that correct? 13 A Yeah. I'm not sure that every single one of 14 these papers deals with graph theory per se. I 15 would -- I would say that many of them do, but I'm 16 just not -- just sitting here today recollecting how 17 all of them would. 18 Q So let's take a look, for example, on J-7. 19 A Yes. I'm there. 20 Q It -- it -- the title of J-7 is "On 21 Performing Robust Order Statistics in Tree-Structure 22 Dictionary Machines"; is that correct? 23 A Yes. 24 Q And it appears that you're taking a graph 25 theory concept of a tree graph, correct? You're</p>	<p style="text-align: right;">Page 21</p> <p>1 connection, one edge, to one other node that we 2 refer to as its parent. And so somebody with -- who 3 themselves is not a parent of any other node would 4 have that one edge to its parent. Then that node 5 would have one edge to its parents and so on and so 6 on until you get to the root, which does not have 7 a parent. 8 Q And is -- are these properties you just 9 mentioned equally applicable to computers as it 10 would be to people? 11 MR. LEE: Objection. Relevance. 12 THE WITNESS: So this concept of tree 13 structure is something that can be applied to 14 people, but it could also apply to computers. 15 Again, outside the scope of the patent, that's 16 something that I have seen people do. 17 BY MR. LIN: 18 Q How can you take a concept that relates to 19 people and translate it to computers? 20 MR. LEE: Same objection. 21 THE WITNESS: Actually, in this case we were 22 taking the concept first from -- not from people per 23 se, but from graph theory. This theory that goes 24 back centuries that deals with just how do you 25 represent these kinds of relationships. And</p>

<p style="text-align: right;">Page 22</p> <p>1 applying it in this case in J-7 to CPUs inside of a</p> <p>2 big computer system that have these edges for how</p> <p>3 they would pass their data.</p> <p>4 BY MR. LIN:</p> <p>5 Q You have a lot of papers. I don't want to</p> <p>6 have to go through all of them.</p> <p>7 Has anyone ever cited your papers?</p> <p>8 A Yes.</p> <p>9 MR. LEE: Objection. Form.</p> <p>10 THE WITNESS: Sorry. Yes.</p> <p>11 BY MR. LIN:</p> <p>12 Q Why would someone cite your paper?</p> <p>13 A So --</p> <p>14 MR. LEE: Objection. Form.</p> <p>15 THE WITNESS: -- in general the way that</p> <p>16 scholars -- and also this is -- this holds also for</p> <p>17 patents. I have several patents that have this</p> <p>18 property as well. Anytime that they are writing</p> <p>19 their paper or their patent description, they will</p> <p>20 refer back to things that came before and will, as</p> <p>21 we say, cite that. We'll give the citation for</p> <p>22 that. In my case I have -- among these 300 papers,</p> <p>23 I believe over 10,000 citations that have been made</p> <p>24 to these papers.</p> <p>25 And in academic circles, such as where I am a</p>	<p style="text-align: right;">Page 24</p> <p>1 work because it's also in the field of graph theory,</p> <p>2 correct, or computers?</p> <p>3 MR. LEE: Objection. Form.</p> <p>4 THE WITNESS: I don't want to try to</p> <p>5 speculate on all of the contexts, but I have pursued</p> <p>6 and have seen my -- my work cited in other papers.</p> <p>7 And such other papers include a number of domains,</p> <p>8 primarily in computer science but not exclusively to</p> <p>9 computer science, as I recall.</p> <p>10 BY MR. LIN:</p> <p>11 Q So you mentioned UC Irvine uses citations as</p> <p>12 a form of professor evaluation, correct?</p> <p>13 A Yes. That's correct.</p> <p>14 Q Why?</p> <p>15 A Because when we evaluate a junior faculty who</p> <p>16 are being considered for promotions and even being</p> <p>17 granted tenure in our system, we want to be able to</p> <p>18 judge that they're having an impact on their field.</p> <p>19 And the way that we judge that is a number of ways.</p> <p>20 We actually, oftentimes, will ask for letters from</p> <p>21 prominent members of the research community to</p> <p>22 describe what their opinions are, we'll look at</p> <p>23 their CVs and take statistics from that as well as</p> <p>24 looking at the venues that they tend to publish in.</p> <p>25 And then we also look at the statistics of the</p>
<p style="text-align: right;">Page 23</p> <p>1 professor at the University of California at Irvine,</p> <p>2 these citations are seen as a kind of a praise, if</p> <p>3 you will, that others are giving you this citation,</p> <p>4 that then is a way of them recognizing that you made</p> <p>5 this contribution that was worthy of them</p> <p>6 referencing in their work. And, indeed, when --</p> <p>7 oftentimes when professors come up for their</p> <p>8 promotions, they are judged by how many citations</p> <p>9 their work has.</p> <p>10 BY MR. LIN:</p> <p>11 Q Have you ever seen a cookbook cite your</p> <p>12 papers?</p> <p>13 MR. LEE: Objection. Relevance.</p> <p>14 THE WITNESS: I -- I'm not aware, as I sit</p> <p>15 here today, of a cookbook citing my papers. As I</p> <p>16 mentioned, according to the Google scholar website,</p> <p>17 I believe I have over 10,000 citations to my work</p> <p>18 and I've not reviewed all 10,000 of those citations.</p> <p>19 But as I sit here today, I'm not aware of a cookbook</p> <p>20 citing my work.</p> <p>21 BY MR. LIN:</p> <p>22 Q It would be unlikely, correct?</p> <p>23 A I would only speculate why a cookbook would</p> <p>24 want to do this.</p> <p>25 Q But you imagine someone would only cite your</p>	<p style="text-align: right;">Page 25</p> <p>1 citations to see are other people citing their work,</p> <p>2 giving this form of praise, as I mentioned, to the</p> <p>3 contributions that they make.</p> <p>4 Q So the presumption is the citations show that</p> <p>5 they're contributing to the field, correct?</p> <p>6 A I think that's accurate, yes. That these</p> <p>7 citations are representations of the influence that</p> <p>8 they're having because other people are noticing</p> <p>9 them and citing to their papers.</p> <p>10 MR. LIN: I'm handing the -- Dr. Goodrich</p> <p>11 what has been previously entered as Exhibit 1001,</p> <p>12 which is the '147 patent.</p> <p>13 Q Oops, sorry.</p> <p>14 A Thank you.</p> <p>15 Q So we've talked about graph theory generally.</p> <p>16 What type of graph theory does the '147</p> <p>17 patent relate to?</p> <p>18 MR. LEE: Objection. Form.</p> <p>19 THE WITNESS: Right. So if we turn in the</p> <p>20 patent to column 1 at line 29, we see that the</p> <p>21 patent identifies itself, its technical field, and</p> <p>22 it says, "The described technology relates generally</p> <p>23 to a computer network and more particularly, to a</p> <p>24 broadcast channel for a subset of...computers of an</p> <p>25 underlying network." And then if we then go to</p>

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<p style="text-align: right;">Page 26</p> <p>1 column 4 at line 25, we see that it says, "The 2 broadcast technique overlays the underlying network 3 system with a graph of point-to-point connections 4 (i.e., edges) between host computers (i.e., nodes) 5 through which the broadcast channel is implemented." 6 BY MR. LIN: 7 Q Thank you. I was wondering more of if 8 there's a more general graph theory concept for 9 what -- strike that. 10 I'm wondering if there's a more general term 11 for the study of topologies in graph theory. 12 MR. LEE: Objection. Form. 13 THE WITNESS: I'm sorry, I don't -- I don't 14 understand that question. Generally when we use the 15 term "topology," we're sort of -- that is shorthand, 16 again, outside the context of the patent. So 17 there's a shorthand way of discussing structure in 18 graphs and what graphs can represent. And so when 19 we talk about the topology of something, it's 20 referring to its structure in a very broad sense 21 because topology is a whole area of mathematics 22 dealing with structure and fundamental set theoretic 23 concepts. And so we kind of port that term over to 24 graph theory when we talk about the topology of 25 graphs.</p>	<p style="text-align: right;">Page 28</p> <p>1 summary of the '147 patent that talks about what 2 it's about. 3 Q Okay. So is it fair then to say, "The '147 4 patent," quote, "describes methods for disconnecting 5 a node (either in a planned or unplanned manner) 6 from a broadcast channel that overlays a 7 point-to-point network where each node, or 8 participant is connected to some -- but not all -- 9 neighboring participants"? 10 A Yes. That's there in my paragraph 40. 11 Q Would you mind turning -- strike that. 12 Is that a correct summary of what the '147 13 patent is about? 14 A That is a part of the summary. As I 15 mentioned earlier, my summary for the '147 patent 16 begins on paragraph 40 and then continues through 17 44. And then throughout my declaration I have other 18 discussions that also bring in summary information 19 with respect to the '147 patent. 20 Q Would you mind turning to page 55 and 56 of 21 the '147 patent. 22 A Do you mean my declaration or the patent? 23 Q Sorry, of the '147 patent. 24 A What was that page number again? 25 Q 55 and 56, please.</p>
<p style="text-align: right;">Page 27</p> <p>1 BY MR. LIN: 2 Q Are those concepts applicable to this patent? 3 MR. LEE: Objection. Form. 4 THE WITNESS: I would have to -- you'd have 5 to be more specific because people use that term 6 "topology" in multiple ways. Sometimes they mean it 7 precisely to be the study -- this mathematical field 8 that's literally called topology, and then other 9 times we refer to it in this more generic sense just 10 to refer to structure, broadly defined. And I've 11 seen people use it in a multitude of different ways, 12 so I can't answer that question strictly until I, 13 you, would understand what did you mean by that term 14 "topology" in this context. 15 BY MR. LIN: 16 Q Okay. That's fair. Then are you an expert 17 on the '147 patent? 18 A Yes. I consider myself an expert for the 19 '147 patent. 20 Q And you've read it all -- I don't know -- 21 58 pages of it? 22 A Yes. That's correct. 23 Q What is the '147 patent about? 24 A So it's -- if we turn in my declaration to 25 page 19, beginning at paragraph 40, I include a</p>	<p style="text-align: right;">Page 29</p> <p>1 A 55, 56. I'm there. 2 Q Do you see the number of claims? 3 A Yes. 4 Q Are you familiar with what a claim is in a 5 patent? 6 A Yes. 7 Q What is what is a claim in a patent? 8 A So a claim is the part of the patent where 9 it's laying out the claimed invention that the 10 patent is describing. 11 Q Do you see that -- the claims of the '147 12 patent claiming the two aspects of planned and 13 unplanned disconnections? 14 MR. LEE: Objection. Form. 15 THE WITNESS: Could you restate that question 16 again. I'm sorry, I'm not quite following it. 17 BY MR. LIN: 18 Q Could you categorize the claims 1 through 16 19 in any particular fashion? 20 MR. LEE: Objection. Form. 21 THE WITNESS: I think there's a number of 22 different ways that you could categorize these 23 claims 1 through 16. 24 BY MR. LIN: 25 Q Okay. So what's claim 1 about?</p>

<p style="text-align: right;">Page 30</p> <p>1 A So claim 1 begins, "A method of disconnecting 2 a first computer from a second computer, the first 3 computer and the second computer being connected to 4 a broadcast channel, said broadcast channel forming 5 an m-regular graph where m is at least 3, the method 6 comprising." And then it gives steps for how you do 7 that method of disconnecting a first computer. 8 Q Is this a -- is claim 1 talking about a 9 planned disconnection or an unplanned disconnection? 10 A Claim 1 is talking about a planned 11 disconnection. 12 Q Can you look at claim 11, please. 13 A I'm there. 14 Q Is claim 11 directed towards a planned or 15 unplanned disconnection? 16 A So it begins, "A computer-readable medium 17 containing instructions for controlling 18 disconnecting of a computer from another computer, 19 the computer and the other computer being connected 20 to a broadcast channel, said broadcast channel being 21 an m-regular graph where m is at least 3, 22 comprising" and then it gives several steps. So 23 claim 11 would you also be addressing a planned 24 disconnection. 25 Q Okay. How about claim 6?</p>	<p style="text-align: right;">Page 32</p> <p>1 that they were supported by this specification of 2 the patent. 3 BY MR. LIN: 4 Q Did you consider claims 1 and 11 when 5 analyzing claim 6? 6 A Yes. I considered them, but they were not 7 the subject matter for the IPR. 8 Q How did you consider them? 9 A I read them, I read the discussions, for 10 example, that the PTAB had regarding them in their 11 decision to institute this IPR proceedings. Beyond 12 that, I'm not sure what you're asking. 13 Q Why did you consider claims 1 and 11? 14 A I considered them in the sense that I wanted 15 to read the entire patent to see all of the claims 16 and I also, as I mentioned earlier, read the 17 decision by the PTAB to institute. And in that 18 decision they also mentioned these other claims 19 besides 6 through 10. And, for example, as I sit 20 here today, I recall them saying that they agreed 21 that those other claims were for a planned 22 disconnection, whereas 6 through 10 was for this 23 unplanned disconnection. 24 Q Are you familiar with the claim construction 25 canon that different independent claims should have</p>
<p style="text-align: right;">Page 31</p> <p>1 A So claim 6 begins, "A method for healing a 2 disconnection of a first computer from a second 3 computer, the computers being connected to a 4 broadcast channel, said broadcast channel being an 5 m-regular graph where m is at least 3, the method 6 comprising" and then it gives steps after that. And 7 this would be understood by a person of ordinary 8 skill as relating to an unplanned disconnection. 9 Q Do you feel the claims capture what the '147 10 patent discloses? 11 MR. LEE: Objection. Form. 12 THE WITNESS: I'm not sure I understand what 13 you mean by "capture" in that question. I'm sorry. 14 BY MR. LIN: 15 Q Let me ask a better question. 16 Do you think the claims 1 through 16 17 accurately summarizes the inventions of the '147 18 patent? 19 MR. LEE: Same objection. 20 THE WITNESS: So with respect to my 21 declaration, I did not specifically address claims 1 22 through 6 and 11 through 16. Instead I focused on 23 claims 6 through 10 because I believe those were the 24 ones that were the subject matter of this IPR. And 25 with respect to those, claim 6 through 10, I found</p>	<p style="text-align: right;">Page 33</p> <p>1 different scope? 2 MR. LEE: Objection. Form. 3 THE WITNESS: I've been told these kinds of 4 things by attorneys, but I myself am not an 5 attorney. 6 BY MR. LIN: 7 Q Do you know why we have this canon in claim 8 construction? 9 MR. LEE: Objection. Form. 10 THE WITNESS: I'm not sure what you're 11 asking, actually, this motivation for the canon. 12 BY MR. LIN: 13 Q Okay. So it's generally -- it's because we 14 don't want to have many repetitive claims. They 15 should all be capturing different aspects of the 16 invention or have different scope. 17 Do you understand that? 18 MR. LEE: Objection. Form. 19 THE WITNESS: I'm willing to accept your 20 explanation of that -- 21 BY MR. LIN: 22 Q Okay. 23 A -- for today. 24 Q Okay. Do you mind turning to page 4 of your 25 declaration, paragraph 11.</p>

<p style="text-align: right;">Page 34</p> <p>1 A I'm there.</p> <p>2 Q You say, "The relevant timeframe for the</p> <p>3 challenge claims of the '147 patent is at least</p> <p>4 July 2000."</p> <p>5 A I see that.</p> <p>6 Q So the patents were filed on July 31st, 2000.</p> <p>7 Throughout this deposition I'm going to say</p> <p>8 July 2000 like you say "here" to refer to the time</p> <p>9 frame before July 2000. Is that okay?</p> <p>10 A Yes.</p> <p>11 Q Can you turn to page 8 of your declaration.</p> <p>12 I'm sorry, page 9.</p> <p>13 A I'm there.</p> <p>14 Q We went over this a little bit on Wednesday</p> <p>15 about a person having ordinary skill in the art and</p> <p>16 the differences that your definition is with</p> <p>17 Professor Karger, but I'm going to go through it</p> <p>18 again just so we have it in this proceeding.</p> <p>19 A Okay.</p> <p>20 Q Your definition of a person having ordinary</p> <p>21 skill in the art is "someone with a bachelor's</p> <p>22 degree in computer science or related field, and</p> <p>23 either two or more years of industry experience</p> <p>24 and/or an advanced degree in computer science or</p> <p>25 related field"; is that correct?</p>	<p style="text-align: right;">Page 36</p> <p>1 Q I don't want to be difficult, but you said</p> <p>2 that an approximate (sic) person having ordinary</p> <p>3 skill in the art would have knowledge of this</p> <p>4 subject matter and I'm trying to figure out what you</p> <p>5 mean by this subject matter?</p> <p>6 A Certainly. So again, if we go to column 1 in</p> <p>7 the '147 patent, it defines its own technical field.</p> <p>8 It says, "Technical Field" as a heading and then it</p> <p>9 says, "The described technology relates generally to</p> <p>10 a computer network and more particularly, to a</p> <p>11 broadcast channel for a subset of computers of an</p> <p>12 underlying network." So we see here from its own</p> <p>13 self-definition that it self-identifies as being</p> <p>14 something that relates to computer networks. So</p> <p>15 broadly speaking, that's the subject matter of the</p> <p>16 '147 patent.</p> <p>17 Q So a person having a bachelor's degree in</p> <p>18 computer science would have knowledge of computer</p> <p>19 networks and more particularly broadcast channels or</p> <p>20 a subset of computers of an underlying network.</p> <p>21 Is that -- is that your testimony?</p> <p>22 A So I think it would be more accurate to say</p> <p>23 that an undergraduate with either two or more years</p> <p>24 of industry experience and/or an advanced degree in</p> <p>25 computer science or related field, having graduated</p>
<p style="text-align: right;">Page 35</p> <p>1 A Yes.</p> <p>2 Q Do you think that bachelor's degree in</p> <p>3 computer science and/or that industry experience</p> <p>4 should relate to computer networking, networking</p> <p>5 protocols and networking topologies?</p> <p>6 MR. LEE: Objection. Form.</p> <p>7 THE WITNESS: I believe that a person of</p> <p>8 ordinary skill, the way that I have opined here,</p> <p>9 would have knowledge of networking as is discussed</p> <p>10 in the '147 patent.</p> <p>11 BY MR. LIN:</p> <p>12 Q Why?</p> <p>13 A Because this is a subject matter that is</p> <p>14 taught in standard computer science curricula as of</p> <p>15 the year 2000. And hence, it would be something</p> <p>16 that a person of ordinary skill, by this definition,</p> <p>17 would have knowledge of.</p> <p>18 Q When you say this subject matter, could you</p> <p>19 elaborate what you mean?</p> <p>20 A It's the subject matter of the '147 patent.</p> <p>21 That's what I was referring to as "this."</p> <p>22 Q And what is the subject matter of the '147</p> <p>23 patent?</p> <p>24 A Are you asking broadly or the specific, what</p> <p>25 it self-defines as its technical field?</p>	<p style="text-align: right;">Page 37</p> <p>1 from there with their bachelor's degree, would have</p> <p>2 a general understanding of networking and then would</p> <p>3 be able to read the '147 patent and understand what</p> <p>4 it means by the broadcast channel. Because</p> <p>5 "broadcast channel" is a technical word that it</p> <p>6 defines itself and then uses that term in the</p> <p>7 claims. And, indeed, I provide a definition for</p> <p>8 broadcast channel beginning in paragraph 50 in my</p> <p>9 declaration and going to 52.</p> <p>10 Q Thank you for that clarification. In</p> <p>11 paragraph 26, Dr. Karger lists his definition of a</p> <p>12 person of ordinary skill in the art.</p> <p>13 Do you see that?</p> <p>14 A Yes. I quote from his definition there in my</p> <p>15 paragraph 26.</p> <p>16 Q What's the main difference between his</p> <p>17 definition and your definition?</p> <p>18 A So the definitions are very similar. His</p> <p>19 also has a bachelor's degree in computer science. I</p> <p>20 said, "or related field." He spelled it out as</p> <p>21 "computer science, computer engineering, applied</p> <p>22 mathematics, or a related field" and then he adds</p> <p>23 (as read) "four or more years of industry experience</p> <p>24 relating to computer networking protocols and</p> <p>25 networking topologies" and then he has a separate</p>

10 (Pages 34 - 37)

<p style="text-align: right;">Page 38</p> <p>1 sentence that says, "Additional graduate education 2 could substitute for professional experience, or 3 significant experience in the field could substitute 4 for formal education." 5 And so we see with that second definition 6 that I believe it's getting extremely close to my 7 definition, which is "two or more years of industry 8 experience and/or an advanced degree in computer 9 science." So he has a number four, whereas I have a 10 number two, but then he has this clarifying sentence 11 that comes later that says you could substitute 12 those four years for graduate education and even 13 substitute significant experience for that formal 14 education. 15 Q So when I say POSITA, will you understand 16 that means a person of ordinary skill in the art to 17 say? 18 A Yes. 19 Q Would a POSITA have known about token grids 20 and token rings before July 2000? 21 A Yes. 22 Q Do you have an experience with token rings 23 and token grids before July 2000? 24 A As I sit here today, I don't have a specific 25 recollection, but I believe I had general knowledge</p>	<p style="text-align: right;">Page 40</p> <p>1 A Okay. 2 MR. LEE: Same objection. 3 THE WITNESS: So I'm just doing a quick scan 4 here of my CV, but I can already see and highlight 5 for you -- 6 BY MR. LIN: 7 Q Okay. 8 A -- journal paper J-8, journal paper J-19, and 9 so -- I don't have a pen, so I didn't mark any of 10 these. Let me see if I can find it again. J-24 11 just in the first few pages. I believe there's 12 others, but those are at least exemplary from that 13 time frame before 2000. 14 Q What does -- in journal paper J-8, the title 15 is "Stabbing Parallel Segments with a Convex 16 Polygon." 17 What does a convex polygon have to do with a 18 "token grid," a "token ring" or "token bus"? 19 A Right. So this is a paper that describes how 20 to set up a ring type of a topology, like we were 21 talking about earlier, where that topology has 22 geometric properties in addition to its strictly 23 graph theoretic properties. In this case the 24 geometric property is that the vertices representing 25 the different entities themselves can have geometric</p>
<p style="text-align: right;">Page 39</p> <p>1 of these subjects as of the year 2000. 2 Q Do you believe that you're qualified to opine 3 on what a POSITA would know about token grids and 4 token rings before July 2000? 5 A Yes, absolutely. 6 Q Why? 7 A Because of my extensive experience in the 8 field that we talked about, over 300 publications 9 since the 1980s. As I just mentioned, I believe I 10 had a general knowledge of token buses and token 11 rings at that time. They were fairly common 12 technologies, and so I could put myself back into 13 that time frame mentally. And I'm, you know, doing 14 research in computer science as a Ph.D. since the 15 1980s. 16 Q So even -- strike that. 17 None of your articles before July 2000 relate 18 to token grids or token rings; is that correct? 19 MR. LEE: Objection. Form. 20 THE WITNESS: No. I don't believe that's 21 correct. 22 BY MR. LIN: 23 Q Which one? Could you please point that out 24 to me, please. Also let me add token buses into my 25 question.</p>	<p style="text-align: right;">Page 41</p> <p>1 coordinates that when you connect them all together 2 form a convex polygon. And then if we turn in my 3 declaration -- 4 Q I'm sorry to interrupt. Would you mind if I 5 explored that concept about the -- it looked like 6 you were making a ring symbol? 7 A Yeah. That's why I wanted to highlight to a 8 picture in my declaration. 9 Q Okay. Go ahead. Sorry. Sorry to interrupt. 10 A Yes. That's not a problem. So if we then go 11 to -- yeah, I have a picture on my page 14 of a 12 token ring, which is highlighted from this Tanenbaum 13 book. And we see that he also has drawn his token 14 ring as a convex polygon, that each of those 15 stations is going around and has this convex 16 property. And similarly, if we then go to my 17 page 17 and we look at another figure that comes 18 from Tanenbaum, then we see his representing a token 19 bus. With respect to a token bus, there's a logical 20 ring associated with it. He's also drawn that as a 21 convex polygon. 22 Q So your idea of convex polygon in J-8 had 23 attributes that were applicable to what's Figure 428 24 on Bates-labeled page 14 and Figure 425 on Bates 25 labeled p.17; is that correct?</p>

<p style="text-align: right;">Page 42</p> <p>1 A Yes. That's correct.</p> <p>2 Q I understand. Thank you for explaining to me</p> <p>3 your expertise with token grids and token rings.</p> <p>4 A And then I can also highlight how J-19 and</p> <p>5 J-24 fit in, if you want, or we can go on to</p> <p>6 something else. I don't care.</p> <p>7 Q Let's -- I have you here. Why don't I ask</p> <p>8 you.</p> <p>9 A Okay. Sure. So go to J-19.</p> <p>10 Q Okay.</p> <p>11 A So with J-19 this is a journal article on</p> <p>12 Parallel Algorithms For Evaluating Sequences of Set-</p> <p>13 Manipulation Operations.</p> <p>14 Q Uh-huh.</p> <p>15 A The idea, here, is that this is referring to</p> <p>16 algorithms where the functioning of the algorithm is</p> <p>17 a parallel algorithm. It's going to be performed by</p> <p>18 multiple computers not just one. And now they want</p> <p>19 to evaluate a sequence of set-manipulation</p> <p>20 operations that have unions and intersection</p> <p>21 operations in them. And what we describe here is a</p> <p>22 way that this can be done in parallel by</p> <p>23 transferring information from one thing to the next</p> <p>24 in something that could be a topology that would be</p> <p>25 represented, say, with either a token bus or a token</p>	<p style="text-align: right;">Page 44</p> <p>1 Q Okay. What's J-24?</p> <p>2 A So J-24 is dealing with, again, a general</p> <p>3 class of computational models. In this case, it's</p> <p>4 called a parallel pointer machine. So a parallel</p> <p>5 pointer machine has the property that the computers</p> <p>6 have links to other computers and data on other</p> <p>7 computers and can only follow those links to those</p> <p>8 other computers in order to perform a computation.</p> <p>9 And so again, we see that came kind of concept with</p> <p>10 either the -- the token bus technology or the token</p> <p>11 ring technology.</p> <p>12 Q I understand. Thank you. And this was --</p> <p>13 your papers were in -- J-8 was in 1990, J-19 was in</p> <p>14 1994 and J-24 was in 1996. So the abstractions and</p> <p>15 everything we just discussed in the last couple</p> <p>16 minutes would have been known to a POSITA; is that</p> <p>17 correct?</p> <p>18 MR. LEE: Objection to form.</p> <p>19 THE WITNESS: This would be subject matter</p> <p>20 that could be known by a POSITA the way we're</p> <p>21 describing these, either with my definition or</p> <p>22 Dr. Karger's. And, indeed, as I opined in my</p> <p>23 declaration, all my conclusions would hold even</p> <p>24 using the definitions from Dr. Karger.</p> <p>25 BY MR. LIN:</p>
<p style="text-align: right;">Page 43</p> <p>1 ring.</p> <p>2 Q And why was it translatable from a token bus</p> <p>3 to a token ring?</p> <p>4 A Because we did it in a general parallel</p> <p>5 computational model that is easily translated into</p> <p>6 algorithms for those other models. I mean, using</p> <p>7 references that are not a part of these proceedings,</p> <p>8 of course.</p> <p>9 Q I understand. What do you mean by general</p> <p>10 computation model?</p> <p>11 A So there's several different kinds of</p> <p>12 computational models -- I'm teaching, for example,</p> <p>13 some in the class that I'm teaching now -- that</p> <p>14 abstract how algorithms would perform and then</p> <p>15 present a model of computation that you can describe</p> <p>16 algorithms in that model.</p> <p>17 Q How do you abstract an algorithm?</p> <p>18 A So the concept of abstraction is ubiquitous</p> <p>19 in computer science. For example, in my declaration</p> <p>20 I talk about the seven layers of the network</p> <p>21 hierarchy. These are representations of</p> <p>22 abstractions. It's a way for you to model details.</p> <p>23 It -- and then ignore other details and just focus</p> <p>24 in on the details that matter for the kinds of</p> <p>25 issues that you are interested in.</p>	<p style="text-align: right;">Page 45</p> <p>1 Q Did you apply your definition of a POSITA</p> <p>2 while analyzing the prior art or did you apply</p> <p>3 Dr. Karger's?</p> <p>4 A I applied my definition of a POSITA when I</p> <p>5 did my analysis, but then I also went back and</p> <p>6 thought through my conclusions to come to this other</p> <p>7 conclusion, that I would have reached those same</p> <p>8 other conclusions had I even used Dr. Karger's</p> <p>9 definition.</p> <p>10 Q Do you think a POSITER -- POSITA under</p> <p>11 Dr. Karger's definition would have more knowledge</p> <p>12 about token rings, token buses, token grids or --</p> <p>13 I'm sorry, that was a bad question. Let me start</p> <p>14 again.</p> <p>15 Do you think a POSITA before July 2000 would</p> <p>16 know more about token grids, token buses, token</p> <p>17 rings than the POSITA in your definition?</p> <p>18 A Not necessarily. Under Dr. Karger's</p> <p>19 definition, I believe his definition is inclusive of</p> <p>20 mine. So anything that a POSITA under my definition</p> <p>21 would know his would know. And just sitting here</p> <p>22 today, I'm not immediately seeing how something</p> <p>23 would come up that his POSITA would know that by</p> <p>24 definition of my POSITA would not know.</p> <p>25 Q I understand.</p>

<p style="text-align: right;">Page 46</p> <p>1 Counsel, I'm about to change subject matter</p> <p>2 if you wanted to take a quick bio break.</p> <p>3 MR. LEE: Yeah.</p> <p>4 MR. LIN: Thank you.</p> <p>5 THE VIDEOGRAPHER: We're going off the</p> <p>6 record, the time is 9:50.</p> <p>7 (Recess.)</p> <p>8 THE VIDEOGRAPHER: We're back on the record,</p> <p>9 the time is 10:02.</p> <p>10 BY MR. LIN:</p> <p>11 Q Hello, Dr. Goodrich. Would you mind turning</p> <p>12 to page 10 of your declaration, paragraph 28.</p> <p>13 A I'm there.</p> <p>14 Q I said paragraph 28, correct? Yeah. Okay.</p> <p>15 A Yeah.</p> <p>16 Q What's a network protocol?</p> <p>17 A So a network protocol is a protocol for how</p> <p>18 you do various functions in a network between the</p> <p>19 communicating entities. And as I mentioned here, in</p> <p>20 the next page it has these seven layers broadly</p> <p>21 defined in this OSI model of how you would implement</p> <p>22 various kinds of protocols.</p> <p>23 Q Why do you say model "Network protocols are</p> <p>24 typically," quote, "modelled conceptually"? Is</p> <p>25 it -- strike that.</p>	<p style="text-align: right;">Page 48</p> <p>1 down into three. First a session layer, then a</p> <p>2 presentation layer and then the application layer</p> <p>3 where applications perform their functions and make</p> <p>4 communications.</p> <p>5 Q Thank you for that explanation, Dr. Goodrich.</p> <p>6 There was a lot that you said there that I would</p> <p>7 like to unpack kind of one by one. So I mean my</p> <p>8 question is -- let me see if I can ask it a</p> <p>9 different way.</p> <p>10 Are network protocols typically modeled</p> <p>11 conceptually because they're usually kind of mixed</p> <p>12 together, the different -- the different layers are</p> <p>13 not easily separated?</p> <p>14 MR. LEE: Objection. Form.</p> <p>15 THE WITNESS: No. It's quite the contrary.</p> <p>16 This way of thinking is so ubiquitous in networking</p> <p>17 that it permeates all discussions of networking that</p> <p>18 there's these layers. That each layer is going to</p> <p>19 rely on abstractions and functions that are provided</p> <p>20 by the layer or layers below it in order to</p> <p>21 implement any interface that then it provides to</p> <p>22 layers there above it. All going, again, from the</p> <p>23 physical layer all the way up to the application</p> <p>24 layer.</p> <p>25 BY MR. LIN:</p>
<p style="text-align: right;">Page 47</p> <p>1 Why are network protocols typically, quote,</p> <p>2 "modelled conceptually"?</p> <p>3 A Okay. So as I opined here in this first</p> <p>4 sentence, I say "Network protocols are typically</p> <p>5 modelled conceptually as being partitioned into</p> <p>6 layers, which collectively are called the...protocol</p> <p>7 stack." And so what I'm referring to, here, is this</p> <p>8 idea that is then illustrated with a picture from</p> <p>9 Tanenbaum on the next page that a person of ordinary</p> <p>10 skill would understand is ubiquitous in networking.</p> <p>11 That we think of the functions of networking</p> <p>12 according to this hierarchy of abstractions that</p> <p>13 begins, first, with the physical layer, the actual</p> <p>14 physical media, cables, wires, RF signals that carry</p> <p>15 the communications; then the data link layer, how we</p> <p>16 link together pairs of, say, computers that are</p> <p>17 computing -- or communicating; then the network</p> <p>18 layer that describes how to do longer scale sending</p> <p>19 of messages across a network and then the transport</p> <p>20 layer that defines concepts that would allow for,</p> <p>21 say, point-to-point communications as described in</p> <p>22 the '147 patent.</p> <p>23 And then above that, we have three more</p> <p>24 layers and some models are represented just as one</p> <p>25 application layer, but in the OSI model it's broken</p>	<p style="text-align: right;">Page 49</p> <p>1 Q So we'll walk through the layers one by one</p> <p>2 in a few minutes, but I'm trying to wrap my head</p> <p>3 around why something needs to be modeled</p> <p>4 conceptually if it's actually implemented.</p> <p>5 A Oh, maybe this part is somewhat confusing.</p> <p>6 So when I say it's modeled conceptually, that's how</p> <p>7 it's implemented. It's implemented in terms of</p> <p>8 these that models. So a person of ordinary skill in</p> <p>9 the art would understand that this model, as we call</p> <p>10 it, is the way that you do implementations. And</p> <p>11 then you can plug in a protocol based on the layer</p> <p>12 that it would be existing at.</p> <p>13 Q Is there an OSI protocol that -- that</p> <p>14 actually implements these seven layers?</p> <p>15 A The OSI model is itself not an</p> <p>16 implementation. It's that other implementations</p> <p>17 follow this model or something very, very close to</p> <p>18 it, such as the Internet, as would be understood by</p> <p>19 a person of ordinary skill in the art.</p> <p>20 Q So maybe we'll get to this later, so let me</p> <p>21 kind of go through this. Are there -- you mentioned</p> <p>22 Internet protocol and that seems to be the protocol</p> <p>23 you're talking about in paragraph 29.</p> <p>24 Are there any other protocols that you know</p> <p>25 of -- network protocols that you know of?</p>

<p style="text-align: right;">Page 50</p> <p>1 MR. LEE: Objection to form.</p> <p>2 THE WITNESS: Yes. So, for example, in the</p> <p>3 Shoubridge reference -- and I have discussions of</p> <p>4 that in my declaration -- it's using something</p> <p>5 called the X.25, X.25 protocol that's yet a</p> <p>6 distinctive thing from the Internet protocol. Just</p> <p>7 as I sit here today, I'm not thinking of others, but</p> <p>8 others also exist.</p> <p>9 BY MR. LIN:</p> <p>10 Q When you say the "Internet Protocol stack"</p> <p>11 on -- in paragraph 29, is that the TCP/IP protocol?</p> <p>12 A So the way that the Internet protocol works</p> <p>13 is that it has these same first four layers,</p> <p>14 identical, physical layer, data link layer, network</p> <p>15 layer, transport layer. And then rather than having</p> <p>16 and distinguishing what in this figure on my page 11</p> <p>17 and from this reference 2021 it's all -- it's called</p> <p>18 the OS combination of a session layer, a</p> <p>19 presentation layer and an application layer. In the</p> <p>20 Internet protocol stack, those top three are just</p> <p>21 called the application layer. It doesn't</p> <p>22 distinguish presentation and session.</p> <p>23 And with respect now to your specific</p> <p>24 question about TCP/IP, those are actually two</p> <p>25 different protocols. First the IP protocol or</p>	<p style="text-align: right;">Page 52</p> <p>1 built at the transport layer on top of that and uses</p> <p>2 that in order to build its interface. And then the</p> <p>3 application layer comes above both TCP and IP. It</p> <p>4 would be at level 5 in the Internet protocol stack</p> <p>5 or level 7 here in the OSI model.</p> <p>6 Q I understand. Are you aware of the DARPA</p> <p>7 protocol model?</p> <p>8 A Just sitting here today, if you have</p> <p>9 something to reference. I don't recall that being</p> <p>10 cited in the patent or the prior art.</p> <p>11 Q Okay. I'm sorry to be repetitive. I lost</p> <p>12 track of -- is TCP/IP the same as the Internet</p> <p>13 protocol stack? I think your answer is no, correct?</p> <p>14 A It is a member -- the TCP/IP protocol is at</p> <p>15 layers 3 and 4. TCP's at 4, IP's at 3. And the</p> <p>16 Internet protocol has as its first four layers, it's</p> <p>17 identical to the OSI model. So the TCP/IP protocol</p> <p>18 fits into either, the OSI model or the -- what I</p> <p>19 call the Internet protocol stack which just has five</p> <p>20 layers. Because in either case IP exists at level</p> <p>21 3, network layer; TCP exists at the level 4, the</p> <p>22 transport layer.</p> <p>23 Q So let me see if I can sum up correctly</p> <p>24 because we have a lot of numbers and layers going</p> <p>25 on. So layer 1 is the physical layer, layer 2 the</p>
<p style="text-align: right;">Page 51</p> <p>1 Internet protocol exists at the network layer, layer</p> <p>2 3, and it provides a best effort way to send</p> <p>3 messages from one computer to another computer as a</p> <p>4 sequence of data packets. And then we go to the TCP</p> <p>5 protocol, which is at the next layer up, the</p> <p>6 transport layer. It provides a concept of sockets</p> <p>7 that actually can have persistence and reliability</p> <p>8 as well as another protocol called UDP that's also</p> <p>9 referenced from the '147 patent that provides a</p> <p>10 concept of ports number, which also is discussed in</p> <p>11 the patent but is not relevant to the claims today,</p> <p>12 that does an abstraction of best efforts routing but</p> <p>13 adding in this concept of ports.</p> <p>14 Q And then it also includes the applica- --</p> <p>15 strike that.</p> <p>16 The TCP/IP protocol architectural layer in</p> <p>17 addition also captures the application layer, which</p> <p>18 would be layers 5 to 7?</p> <p>19 A No, that's not accurate. Instead, as I</p> <p>20 mentioned earlier, IP -- so when we say TCP/IP,</p> <p>21 that's actually combination of two protocols, sort</p> <p>22 of. And we'd use the shorthand acronym to refer to</p> <p>23 them as a concert because they're built one on top</p> <p>24 of the other. First we have IP, which is at level 3</p> <p>25 in the network layer, and then we have TCP, which is</p>	<p style="text-align: right;">Page 53</p> <p>1 data link layer, layer 3 is the network layer, layer</p> <p>2 4 is the transport layer, layer 5 is the session</p> <p>3 layer, layer 6 is the presentation layer and layer 7</p> <p>4 is the application layer under the OSI model?</p> <p>5 A Correct.</p> <p>6 Q The TCP/IP protocol, in your understanding,</p> <p>7 is at layers 3 and 4 where TCP is at 4 and IP is at</p> <p>8 3?</p> <p>9 A Also correct.</p> <p>10 Q And the Internet protocol is layers 4, 5, 6</p> <p>11 and 7?</p> <p>12 A No. That's not correct. Instead, the</p> <p>13 Internet protocol stack is a model that almost is</p> <p>14 identical to the OSI model stack except that -- so</p> <p>15 it has the exact same first four layers. The only</p> <p>16 difference is that in the Internet protocol stack it</p> <p>17 has a layer 5 that it just calls the application</p> <p>18 layer and it lumps into that both with -- the OSI</p> <p>19 model refers to it as it's session layer and</p> <p>20 presentation layer. So the OSI would be</p> <p>21 distinguishing the layers 5, 6 and 7, which in the</p> <p>22 Internet protocol stack are all lumped into one</p> <p>23 layer 5.</p> <p>24 Q Okay. And it seems from your discussion that</p> <p>25 the -- well, strike that.</p>

<p style="text-align: right;">Page 54</p> <p>1 Is the Internet protocol implemented?</p> <p>2 A Yes. It's implemented on the Internet.</p> <p>3 Q The Internet protocol corresponds to the OSI</p> <p>4 model, correct?</p> <p>5 A Yes. The Internet -- the OSI model also is</p> <p>6 implemented in the Internet. It's just that where</p> <p>7 the Internet protocol lumps together things and</p> <p>8 calls them the application layer, the OSI model</p> <p>9 distinguishes some things and says that's at the</p> <p>10 session layer, that's at the presentation layer.</p> <p>11 But in either case if we're talking about</p> <p>12 application programs, like is talked about in the</p> <p>13 '147 patent, that would be, in both cases,</p> <p>14 understood at what both models would call the</p> <p>15 application layer.</p> <p>16 Q So there's a lot that you just said. I'm</p> <p>17 sorry, Professor -- Dr. Goodrich. I need to kind of</p> <p>18 take this one at a time. So my first question</p> <p>19 was -- or not my first question. A question I have</p> <p>20 is that the Internet protocol corresponds to the OSI</p> <p>21 model, correct?</p> <p>22 A Perhaps I need to clarify something that's</p> <p>23 maybe a little confusing and why I keep having to</p> <p>24 give these more longwinded answers. The term "IP"</p> <p>25 stands for Internet protocol. And so if we just say</p>	<p style="text-align: right;">Page 56</p> <p>1 instead of seven. But in the end they line up</p> <p>2 perfectly. It's just in the Internet protocol stack</p> <p>3 it lumps together three things that the OSI model</p> <p>4 distinguishes at the very, very top. But as I</p> <p>5 mentioned it earlier, they both have the same</p> <p>6 similarity, that application programs in both cases</p> <p>7 would be functioning at the application layer</p> <p>8 with -- either case would be calling the application</p> <p>9 layer and would be above the first four layers in</p> <p>10 this either protocol stack.</p> <p>11 BY MR. LIN:</p> <p>12 Q Do they match up perfectly or close?</p> <p>13 A They match up perfectly in the sense of an</p> <p>14 equivalence relation. So the first four layers in</p> <p>15 both protocol stacks are identical and then the OSI</p> <p>16 model distinguishes three layers that correspond</p> <p>17 identically to one layer in the Internet protocol</p> <p>18 stack. And again, the three at the top are session</p> <p>19 layer, presentation layer and application layer in</p> <p>20 the OSI model, which line up perfectly with just now</p> <p>21 one layer in the Internet protocol stack which are</p> <p>22 called the Internet -- or the application layer.</p> <p>23 Q But there are some differences, correct?</p> <p>24 A Those are the -- that's how they line up.</p> <p>25 They line up so that -- again, we're -- in the OSI</p>
<p style="text-align: right;">Page 55</p> <p>1 IP, Internet protocol, you're referring to just the</p> <p>2 IP stuff that happens at layer 3. So if we refer to</p> <p>3 the Internet protocol stack, we're referring to all</p> <p>4 five that are in this model, the Internet protocol</p> <p>5 stack.</p> <p>6 Q Let me see if I can ask a better question.</p> <p>7 In the Internet protocol stack, does it</p> <p>8 correspond to the OSI model?</p> <p>9 A And the answer is yes with this</p> <p>10 understanding, that at the application layer in the</p> <p>11 Internet protocol stack the OSI model distinguishes</p> <p>12 three distinct layers that are mapped together into</p> <p>13 just the application layer in the Internet protocol</p> <p>14 stack.</p> <p>15 Q I understand. In the Internet protocol</p> <p>16 stack, it's not a -- a -- let me see how I can say</p> <p>17 this. Strike that. Why does the Internet protocol</p> <p>18 stack use a modif- -- strike that.</p> <p>19 Why does the Internet protocol stack use a</p> <p>20 different model than the OSI model? They're</p> <p>21 similar, I understand that, but different also.</p> <p>22 MR. LEE: Objection. Form.</p> <p>23 THE WITNESS: Just sitting here today I don't</p> <p>24 know the reason why it's different. Perhaps they</p> <p>25 wanted to have it more streamlined and have five</p>	<p style="text-align: right;">Page 57</p> <p>1 model, one would distinguish three layers. All</p> <p>2 those threes are lumped into one. So that's the</p> <p>3 only difference, that those three are lumped into</p> <p>4 one layer in the Internet protocol stack, which is</p> <p>5 called in the Internet protocol stack the</p> <p>6 application layer.</p> <p>7 Q Right. In the layers, let's say 1, 2, 3 and</p> <p>8 4 there may be differences to the OSI model,</p> <p>9 correct?</p> <p>10 A No. That's what I'm trying to explain.</p> <p>11 Layers 1, 2, 3 and 4 are identical in both models.</p> <p>12 Q 5?</p> <p>13 A Yeah. Where 5's -- the differences begin.</p> <p>14 Q Okay. Why did you chose to talk about the</p> <p>15 OSI reference model instead of the Internet protocol</p> <p>16 stack? I'm sorry, strike that.</p> <p>17 Your declaration focused -- focuses your</p> <p>18 analysis on the OSI reference model; is that</p> <p>19 correct?</p> <p>20 A Yes. But it also includes the Internet</p> <p>21 protocol model because of the similarities of the</p> <p>22 first four, that the first four layers are</p> <p>23 identical. So the conclusions would be the same if</p> <p>24 we had used the Internet protocol stack. But the</p> <p>25 OSI is something that is referenced, for example, in</p>

<p style="text-align: right;">Page 58</p> <p>1 this textbook by Tanenbaum, and that's something 2 that we use in undergraduate curricula ubiquitously 3 across the country and so that's why I used it here 4 in my declaration. 5 Q Why didn't you use just the Internet protocol 6 stack? Why didn't -- strike that. 7 Why didn't you use the model of the Internet 8 protocol stack only in your discussion? 9 A Because of this history of the OSI model 10 being in such textbooks as Tanenbaum that are, you 11 know, like standard references for computer 12 networking and so that -- and again, it didn't 13 really make that much of a difference with respect 14 to the analysis and so I thought go with the 15 historical model rather than focusing in just on the 16 Internet. 17 So, for example, if we go to the '147 patent 18 and we go to, say, column 1 and beginning in 19 line 45, it's talking about these point-to-point 20 network protocols and gives three examples such as 21 UNIX, pipes, TCP/IP and UDP, which allow processes 22 on different -- on different computers to 23 communicate via point-to-point connections. And so 24 I don't want to just focus exclusively on the 25 Internet protocol which someone might confuse it</p>	<p style="text-align: right;">Page 60</p> <p>1 network layer. As you explained before, that's 2 different than Internet protocol stack and that the 3 Internet protocol occurs at layer 3, correct? 4 A Yes. 5 Q Is it -- is it -- when you look at an 6 application running on the Internet, is it easy for 7 you to determine what layer a computer program is 8 running on? 9 MR. LEE: Objection. Form. 10 THE WITNESS: I'm sorry, I don't understand 11 that question. 12 BY MR. LIN: 13 Q Have you written a computer program before? 14 A Yes. 15 Q And how do you know which layer your computer 16 program is operating on? 17 A I'm still not quite following the question 18 because some programs that we write don't use a 19 network at all. It's just using one computer, like 20 even on your iPhone, a disconnected, even, iPhone or 21 on the little -- I got a little Raspberry Pi for my 22 son, this little tiny computer. And when it's not 23 connected to anything that would be construed as a 24 network, there's no concept of any layers at all. 25 It's just running on a little device.</p>
<p style="text-align: right;">Page 59</p> <p>1 only would apply to, say, TCP/IP and UDP because the 2 '147 patent also discusses UNIX pipes. And then 3 when I, for example, would go to some of these prior 4 art references that are cited by the petitioner, it 5 would talk about other protocols like the X.25, 6 which is not a part of the Internet. So I want to 7 be inclusive of all these different protocols which 8 the OSI model does. 9 Q Would a POSITA been -- before July 2000 known 10 about the Internet protocol stack? 11 A Yes. 12 Q And the concepts of the Internet protocol 13 stack, because it has the same abstract layers, 14 could it be translated from different protocols? 15 MR. LEE: Objection. Form. 16 THE WITNESS: I'm sorry, I don't understand 17 the question. 18 BY MR. LIN: 19 Q Can you take a -- something that talks about 20 operating on the Internet protocol stack -- strike 21 that. Forget it. Let's move on. 22 A Okay. 23 Q And then so I think we covered this already. 24 But in paragraph 30 you talk about the Internet 25 protocol IP is an example of a protocol at the</p>	<p style="text-align: right;">Page 61</p> <p>1 Q I'm sorry, I think I meant to ask an 2 application running on the Internet. 3 A So I still need calculation for what you mean 4 by application. So if you're referring to, for 5 example, like the applications that are discussed 6 here in the '147 patent -- I believe I can find the 7 citations. Yeah. So it begins in -- in column 15 8 beginning already in line 7 and then going all the 9 way to the bottom. It's talking over and over and 10 over about these application programs executing the 11 separate processes and then using this broadcast 12 channel, which we read elsewhere is a -- in fact, I 13 gave a precise definition to that in my 14 declaration -- is a logical channel that overlays an 15 underlying point-to-point communications network. 16 So from that we see, based on -- and from the 17 support from column 15 that its application 18 program's running on top of a point-to-point 19 communication network that a person of ordinary 20 skill in the art would understand must be at layer 5 21 or above because it's built on top of something that 22 has this concept of point-to-point communications, 23 which is established in layer 4. So that's how a 24 person of ordinary skill can understand what the 25 layer is for an application running, say, on the</p>

<p style="text-align: right;">Page 62</p> <p>1 Internet.</p> <p>2 Q Dr. Goodrich, it seems like you're reading my</p> <p>3 mind and we'll get to that later today. But I'd</p> <p>4 like to make sure that we're on the same page on</p> <p>5 some other concepts first before we get there.</p> <p>6 A Okay.</p> <p>7 Q Would you mind turning, then, to</p> <p>8 paragraph 31.</p> <p>9 A Okay.</p> <p>10 Q And then on page 13.</p> <p>11 A That's not -- oh.</p> <p>12 Q Bates 13.</p> <p>13 A I'm there. Sorry, Bates 13. Sorry. Yes,</p> <p>14 I'm there.</p> <p>15 Q And there's something that says, "Typically,</p> <p>16 the application layer will use application</p> <p>17 programming interfaces that will interact with a</p> <p>18 variety of underlying networks." Is that --</p> <p>19 A Yes. I see that.</p> <p>20 Q Can you tell me how -- and what is an</p> <p>21 application programming interface as you understand</p> <p>22 it?</p> <p>23 A Certainly. So the idea here is that as we</p> <p>24 talked about with respect to, say, the OSI reference</p> <p>25 model, each layer provides an abstraction, what we</p>	<p style="text-align: right;">Page 64</p> <p>1 page 11, the APIs are like the little spaces in</p> <p>2 between each of the layers. Each layer has an</p> <p>3 interface. That's why we sort of think of it as</p> <p>4 like the spaces in between the layers. The lower</p> <p>5 layer is providing the interface, it's providing the</p> <p>6 functions that then the next layer up can then call</p> <p>7 using that agreed-upon interface, the functionality</p> <p>8 that exists at the lower layer.</p> <p>9 Q Can API manage the spaces between multiple</p> <p>10 layers?</p> <p>11 A I'm not sure I understand that question.</p> <p>12 Q Okay. So between -- we'll look at your</p> <p>13 figure on layer -- I'm sorry. We'll look at the</p> <p>14 figure on page 11.</p> <p>15 A Yes.</p> <p>16 Q And so between the application layer and the</p> <p>17 presentation layer, is it correct that there may be</p> <p>18 an API that sits in between those layers?</p> <p>19 A Yes.</p> <p>20 Q Then the same would go between the layers 5</p> <p>21 and 6?</p> <p>22 A That's correct.</p> <p>23 Q 4 and 5?</p> <p>24 A Yes.</p> <p>25 Q 3 and 4?</p>
<p style="text-align: right;">Page 63</p> <p>1 call an application programming interface, of how to</p> <p>2 interface with layers that are above it and how it</p> <p>3 can provide certain functionality and then to do</p> <p>4 that in a concise way that the layers above can use.</p> <p>5 So, for example, in the Internet protocol, it will</p> <p>6 present to a higher level a concept of Internet</p> <p>7 addresses that computers will have and it presents</p> <p>8 to the higher levels a best effort ability to send</p> <p>9 packets from one computer address and IP address to</p> <p>10 another.</p> <p>11 And then from that API, that application</p> <p>12 programming interface, say the next layer up, the</p> <p>13 transport layer, TCP will take that functionality</p> <p>14 and add additional protocols that then provide these</p> <p>15 ports numbers and provide, in the case of TCP,</p> <p>16 reliability that it's guaranteed the messages -- you</p> <p>17 know, barring some really horrible catastrophe --</p> <p>18 guaranteed that messages will arrive to their</p> <p>19 destination in the order that they are sent.</p> <p>20 Q So thank you for that explanation. You kind</p> <p>21 of lost me a little bit when you were saying layer</p> <p>22 up and you said that's the transport layer. So</p> <p>23 where does the application -- where does the API sit</p> <p>24 in the OSI model?</p> <p>25 A Oh, so conceptually, if we go back to my</p>	<p style="text-align: right;">Page 65</p> <p>1 A Yes.</p> <p>2 Q 2 and 3?</p> <p>3 A Correct.</p> <p>4 Q And 1 and 2?</p> <p>5 A Also.</p> <p>6 Q Okay. Can an API -- does the API have to be</p> <p>7 distinct between each gap?</p> <p>8 A That's the question I'm not understanding.</p> <p>9 Q Okay.</p> <p>10 A I'm sorry.</p> <p>11 Q Let me see. Let me see. Can one API manage</p> <p>12 layers -- the space between 6 and 7 and 5 and 6 at</p> <p>13 the same time?</p> <p>14 A I'm still not -- I'm not understanding the</p> <p>15 question. So these APIs exist sort of in between</p> <p>16 the spaces. That's -- and it's something that the</p> <p>17 layer just below that space is providing to the</p> <p>18 higher layers above it as a way to call the</p> <p>19 functionality of that level.</p> <p>20 Q I think I know how to ask a better question.</p> <p>21 Is the API between layer 6 and 7 -- strike that.</p> <p>22 Would the API between layer 6 and 7 be</p> <p>23 different than the API between layers 5 and 6?</p> <p>24 A Yes. Presumably, under most circumstances.</p> <p>25 Q You said, "most circumstances." Is there any</p>

<p style="text-align: right;">Page 66</p> <p>1 circumstance that you know of where they can be the</p> <p>2 same?</p> <p>3 A Again, I think you're getting maybe a little</p> <p>4 confused. So as I mentioned in the Internet</p> <p>5 protocol stack, layers 5, 6 and 7 are lumped into</p> <p>6 one. And so the functionality that exists there</p> <p>7 depends on the functionality that happens, for</p> <p>8 example, at layer 4. And then it can have an API</p> <p>9 from layer 4 that then is used in the application</p> <p>10 layer for the Internet protocol stack, which</p> <p>11 encompasses those top three. But we wouldn't be</p> <p>12 like, in that case, having a separate distinction</p> <p>13 between layer 5 and 6 and 6 and 7 with respect to</p> <p>14 the OSI layer.</p> <p>15 Q I think I understand. Then, perhaps, that's</p> <p>16 one distinction between the Internet protocol stack</p> <p>17 and the application -- I'm sorry, one distinction</p> <p>18 between the Internet protocol stack and the OSI</p> <p>19 model, correct?</p> <p>20 MR. LEE: Objection. Form.</p> <p>21 THE WITNESS: If by that distinction you're</p> <p>22 referring to how the Internet protocol stack lumps</p> <p>23 layers 5, 6 and 7 into one layer that it just calls</p> <p>24 the application layer that, indeed, is the</p> <p>25 distinction.</p>	<p style="text-align: right;">Page 68</p> <p>1 prevents an API to layer 7 using the OSI framework.</p> <p>2 Q Got it. Thank you. Okay. Now I -- now I</p> <p>3 understand what you're saying. Turn to page 20,</p> <p>4 Figure 2.</p> <p>5 A I'm there.</p> <p>6 Q What's Figure 2?</p> <p>7 A Figure 2 is a figure from the '147 patent</p> <p>8 that's found on the page marked 4 in that patent.</p> <p>9 Q Uh-huh. Why did you reproduce it?</p> <p>10 A So the Figure 2 is an illustration that the</p> <p>11 '147 patent provides to illustrate a concept that it</p> <p>12 refers to as the m-regular network property. And</p> <p>13 then it has a description of Figure 2 beginning on</p> <p>14 column 5 at line 8. It says (as read), "Figure 2</p> <p>15 illustrates a graph representing 20 computers</p> <p>16 connected to a broadcast channel. The diameter of</p> <p>17 this broadcast channel is 4. In particular the</p> <p>18 shortest path between computers 1 and 3 contains</p> <p>19 four connections.</p> <p>20 Q So you reproduced this because one of the</p> <p>21 topics of the '147 patent is an incomplete m-regular</p> <p>22 broadcast channel, correct?</p> <p>23 A The word "incomplete" does not appear in the</p> <p>24 claims that we're talking about today, but m-regular</p> <p>25 does appear, and so I thought it was relevant in my</p>
<p style="text-align: right;">Page 67</p> <p>1 BY MR. LIN:</p> <p>2 Q In that the API is between that application</p> <p>3 layer and whatever is underneath it, correct?</p> <p>4 A In the Internet protocol stack and in the OSI</p> <p>5 model stack the API provided by layer 4 would be the</p> <p>6 same, potentially. But in the Internet protocol</p> <p>7 stack that API would be used by just what's, lump</p> <p>8 sum, one layer; whereas, in the OSI model, that</p> <p>9 transport layer, API, would be used potentially by</p> <p>10 those layers above it, those 3, 5, 6 and 7.</p> <p>11 Q Got it. Do those three need an API or -- I'm</p> <p>12 sorry, let me ask -- let me try this again.</p> <p>13 In the OSI models between layers 5, 6 and 7,</p> <p>14 do they need an API to interact with the different</p> <p>15 layers?</p> <p>16 MR. LEE: Objection. Form.</p> <p>17 THE WITNESS: They provide an API that can be</p> <p>18 used by the higher levels. That's how the models</p> <p>19 are set up.</p> <p>20 BY MR. LIN:</p> <p>21 Q What do you mean? Who is "they," layers 5, 6</p> <p>22 and 7 --</p> <p>23 A Yes.</p> <p>24 Q -- is that correct?</p> <p>25 A So 5 represents an API to layers 6 and 7, 6</p>	<p style="text-align: right;">Page 69</p> <p>1 declaration to include this illustration that</p> <p>2 illustrated this concept of being m-regular as the</p> <p>3 '147 patent discusses it.</p> <p>4 Q Is it -- is this -- is Figure 2 a</p> <p>5 broadcast -- a claimed broadcast channel of the '147</p> <p>6 patent? Sorry, strike that.</p> <p>7 Is -- is Figure 2 a broadcast channel as</p> <p>8 defined by the '147 patent?</p> <p>9 A As I just read, from column 5, it says,</p> <p>10 "Figure 2 illustrates a graph representing 20</p> <p>11 computers connected to a broadcast channel."</p> <p>12 Q Okay. So there's 20 computers in here, zero</p> <p>13 through 19, and I'm assuming the vertex -- vertices</p> <p>14 represent computers or participants; is that</p> <p>15 correct?</p> <p>16 A Yes.</p> <p>17 Q And the lines between the vertices are</p> <p>18 connections, correct?</p> <p>19 A Yes.</p> <p>20 Q And then the connections, the sum of the</p> <p>21 connections form the broadcast channel; is that</p> <p>22 correct?</p> <p>23 A That sounds right.</p> <p>24 Q And you said in the passage that you just</p> <p>25 read that the diameter is 4, correct?</p>

<p style="text-align: right;">Page 70</p> <p>1 A Yes.</p> <p>2 Q What's a diameter?</p> <p>3 A So in this context it's referring to the</p> <p>4 length of the longest path in a network, in this</p> <p>5 case this broadcast channel.</p> <p>6 Q The longest path from where to where?</p> <p>7 A From any two nodes in the graph.</p> <p>8 Q Thank you.</p> <p>9 A That's what we refer to as the diameter.</p> <p>10 Q Is there a diameter where -- is so large that</p> <p>11 it -- that it would no longer be a broadcast</p> <p>12 channel?</p> <p>13 MR. LEE: Objection. Form.</p> <p>14 THE WITNESS: That's not something I</p> <p>15 considered in my analysis because it wasn't</p> <p>16 relevant. Let me think about that.</p> <p>17 BY MR. LIN:</p> <p>18 Q Do you mind if I ask a different question?</p> <p>19 A Not at all. Go ahead.</p> <p>20 Q Does your claim construct- -- strike that.</p> <p>21 Does the diameter of a broadcast channel</p> <p>22 matter in your definition of a broadcast channel?</p> <p>23 A As long as it's a finite number, which I</p> <p>24 can't imagine how it could possibly be infinite when</p> <p>25 you have a finite number of nodes. I don't see how</p>	<p style="text-align: right;">Page 72</p> <p>1 distance between them changes to one. The first</p> <p>2 message may have to travel a distance of four to</p> <p>3 reach the receiving computer. The second message</p> <p>4 only has to travel a distance of one. Thus, it is</p> <p>5 possible for the second message to reach the</p> <p>6 receiving computer before the first message." And</p> <p>7 then it continues, "When the broadcast channel is in</p> <p>8 a steady state (i.e., no computers connecting or</p> <p>9 disconnecting from the broadcast channel) out-of-</p> <p>10 order messages are not a problem because each</p> <p>11 computer will eventually receive both messages and</p> <p>12 can queue messages until all earlier order messages</p> <p>13 are received."</p> <p>14 So based on that quick reading -- again, this</p> <p>15 was not something that I had to do as a part of my</p> <p>16 analysis, but just as I sit here today, that</p> <p>17 suggests that whatever the diameter number is it</p> <p>18 should not matter to the definition of a broadcast</p> <p>19 channel. Something with a large diameter could be a</p> <p>20 broadcast channel, something with a small diameter</p> <p>21 could also be a broadcast channel.</p> <p>22 Q It doesn't -- and it doesn't matter to your</p> <p>23 claim construction, correct?</p> <p>24 A That is correct.</p> <p>25 Q If we turn to, let's say, page 25, Bates 25,</p>
<p style="text-align: right;">Page 71</p> <p>1 it would matter, just sitting here today.</p> <p>2 Q It can be a line. Let me -- let me -- let me</p> <p>3 see if I can ask that better.</p> <p>4 A broadcast channel cannot be a tree?</p> <p>5 A That has something independently to do with</p> <p>6 diameter. So diameter is just a number, like 4 in</p> <p>7 this case, that tells you the length of the longest</p> <p>8 path in a graph. Then you asked is that relevant,</p> <p>9 is there a number that could be so large that it</p> <p>10 would no longer be a broadcast channel? And I was</p> <p>11 looking through the patent. There is some</p> <p>12 discussion about diameter and distance, I think,</p> <p>13 in -- in columns 7 and 8. I was going there to</p> <p>14 answer that question.</p> <p>15 Q Okay. Go ahead. Feel free.</p> <p>16 A Okay. So there might be some other places</p> <p>17 where this concept of distance is discussed that I'm</p> <p>18 just not finding right now, but it's certainly</p> <p>19 discussed here in columns 7 and 8. So it talks</p> <p>20 about a particular example. It says, starting in</p> <p>21 column 7 at line 62, "For example the distance</p> <p>22 between an originating computer and a certain</p> <p>23 receiving computer may be four. After sending the</p> <p>24 first message, the originating computer and</p> <p>25 receiving computer may become neighbors and thus the</p>	<p style="text-align: right;">Page 73</p> <p>1 paragraph 50.</p> <p>2 A I'm there.</p> <p>3 Q That's your discussion of a broadcast</p> <p>4 channel, correct?</p> <p>5 A That's correct.</p> <p>6 Q Then page 50 -- I'm sorry, page 26,</p> <p>7 paragraph 53.</p> <p>8 A I'm there.</p> <p>9 Q And it says, "Connection" and then your</p> <p>10 construction is "an edge between two application</p> <p>11 programs connected to a logical broadcast channel</p> <p>12 that overlays an underlying network"; is that</p> <p>13 correct?</p> <p>14 A Yes. That's my -- the definition I'm</p> <p>15 offering that a person of ordinary skill would have</p> <p>16 for connection, applying the standard of the</p> <p>17 broadest reasonable interpretation in light of the</p> <p>18 specification of the patent.</p> <p>19 Q And then how do -- in the '147 patent, how do</p> <p>20 -- let me take a step back.</p> <p>21 The '147 patent uses, in the claim, the term</p> <p>22 "computer," is that correct, in claim 6?</p> <p>23 A Yes. That's correct.</p> <p>24 Q What is a computer?</p> <p>25 A In the context of claim 6?</p>

<p style="text-align: right;">Page 74</p> <p>1 Q Yes.</p> <p>2 A So a computer would be understood by a person</p> <p>3 of ordinary skill in the art with respect to claim 6</p> <p>4 as having its ordinary meaning, plain and ordinary</p> <p>5 meaning, of just a computer the way a POSITA would</p> <p>6 normally define it.</p> <p>7 Q Okay. And then how do connections between</p> <p>8 computers -- how are they formed --</p> <p>9 A So there is --</p> <p>10 Q -- as the term is understood in paragraph 53?</p> <p>11 A Yeah. So again, a connection is "an edge</p> <p>12 between two application programs connected to a</p> <p>13 logical broadcast channel that overlays an</p> <p>14 underlying network." That, I know, is a lot of</p> <p>15 words but it is the proper definition under the</p> <p>16 standard of the broadest reasonable interpretation</p> <p>17 in light of the specification. In my declaration I</p> <p>18 give several examples of this. But the concept of</p> <p>19 how these connections are made, what happens when</p> <p>20 they're broken is found throughout the patent.</p> <p>21 Q Okay.</p> <p>22 A And I could cite to other locations too if</p> <p>23 you wanted me to.</p> <p>24 Q We don't need to do that right now. I just</p> <p>25 would like to have a correct understanding of how</p>	<p style="text-align: right;">Page 76</p> <p>1 A Yes.</p> <p>2 Q -- here's computer B.</p> <p>3 A I see that.</p> <p>4 Q Okay. So I apologize. I figured everyone</p> <p>5 can -- and there must be some physical layer between</p> <p>6 computer A and computer B before the method of claim</p> <p>7 6 is performed, correct?</p> <p>8 MR. LEE: Objection. Form.</p> <p>9 THE WITNESS: That's the part I'm not quite</p> <p>10 following. So computer A and computer B -- I'm not</p> <p>11 sure what you're referring to here. Are they -- so</p> <p>12 you're saying we have to get to the -- to be able to</p> <p>13 perform claim 6. That, I understood. And then</p> <p>14 claim -- in this context there's a first computer</p> <p>15 and a second computer. So is A and B going to</p> <p>16 ultimately become the first and the second? There's</p> <p>17 also a third, by the way, too.</p> <p>18 BY MR. LIN:</p> <p>19 Q I realized I asked a bad question.</p> <p>20 A Okay.</p> <p>21 Q Let me try again. I want to focus on your</p> <p>22 construction of connection. So just -- let's figure</p> <p>23 out how two computers can be connected under your</p> <p>24 construction of connection.</p> <p>25 A Okay.</p>
<p style="text-align: right;">Page 75</p> <p>1 edges are formed between computer A and computer B.</p> <p>2 So I'm going to -- I'm going to refer to the OSI</p> <p>3 model on page 11, the Tanenbaum figure.</p> <p>4 A Okay.</p> <p>5 Q Before we start computer A and computer B, I</p> <p>6 assume there must somehow be a physical layer that</p> <p>7 preexists, correct?</p> <p>8 MR. LEE: Objection. Form.</p> <p>9 THE WITNESS: I'm not sure I understand what</p> <p>10 you're asking.</p> <p>11 BY MR. LIN:</p> <p>12 Q Before the patent -- before we perform the</p> <p>13 method of the patent, there must be some physical</p> <p>14 layer between computer A and computer B, correct?</p> <p>15 MR. LEE: Same objection.</p> <p>16 THE WITNESS: I'm no sure what you mean by</p> <p>17 "computer A and computer B." That's the part I'm</p> <p>18 missing. I'm sorry.</p> <p>19 BY MR. LIN:</p> <p>20 Q I'm going to --</p> <p>21 A Are you drawing a picture?</p> <p>22 Q I'm drawing a picture. Sorry.</p> <p>23 A Okay.</p> <p>24 Q I should be clear. I'm drawing a picture.</p> <p>25 Here's computer A --</p>	<p style="text-align: right;">Page 77</p> <p>1 Q So computer -- there's a computer A and</p> <p>2 there's a computer B.</p> <p>3 A Okay.</p> <p>4 Q And the precondition before any of -- any</p> <p>5 connection can occur, is that there must be some</p> <p>6 physical layer between computer A and computer B,</p> <p>7 correct?</p> <p>8 MR. LEE: Objection. Form.</p> <p>9 THE WITNESS: That's the part I'm not quit</p> <p>10 following because we're talking here, and again as I</p> <p>11 believe is the proper definition of a connection to</p> <p>12 be "an edge between two application programs</p> <p>13 connected to a logical broadcast channel that</p> <p>14 overlays an underlying network." And so we have to</p> <p>15 have this concept that the underlying network is</p> <p>16 capable of these point-to-point connections that</p> <p>17 then are going to be utilized to form the</p> <p>18 connections as are being defined here in the patent,</p> <p>19 so --</p> <p>20 BY MR. LIN:</p> <p>21 Q I understand.</p> <p>22 A So it sounds like you're building up to that,</p> <p>23 but the part that I'm not quite following is when</p> <p>24 you're talking about the physical layer between A</p> <p>25 and B, what does that consist of in this context?</p>

20 (Pages 74 - 77)

<p style="text-align: right;">Page 78</p> <p>1 Q So there's -- cable A and computer B must be 2 connected somehow so electrical signals can be 3 transmitted from computer A to computer B; is that 4 correct? 5 MR. LEE: Objection. Form. 6 THE WITNESS: That's not quite correct. So 7 that's the part that I'm not quite following, is it 8 that in a -- in a potentially big network, there 9 could be lots of little -- 10 BY MR. LIN: 11 Q We're talking about two computers. 12 A I know. But if you want to do it in the 13 context of what ultimately will become claim 6, you 14 have to talk about it in the context of a bigger 15 network. Because this connection, the way that it 16 needs to be defined according to claim 6, has to be 17 a point-to-point connection in an underlying 18 network. And so you have to first establish what 19 does that mean. And in that context, computer A and 20 computer B might not be connected with a physical 21 link. 22 Q I've got it. Why don't we do this. You're 23 the professor. Can you explain to me how a 24 connection between computer A and computer B can be 25 formed?</p>	<p style="text-align: right;">Page 80</p> <p>1 A -- is that right? All right. So on computer 2 A, we have an application program that I'm drawing 3 here. 4 Q And is that layer 7 or is that layers 5, 6 5 and 7? 6 A In this case, in this example, let's choose 7 layer 7, for example. So we'll say layer 7 in this 8 example. 9 Q Okay. 10 A And so again, this is just an example. I'll 11 write that here too. And then, similarly, we have 12 an application program here in -- that's functioning 13 in computer B, also, let's say at layer 7. And then 14 so that's -- we have what we're calling here in the 15 definition an edge between these two application 16 programs. So I'm going to draw that as a red line 17 between the two application programs on the two 18 computers that's now connecting the two computers. 19 And we see further that it has to be 20 connected to a logical broadcast channel that 21 overlays an underlying network. So we have to have 22 some underlying network, which I'm drawing as a box 23 in the middle that -- underlying network -- that 24 then provides the point-to-point connection that 25 allows you to have communication that can occur</p>
<p style="text-align: right;">Page 79</p> <p>1 MR. LEE: Objection. Form. 2 THE WITNESS: Yes. 3 BY MR. LIN: 4 Q Okay. So layer 1, physical layer, how would 5 computer A connect to computer B? 6 MR. LEE: Objection. Form. 7 THE WITNESS: I think the proper way to think 8 of it is to actually think of it from the top down. 9 That first we start with the proper definition of 10 what is a connection, and that is that it is "an 11 edge between two application programs connected to a 12 logical broadcast channel that overlays an 13 underlying network." 14 BY MR. LIN: 15 Q Okay. 16 A So we have the two computers, A and B. 17 Q Okay. 18 A Am I allowed to draw on your figure? Okay. 19 MR. LIN: Oh, we'll mark this as Goodrich 10. 20 (Exhibit 10 was marked for identification 21 by the court reporter and is attached hereto.) 22 THE WITNESS: And I'll use red. It looks 23 like you are using blue -- 24 BY MR. LIN: 25 Q Yeah.</p>	<p style="text-align: right;">Page 81</p> <p>1 between these two application programs on the two 2 computers. 3 Q And what's the underlying network there? 4 A So the underlying network, then, would have 5 these other layers that we talked about. Like layer 6 1, layer 2, layer 3, up to layer 4, for example, for 7 doing TCP/IP, which is, I think, discussed in the 8 patent as one of the example ways you can do 9 point-to-point connections in an underlying network. 10 Q Can -- you used layer 7 of the OSI model. 11 Can it ever, under your definition, refer to layers 12 5, 6 and 7 or 5, 6 or 7, 5, 6 and/or 7, some 13 combination of those three? 14 A Yeah. It can also refer to those. I 15 don't -- I don't see how that's not allowed. I just 16 did this example, here, where layer 7 is utilizing 17 functionality from layer 4. 18 Q I'm sorry, I think I -- I don't -- I 19 misunderstood. When you say an edge between 20 applications, is it limited to a particular set of 21 layers? 22 A It has to be something a person of ordinary 23 skill in the art would understand as having this 24 functionality that it is an application program. 25 That's absolutely required. And the other essential</p>

21 (Pages 78 - 81)

<p style="text-align: right;">Page 82</p> <p>1 component is that it overlays an underlying network 2 that provides these point-to-point communications. 3 So in this example, I'm showing an example where the 4 underlying network provides the TCP/IP protocol that 5 happens -- actually, I should have drawn it TCP 4 6 and IP at 3. 7 So, for example, it could be setting up TCP 8 connections as its point-to-point communication 9 means that then is what we're talking about here as 10 overlaying the underlying network. So when you 11 overlay an underlying network, you're necessarily 12 going to be utilizing the interface of whatever that 13 network is providing. So in this example would be 14 TCP connections that you would establish as the 15 underlying network connections. 16 Q So I think I understand the underlying 17 network is basically anything under layers 4 and 18 below? 19 A In this example it is, yes. 20 Q How about in your definition, what's the -- 21 where is -- where -- your definition is "an edge 22 between two application programs connected to a 23 logical broadcast channel that overlays an 24 underlying network." 25 Where -- what is the underlying network?</p>	<p style="text-align: right;">Page 84</p> <p>1 point-to-point ability? 2 A Are we talk- -- 3 MR. LEE: Objection. Form. 4 THE WITNESS: Are we talking -- if we're 5 talking the OSI model, it -- it can provide not only 6 that ability but other things too, as I talk about 7 when I summarize what other functions can be 8 provided in the session layer with respect to the 9 OSI model. So you could also, if you wanted to, do 10 it on top of layer 5. 11 BY MR. LIN: 12 Q So I think I understand what you're saying. 13 A connection is an edge -- let me see. The 14 application program is limited to layers 5, 6 and 15 7 -- 16 MR. LEE: Objection. Form. 17 BY MR. LIN: 18 Q -- correct? 19 A Application -- it depends on which model 20 we're talking about. If we're talking about how 21 you -- a person of ordinary skill would understand 22 it with respect to the OSI model, application 23 programs would exist at layer 7, but they can use 24 functionality, for example, from layer 5 and skip 25 over 6 or it could use the functionality from layer</p>
<p style="text-align: right;">Page 83</p> <p>1 A Yes. So -- 2 MR. LEE: Objection. Form. 3 THE WITNESS: So in this case the underlying 4 network, as a person of ordinary skill would 5 understand it, has to be what the patent says over 6 and over and over again, has this essential property 7 of an underlying network that it can provide these 8 point-to-point communications. It says that over 9 and over. Like, for example, let me just go to one 10 spot where it says it right at the very, very 11 beginning. 12 So if we go to column 4 in the patent and it 13 says at line 5 (as read), "A broadcast technique in 14 which a broadcast channel overlays a point-to-point 15 communication network is provided." So that's what 16 is meant here when it says, "an underlying network." 17 It's an underlying network that provides this 18 point-to-point communication ability. 19 BY MR. LIN: 20 Q Which would be layers 4 and below? 21 MR. LEE: Objection. Form. 22 THE WITNESS: 4 and below would be providing 23 that point-to-point ability, yes. 24 BY MR. LIN: 25 Q Can layer 5 provide -- provide that</p>	<p style="text-align: right;">Page 85</p> <p>1 4 and skip over 6. But you have to have at least 2 that functionality, say, in this example of layer 4, 3 of being able to have point-to-point connections. 4 Point to point, as the patent itself describes, is 5 what the underlying network is providing. So -- 6 but, alternatively, if you were in the Internet 7 protocol stack, then it would be all of what the 8 Internet protocol stack calls layer 5, would simply 9 just use layer 4 to provide that point-to-point 10 capability. 11 Q Okay. 12 I think the videographer is running out of 13 tape if you wanted to -- 14 A Take a break? 15 Q -- take a quick break. 16 THE VIDEOGRAPHER: This is the end of media 17 1. We're going off the record at 11:02. 18 (Recess.) 19 THE VIDEOGRAPHER: This is the beginning of 20 media 2. We're back on the record at 11:12. 21 BY MR. LIN: 22 Q Welcome back, Dr. Goodrich. 23 A Thank you. 24 Q Thank you for coming back. Can you pull up 25 your -- the diagram that you drew again.</p>

22 (Pages 82 - 85)

<p style="text-align: right;">Page 86</p> <p>1 A Right.</p> <p>2 Q So I think I understand what you're -- you're</p> <p>3 trying to say. And if I'm not summarizing what</p> <p>4 you're saying correctly, then please correct me.</p> <p>5 A Yeah. So I think the other thing about this</p> <p>6 figure is that we're trying to illustrate this</p> <p>7 concept of connection. So I'm going to write there</p> <p>8 at the top. But, of course, we're not showing the</p> <p>9 broadcast channel with any, like, illustration yet.</p> <p>10 So I'll write that here too.</p> <p>11 Q Thank you. Very helpful. So underlying</p> <p>12 network --</p> <p>13 A Uh-huh.</p> <p>14 Q -- what is an underlying network?</p> <p>15 A So this idea of an underlying network would</p> <p>16 be understood by a person of ordinary skill in the</p> <p>17 art to be a network that you are utilizing to</p> <p>18 provide this point-to-point functionality. The</p> <p>19 patent specifies that in several places that that's</p> <p>20 what's needed. So, for example, if we go to column</p> <p>21 4 and it's now beginning in line 17. It says, "The</p> <p>22 logical broadcast channel is implemented using an</p> <p>23 underlying network system (e.g., the Internet) that</p> <p>24 allows each computer connected to the underlying</p> <p>25 network system to send messages to each other</p>	<p style="text-align: right;">Page 88</p> <p>1 this underlying network, it has to be providing</p> <p>2 point-to-point connections, that that's specified in</p> <p>3 that passage I just read.</p> <p>4 It's specified in multiple other places,</p> <p>5 point to point, point to point, all the way, for</p> <p>6 example, in other lines of column 4 and elsewhere in</p> <p>7 the patents. A broadcast channel itself provides</p> <p>8 its functionality of broadcasting a one to many</p> <p>9 communications, not a point-to-point connections.</p> <p>10 So a person of ordinary skill would understand that</p> <p>11 is not a point-to-point communications network.</p> <p>12 It's, instead, broadcasting.</p> <p>13 Q Thank you. So I think there was some</p> <p>14 confusion on my part because it seems like what</p> <p>15 you're saying is this underlying network must be a</p> <p>16 point-to-point network.</p> <p>17 A It has to provide this point-to-point</p> <p>18 capability for -- otherwise, this concept of edges</p> <p>19 doesn't make any sense.</p> <p>20 Q So --</p> <p>21 A You're connecting two things not one too</p> <p>22 many. So it's implicit in -- in my definition that</p> <p>23 it has to be point to point.</p> <p>24 Q So it should say an edge between two</p> <p>25 application programs connected to a logical</p>
<p style="text-align: right;">Page 87</p> <p>1 computer" -- "connected computer using each</p> <p>2 computer's address."</p> <p>3 Q Can an underlying network be a broadcast</p> <p>4 channel as well?</p> <p>5 MR. LEE: Objection. Form.</p> <p>6 THE WITNESS: So I'm not quite understanding</p> <p>7 the question. Are you asking -- now, I'm sorry, I'm</p> <p>8 not following. Can you explain that what you're</p> <p>9 asking.</p> <p>10 BY MR. LIN:</p> <p>11 Q I think the general concept that I'm trying</p> <p>12 to get to is that can you have a broadcast channel</p> <p>13 on top of a broadcast channel?</p> <p>14 A So can a broadcast channel utilize another</p> <p>15 broadcast channel as the underlying network. Is</p> <p>16 that the question?</p> <p>17 Q Yes.</p> <p>18 A Okay. I -- I think the answer is no to that.</p> <p>19 And the reason is the following. First, the patent</p> <p>20 discusses the possibility where application programs</p> <p>21 can be connected to multiple broadcast channels, but</p> <p>22 never talks about how they can be built on top of</p> <p>23 yet another broadcast channel. That's number one.</p> <p>24 Number two, as I sit here today, we also have this</p> <p>25 requirement that talks about here that whatever is</p>	<p style="text-align: right;">Page 89</p> <p>1 broadcast channel that overlies an underlying</p> <p>2 point-to-point network, correct?</p> <p>3 MR. LEE: Objection. Form.</p> <p>4 THE WITNESS: No. That's not necessary</p> <p>5 because we always -- we already have this concept of</p> <p>6 point to point in the definition already. When it</p> <p>7 says an edge between two application programs not</p> <p>8 five or ten or however many nodes there are on the</p> <p>9 network, it has to be between two. So that already</p> <p>10 is implicitly implying that there has to be</p> <p>11 point-to-point capability. So you don't need to put</p> <p>12 the words "point to point" in again in the</p> <p>13 definition.</p> <p>14 BY MR. LIN:</p> <p>15 Q That could be redundant, correct --</p> <p>16 A That's right.</p> <p>17 Q -- and confusing?</p> <p>18 A I don't know if it would be confusing, but it</p> <p>19 would be redundant.</p> <p>20 Q Okay. I think that clears up a lot of</p> <p>21 confusion, but I want to make sure I have the</p> <p>22 correct understanding. So this edge between two</p> <p>23 application programs connected to a logical</p> <p>24 broadcast channel that overlays an underlying</p> <p>25 network, which layer -- you said that could happen</p>

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<p style="text-align: right;">Page 90</p> <p>1 at layer 7, correct?</p> <p>2 A That's an example that I was showing in this</p> <p>3 picture, for example.</p> <p>4 Q Could it happen at layer 6?</p> <p>5 A Yes.</p> <p>6 Q Could it happen at layer 5?</p> <p>7 A Yes.</p> <p>8 Q How about layer 4?</p> <p>9 A Not if you're using TCP/IP, no. At layer 4</p> <p>10 or any other layer that I can imagine, actually,</p> <p>11 just sitting here today.</p> <p>12 Q And I assume that it can't -- this edge</p> <p>13 cannot exist at layer 3, correct?</p> <p>14 A That's correct.</p> <p>15 Q Layer 2?</p> <p>16 A No.</p> <p>17 Q Layer 1?</p> <p>18 A Definitely not.</p> <p>19 Q Okay. So the under- -- let's work our way</p> <p>20 back. So the underlying network, though, could be</p> <p>21 layer 5 and the over the edge would be at layer 6;</p> <p>22 is that correct?</p> <p>23 A I think that's possible.</p> <p>24 Q And then if it's at layer 5, the edge could</p> <p>25 also be at layer 7; is that correct?</p>	<p style="text-align: right;">Page 92</p> <p>1 A Okay.</p> <p>2 Q Why can't you have a connection at layer 4?</p> <p>3 MR. LEE: Objection. Form.</p> <p>4 THE WITNESS: Well, it has to do with the</p> <p>5 fact that we're talking about application programs.</p> <p>6 Application programs don't function at layer 4.</p> <p>7 They use layer 4. So that's -- that's why I was</p> <p>8 getting confused by your question.</p> <p>9 BY MR. LIN:</p> <p>10 Q Okay. If a -- if Bims -- sorry, Goodrich 10,</p> <p>11 in that diagram, if a -- if layers 1, 2, 3, and/or 4</p> <p>12 do not exist -- sorry, let me try again.</p> <p>13 If layers 1, 2, 3, and 4 do not exist between</p> <p>14 computers A and computers B in Goodrich 10, is it</p> <p>15 possible to have a connection under your</p> <p>16 construction?</p> <p>17 MR. LEE: Objection. Form.</p> <p>18 THE WITNESS: I'm sorry, I don't understand</p> <p>19 your question at all. So Goodrich 10 is referring</p> <p>20 to my picture.</p> <p>21 BY MR. LIN:</p> <p>22 Q Correct.</p> <p>23 A And then what's the question? What exists</p> <p>24 now? You're taking away the network in the middle?</p> <p>25 Q Yeah. We're taking about layers 4, 3, 2 and</p>
<p style="text-align: right;">Page 91</p> <p>1 A Yes. I think that's also possible.</p> <p>2 Q And then if the layer is at layer -- if the</p> <p>3 point-to-point edge is at layer 6, then the</p> <p>4 overlay -- the edge between the two application</p> <p>5 programs would be at layer 7, correct?</p> <p>6 A Now I'm getting confused. I'm sorry.</p> <p>7 Q Let me try and say that again.</p> <p>8 A Okay.</p> <p>9 Q If the underlying network is at layer 6, then</p> <p>10 the overlay edge could be at layer 7?</p> <p>11 A Yes.</p> <p>12 Q Okay. Thank you. You said something that</p> <p>13 I'm having some difficulties with reconciling. Why</p> <p>14 can't you have an edge at layer -- I'm sorry, strike</p> <p>15 that.</p> <p>16 Why can't you have a connection at layer 4?</p> <p>17 MR. LEE: Objection. Form.</p> <p>18 THE WITNESS: I'm not -- I'm not</p> <p>19 understanding the question now.</p> <p>20 BY MR. LIN:</p> <p>21 Q Why can't you have an edge at layer 4 that</p> <p>22 overlays layer 3?</p> <p>23 MR. LEE: Objection. Form.</p> <p>24 BY MR. LIN:</p> <p>25 Q Let me try one more time.</p>	<p style="text-align: right;">Page 93</p> <p>1 1.</p> <p>2 A So there's no longer a network in that case</p> <p>3 at all.</p> <p>4 Q Why?</p> <p>5 A You wouldn't even have physical links anymore</p> <p>6 at that point.</p> <p>7 Q Okay. But -- okay. Thank you. How about if</p> <p>8 any one of those four layers were removed, could</p> <p>9 there still be a connection?</p> <p>10 MR. LEE: Objection. Form.</p> <p>11 THE WITNESS: I'm not understanding that</p> <p>12 question either.</p> <p>13 BY MR. LIN:</p> <p>14 Q Okay. Let's say -- sorry.</p> <p>15 A Go ahead.</p> <p>16 Q That was -- let me try a better question.</p> <p>17 A Yeah.</p> <p>18 Q Let's say there is no TCP/IP connection</p> <p>19 between computers A and B so that there is no</p> <p>20 connection at layers 3 and 4 between computers A and</p> <p>21 computers B?</p> <p>22 MR. LEE: Objection. Form.</p> <p>23 THE WITNESS: In this example, which we were</p> <p>24 using the Internet, what are we -- so we don't even</p> <p>25 have a replacement to 3 and 4 at all?</p>

24 (Pages 90 - 93)

<p style="text-align: right;">Page 94</p> <p>1 BY MR. LIN: 2 Q Correct. 3 A So in that scenario we only have the data 4 link layer, so I don't see how we can -- I don't see 5 how we can have a connection at all. 6 Q Okay. Thank you. Let's move on. 7 A Okay. 8 Q That was very helpful. Thank you. 9 A You're welcome. 10 Q Let's move to the patent. 11 A Sorry to interrupt. Do we need to mark this 12 and give it -- 13 Q Yes. Goodrich 10. Could you hand it to the 14 court reporter, please. 15 A All right. Fun stuff. 16 Q So the '147 patent is about disconnecting a 17 computer from a variety of computers. 18 Do you agree with me? 19 MR. LEE: Objection. Form. 20 THE WITNESS: So for -- are we focusing now 21 on claim 6? 22 BY MR. LIN: 23 Q Yes. 24 A Okay. So with claim 6 what it's referring to 25 is "A method for healing a disconnection," which we</p>	<p style="text-align: right;">Page 96</p> <p>1 say -- let's keep this easy -- 5A and 5B about? 2 A Okay. So 5A is illustrating the 3 disconnecting of a computer from the broadcast 4 channel in the planned manner. 5 Q Uh-huh. 6 A 5B illustrates the disconnecting of a 7 computer from the broadcast channel in an unplanned 8 manner. 9 Q Okay. And then when you disconnect, this is 10 sometime after the disconnect procedure or sometime 11 during the disconnect procedure, correct? 12 A When you say "this" what are you referring 13 to? 14 Q Figures 5A and 5B. 15 A Oh. Let's see. So with respect to 5A, the 16 solid lines are showing, I believe, a person of 17 ordinary skill would understand to be the situation 18 before a disconnection and in a planned manner, as 19 we said. And with respect to 5B, I believe the 20 solid lines are showing what's happened after a 21 disconnection in an unplanned manner. 22 Q And before we get to Figure 5A and 5B, would 23 you agree with me that Figure 1 shows before, the 24 before step? 25 MR. LEE: Objection. Form.</p>
<p style="text-align: right;">Page 95</p> <p>1 had talked about earlier, is an unplanned 2 disconnection "of a first computer from a second 3 computer, the computers being connected to a 4 broadcast channel, said broadcast channel being an 5 m-regular graph where m is at least 3," and then it 6 gives some steps of a method. 7 Q Would you mind turning to Figures 5A through 8 5F. 9 A I'm at 5A. 10 Q Do you know what Figures 5A through 5F are 11 about? 12 A Well, each one has like its different thing 13 it's trying to illustrate. Do you want to focus me 14 on just one or try to do them all at once? 15 Q I just kind of wanted to know, you know, what 16 the category of these figures are about. But why 17 don't I help you out here. Let's go to column 2, 18 line 59 -- 19 A Okay. I'm there. 20 Q -- to column 3, line 4. 21 A I see that. 22 Q Can you -- I'll give you a second to read 23 about what these figures are about. 24 A Okay. 25 Q And you -- what are Figures 5A to, let's</p>	<p style="text-align: right;">Page 97</p> <p>1 THE WITNESS: So Figure 1 has all the same 2 solid lines as Figure 5A, if that's your question. 3 Now, comparing it to 5B -- so comparing Figure 1 to 4 5B, each of the solid lines in Figure 1 are also 5 found in Figure 5B except for those that are 6 connected to the node marked H. 7 BY MR. LIN: 8 Q So let's turn to column 8, line 63 where -- 9 with the heading "Decomposing the Graph." 10 A What, line? Oh, line 65? 11 Q Yes. 12 A I see that. 13 Q And you see that sentence that says, "A 14 connected computer disconnects from the broadcast 15 channel either in a planned or unplanned manner," 16 correct? 17 A Yes. 18 Q So Figure 5A is about the planned manner, 19 connect? 20 A It's an example that was trying to illustrate 21 some aspect of the disconnection in a planned 22 manner. 23 Q Correct. And then Figure 5B is the unplanned 24 manner, correct? 25 A Yeah. Figure 5B is illustrating some aspect</p>

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<p style="text-align: right;">Page 98</p> <p>1 of what happens in the disconnection in an unplanned 2 manner.</p> <p>3 Q Okay. So you can see in Figure -- line 66 of 4 column 8 to column 9 says, "When a computer 5 disconnects in a planned manner, it sends a 6 disconnect message to each of its four neighbors." 7 You see that?</p> <p>8 A I'm there. Yeah, I see that.</p> <p>9 Q And then -- so what's a disconnect message?</p> <p>10 A Is there a place in my declaration where 11 you're referring to this?</p> <p>12 Q I don't remember off the top of my head, but 13 it's -- it's in claim 1.</p> <p>14 A Right. But that wasn't the scope of the IPR, 15 so I'm trying to ask how that would relate. Maybe 16 I'm confused because I'm not seeing how that relates 17 to disconnecting in an unplanned manner, which was 18 the scope of my analysis.</p> <p>19 Q I think I'll get to that --</p> <p>20 A Okay.</p> <p>21 Q -- but trust me, it's related.</p> <p>22 I mean, do you -- do you know what a 23 disconnect message is?</p> <p>24 MR. LEE: Objection. Form.</p> <p>25 THE WITNESS: It says it in the very next</p>	<p style="text-align: right;">Page 100</p> <p>1 disconnects in an unplanned manner, such as 2 resulting from a power failure, the neighbors 3 connected to the disconnected computer recognize the 4 disconnection when each attempts to send its next 5 message to the now disconnected computer." So in 6 this case, they never got news of this 7 disconnection. It was unplanned. Hence, they only 8 discover it later when they tried to send this 9 message to that computer. It's like, Bob, where'd 10 you go? Bob, hello. And there's -- say in this 11 example, there would be no reply.</p> <p>12 BY MR. LIN:</p> <p>13 Q So it seems to me -- strike that.</p> <p>14 Did you -- did you fully consider the concept 15 of planned disconnections when rendering your 16 opinion about unplanned disconnections?</p> <p>17 MR. LEE: Objection. Form.</p> <p>18 THE WITNESS: As I mentioned at the beginning 19 today, I read the entire patent, in fact, multiple 20 times. Hence, I read this discussion about leaving 21 in a planned manner, understood what that was 22 discussing. But since the claims that deal with the 23 planned departure of a node were not a part of this 24 proceedings, I didn't include opinions about that or 25 analysis about that because what mattered for this</p>
<p style="text-align: right;">Page 99</p> <p>1 sentence. "The disconnect message includes a list 2 that identifies the four neighbors of the 3 disconnecting computer. When a neighbor receives 4 the disconnect message, it tries to connect to one 5 of the computers on the list." 6 BY MR. LIN:</p> <p>7 Q Why is there -- why is there a disconnect 8 message in a planned manner but not in an unplanned 9 manner?</p> <p>10 MR. LEE: Objection. Form.</p> <p>11 THE WITNESS: So in the -- in the case of a 12 disconnection, as the patent describes it, that can 13 either happen in a planned manner, in an unplanned 14 manner. So in a planned manner, the node that is 15 leaving the broadcast channel is deliberately 16 leaving saying bye, guys, I've got to go eat dinner. 17 You know, whatever. So it tells its neighbors I'm 18 leaving with this disconnect message. It sends a 19 message to inform them positively that the computer 20 that's leaving the network is leaving and that's -- 21 you know, has all this -- you know, benefits and 22 functionality that has been described here in this 23 paragraph that we're in now.</p> <p>24 If we go to the next paragraph it says, "When 25 a" -- which is here at line 27, "When a computer</p>	<p style="text-align: right;">Page 101</p> <p>1 IPR is what happens in the unplanned case.</p> <p>2 BY MR. LIN:</p> <p>3 Q So for claim 6 is it your opinion that only 4 the section starting in column 9, line 26 and 5 following that until the end, that's what matters to 6 claim 6 -- to interpreting claim 6?</p> <p>7 A That's particularly relevant to claim 6, that 8 paragraph. There's some relevance of the previous 9 paragraph because that's illustrating what is now 10 missing, an example of something that's now missing, 11 and you can't rely on when you're not talking about 12 how to do the disconnection in the unplanned manner.</p> <p>13 Q Okay. So does this method of sending the 14 disconnect message in lines 1 through -- I don't 15 know, 26. Sorry. Let me try again.</p> <p>16 Do the lines from lines 1 through, let's say, 17 11, does that guaranty that a -- the netwo- -- 18 network will recover to m-regular in a planned 19 disconnection?</p> <p>20 MR. LEE: Objection. Form.</p> <p>21 THE WITNESS: So it wasn't a part of the 22 analysis I did for my declaration to talk about the 23 planned disconnection and how you recover from the 24 planned disconnection. But I did read these 25 passages. They talk about this planned</p>

<p style="text-align: right;">Page 102</p> <p>1 disconnection and what to do to get back to this 2 state of being m-regular for some m. But this is 3 not the only place because we pick up again in 4 column 9 that -- further down in line 52 -- further 5 discussions about what to do, how to recover in a 6 planned or unplanned disconnection in certain cases. 7 So a person of ordinary skill in the art 8 wouldn't just look at that one little paragraph at 9 the top of column 9, but would look to this entire 10 discussion here in the '147 patent beginning in 11 column 8 and then going on. And then there's other 12 passages that kind of revisit the same thing later. 13 BY MR. LIN: 14 Q Okay. Well, let me -- let me -- let me help 15 you out and direct you to column -- column 9, lines 16 12. 17 A Okay. 18 Q 12 to 14 -- 12 through 14. It says, "If 19 connections cannot be established, each computer 20 broadcasts a message that needs to establish a 21 connection with another computer," correct? 22 A I see that. 23 Q So is it correct that even in the planned 24 disconnection, sometimes connections cannot be 25 established?</p>	<p style="text-align: right;">Page 104</p> <p>1 somehow they receive a busy signal because of a 2 firewall or -- or something. 3 Can you follow my hypothetical with me so 4 far? 5 A Now I'm getting confused, but go ahead with 6 it. It's fine. 7 Q Okay. Well, let's just say for some reason A 8 and I -- let me try one more time. 9 So in Figure 5A, node H is leaving. Good-bye 10 everyone, I'm leaving, here's a list of my 11 neighbors -- 12 A I believe that's true. 13 Q -- A, E, I, F. 14 A I believe that's true. So I think -- just to 15 be sure, let me just check. 16 Q Okay. 17 A There's a description of 5A, I think, in the 18 text. 19 Q Okay. 20 A Yes. So here I think that's a fair 21 characterization because when we go to column 9 and 22 begin at column -- at line 19 it says (as read), 23 "Figure 5 illustrates the disconnecting of a 24 computer from the broadcast channel in a planned 25 manner. When computer H decides to disconnect, it</p>
<p style="text-align: right;">Page 103</p> <p>1 A Oh, I think the confusion here is whether or 2 not they can be established immediately with respect 3 to this planned disconnection. So, for example, if 4 we go back to this figure, Figure -- let's say 5A, 5 this is now, again, illustrating the planned 6 disconnection. So let's see, 5 -- no, 5A is not a 7 great example of this. 8 Yeah. So 5 -- if 5A is showing the -- the 9 good case. So in 5A what happens, H tells each of 10 its neighbors, A and I, F and E, that it wants to 11 disconnect and tells each of them, hey, I'm 12 connected to A, I, F and E. And then in this 13 example we have the dashed lines being shown between 14 A and I and E and F to indicate that now A and I are 15 going to connect up and E and F are going to connect 16 up. But that might not always be possible 17 immediately. 18 For example, if E and F were already 19 connected up in this example, then even in this 20 planned case E and F can't just connect up 21 immediately because they're already connected. 22 Q Correct. So let's say for example A and I 23 try to talk to one another and E and F try to talk 24 to one another in the hypothetical you just posed or 25 the description of the -- what's happening -- but</p>	<p style="text-align: right;">Page 105</p> <p>1 sends its list of neighbors to each of its neighbors 2 (computers A, E, F and I) and then disconnects from 3 each of its neighbors. When computers A and I 4 receive the message they establish a connection 5 between them as indicated by the dashed line, and 6 similarly for computers E and F." 7 Q And so there's no reason that A is going to 8 immediately connect to I and E is immediately going 9 to connect to F, right? It's -- they're going to 10 try -- I don't know how, but they're going to try 11 some way to connect to one another, A, I, E and F, 12 correct? 13 MR. LEE: Objection. Form. 14 THE WITNESS: That's the part I'm confused by 15 in your question, is that here in the explanation it 16 was precisely because of the fact that H is leaving 17 in the planned way and he's informing them that I'm 18 connected to A, E, F and I that they -- and he sends 19 that message, this disconnect message, which in this 20 example included that list, to each of those nodes 21 to which he is currently connected. And so they 22 immediately know A should connect to I, and A and I 23 know they're already not connected because they can 24 just look at their connections. And similarly, E 25 and F can know that they need to connect up and so</p>

<p style="text-align: right;">Page 106</p> <p>1 they just connect up. That's definitely plausible</p> <p>2 in this hypothetical.</p> <p>3 BY MR. LIN:</p> <p>4 Q So I'm going to have -- I know you're the</p> <p>5 professor, but I'm going to have to disagree with</p> <p>6 you slightly here because I don't know how A knows</p> <p>7 that it needs to connect to I and I needs to connect</p> <p>8 to A. I mean, easily, doesn't it seem that I could</p> <p>9 connect, try to connect to F when H is leaving?</p> <p>10 MR. LEE: Objection. Form.</p> <p>11 THE WITNESS: Oh, yeah. So that's -- a</p> <p>12 person of ordinary skill in the art hearing -- or</p> <p>13 reading this, what I just read in column 9, would</p> <p>14 understand in this example how that would work. So</p> <p>15 in particular in this example, that would -- what</p> <p>16 you're anticipating would absolutely not be</p> <p>17 necessary because H is sending this list in this</p> <p>18 order, A, E, F, I, and he sends it to each of A, E,</p> <p>19 F and I. That's what it says here in the plain</p> <p>20 language. So each of us, if we're A, E, F and I,</p> <p>21 gets this list that says A, E, F, I in that list.</p> <p>22 And so A could look at that and say I'm already</p> <p>23 connected to E and F, I don't need to contact them,</p> <p>24 obviously. My only possibility to connect up to fix</p> <p>25 this is to connect to I. Similarly, when --</p>	<p style="text-align: right;">Page 108</p> <p>1 for computers E and F." And the message itself</p> <p>2 could be given in a certain order so that the</p> <p>3 computers know what order should we try to -- you</p> <p>4 know, what are the preferred pairings. We need, if</p> <p>5 possible, to pair up two pairs of us with new</p> <p>6 connections. And that could be implicit in the</p> <p>7 message that is being set and how the order is being</p> <p>8 the -- the li -- how the list is ordered.</p> <p>9 For example, that is yet another way you</p> <p>10 could do it without sending any more messages,</p> <p>11 except perhaps even this would not be necessary,</p> <p>12 some kind of confirmation where E says to I, hey,</p> <p>13 we're connected and E and F says, hey, we're</p> <p>14 connected. But that might not be needed. You could</p> <p>15 just -- everybody could just know that's what's</p> <p>16 happening now, so that's allowed here in this</p> <p>17 discussion.</p> <p>18 Q So I understand that H could be programmed to</p> <p>19 somehow tell a preferred set of connections between</p> <p>20 A and I and E and F, but I also think that the</p> <p>21 disconnect message can just not include any</p> <p>22 preferred orderings.</p> <p>23 Is that your understanding too?</p> <p>24 MR. LEE: Objection. Form.</p> <p>25 THE WITNESS: In this context I'm not</p>
<p style="text-align: right;">Page 107</p> <p>1 BY MR. LIN:</p> <p>2 Q Can I -- I'm sorry to interrupt.</p> <p>3 A Yeah.</p> <p>4 Q Because there's so much stuff going on here,</p> <p>5 I think it helps to take this one step at a time.</p> <p>6 So I agree with you that once A gets the list of A,</p> <p>7 I, E and F, A will know that it is connected to E</p> <p>8 and F and will say the only person I can try is I.</p> <p>9 I agree with you there. However, when I receives</p> <p>10 the list of A, E, F and I, I says, well, I can</p> <p>11 connect to A or F, so either one seems plausible to</p> <p>12 me. I can -- I could try to connect to F while A is</p> <p>13 trying to connect to A.</p> <p>14 Is that plausible?</p> <p>15 MR. LEE: Objection. Form.</p> <p>16 THE WITNESS: I'm trying to work through this</p> <p>17 hypothetical.</p> <p>18 BY MR. LIN:</p> <p>19 Q I know it's multiple steps, so --</p> <p>20 A Right. So the way that it's written here in</p> <p>21 column 9, the way that it's described, doesn't</p> <p>22 include any of that other stuff that you just said.</p> <p>23 It just said that "when computers A and I receive</p> <p>24 the message they establish a connection between</p> <p>25 them...indicated by the dashed line, and similarly</p>	<p style="text-align: right;">Page 109</p> <p>1 understanding the question. Before, I thought the</p> <p>2 question was is it required that people send other</p> <p>3 messages to establish these connections. The answer</p> <p>4 is no. And I gave an example where that would not</p> <p>5 be necessary.</p> <p>6 BY MR. LIN:</p> <p>7 Q Correct. I agree with you there.</p> <p>8 A And so if you're asking now are there other</p> <p>9 scenarios where you might have to do more messages</p> <p>10 after H leaves in a planned manner, that answer is</p> <p>11 also yes.</p> <p>12 Q Yes.</p> <p>13 A As I highlighted in the column 9, this whole</p> <p>14 discussion -- it's a long discussion that begins at</p> <p>15 line 52 that says, "It is possible that a planned or</p> <p>16 unplanned disconnection may result in two</p> <p>17 neighbors... having an empty internal port. In such</p> <p>18 a case, since they are neighbors, they are already</p> <p>19 connected and cannot fill their empty ports by</p> <p>20 connecting to each other." So that's that -- it's</p> <p>21 not shown here in the Figure 5A, but that's a</p> <p>22 scenario that totally could happen, where you</p> <p>23 disconnect on purpose in a planned way, but the end</p> <p>24 points don't immediately know how to connect up</p> <p>25 again.</p>

<p style="text-align: right;">Page 110</p> <p>1 Q I think we're on the same page, Dr. Goodrich. 2 Let me try one more time to just make sure that it's 3 straightforward. Starting on column 9, Figure (sic) 4 6, it says, "In one embodiment, the first computer 5 in the list will try to connect to the second 6 computer in the list." 7 A Where are you at now? 8 Q I'm sorry, column 9, line 5 -- line 6. 9 A There you go. Yep. 10 Q "In one embodiment, the first computer in the 11 list will try to connect to the second computer in 12 the list, and the third computer in the list will 13 try to connect to the fourth computer in the list." 14 A Right. That's what I was talking about. 15 Q Correct? "If a computer cannot correct (sic) 16 (e.g., the first and second computers are already 17 connected), then the computers may try connecting in 18 various other combinations." 19 A Uh-huh. 20 Q Correct? Agreed? 21 A Yes. 22 Q "If connections cannot be established, each 23 computer broadcasts a message that it needs to 24 establish a connection with another computer," 25 correct?</p>	<p style="text-align: right;">Page 112</p> <p>1 relate to the paragraph column 9, 26 to 51? 2 A No. 3 Q Okay. 4 A No. I'm saying that that reference to the 5 discussion here that is in column 9 in -- from lines 6 9 to 12, is a forward reference to the discussion 7 that occurs in column 9 beginning in row 52. 8 Q I agree with you. Okay. Thank you. So -- 9 so is that this message that they're talking about, 10 "If connections cannot be established, each computer 11 broadcasts a message that needs to establish a 12 connection with another computer." Do you know what 13 message that is? 14 When it says "a message," do you know what 15 message it's referring to? 16 A So if we skip down now to line 52 -- 17 Q Uh-huh. 18 A -- it says, "It is possible that a planned or 19 unplanned disconnection may result in two neighbors 20 each having an empty internal port." 21 Q Okay. 22 A "In such a case, since they are neighbors, 23 they are already connected and cannot fill their 24 empty port by connecting to each other. Such a 25 condition is referred to as the 'neighbors with</p>
<p style="text-align: right;">Page 111</p> <p>1 A Yes. That's what it says. 2 Q So even in a planned disconnection, it seems 3 that connections may not form in the section that I 4 just read, correct? 5 MR. LEE: Objection. Form. 6 THE WITNESS: So I'm not -- I'm not maybe 7 fully following your -- your question. If your 8 question is -- we have this discussion here in this 9 paragraph of what to do most of the time in a 10 planned disconnection. 11 BY MR. LIN: 12 Q And, "this paragraph," you're talking about 13 column 9, 1 through 26? 14 A That's correct. Then the next paragraph, 15 which goes from 27 to 51, talks about a scenario 16 in the unplanned -- you know, introducing a scenario 17 that occurs in the unplanned manner. And then we 18 pick up at column -- at line -- in column 9 at 19 line 52 with a scenario that can occur in either the 20 plan or the unplanned and talks about how to fix 21 that. So the discussion does not end at line 12. 22 It kind of then skips over the next paragraph and 23 then picks up again at line 52 even in the planned 24 disconnection case. 25 Q So it's your opinion that lines 11 through 12</p>	<p style="text-align: right;">Page 113</p> <p>1 empty ports' connection (sic). Each neighbor 2 broadcasts a port connection request when it detects 3 that it has an empty port as described above." So 4 this message you're referring to as being broadcast 5 is this thing that's called a port connection 6 request here in this example of an embodiment. 7 Q Is that the same as a connection port search 8 message in claim 6? 9 A It's an embodiment of this thing that's 10 called, in claim 6, a connection search port 11 message -- connection port search message. 12 Q Okay. One embodiment? 13 A Yes. 14 Q Okay. All right. Let's move to column 9, 15 line 27. 16 A I'm there. 17 Q "When a computer disconnects in an unplanned 18 manner, such as resulting from a power failure, the 19 neighbors connected to the disconnected computer 20 recognize the disconnection when each attempts to 21 send its next message to the now disconnected 22 computer." 23 What does it mean there when it says, "each 24 attempts"? 25 A I think it means exactly what it says, that</p>

<p style="text-align: right;">Page 114</p> <p>1 each attempts to send its next message and that's</p> <p>2 when it discovers it's not connected anymore to that</p> <p>3 disconnected computer.</p> <p>4 Q When you look at claim 6, does claim 6</p> <p>5 require each computer to perform this task to send</p> <p>6 its next message?</p> <p>7 A No.</p> <p>8 Q Why?</p> <p>9 A Because of the language of the claim. If we</p> <p>10 go to claim 6 -- now we're skipping to the third</p> <p>11 step. It says, "having a third computer" -- well,</p> <p>12 no, let's go to the second step first.</p> <p>13 "...when the attempt to send the message is</p> <p>14 unsuccessful, broadcasting from the first computer a</p> <p>15 connection port search message indicating that the</p> <p>16 first computer needs a connection." So this is that</p> <p>17 broadcasting of that type of a message.</p> <p>18 Q Uh-huh.</p> <p>19 A Then we go to the next step and it says,</p> <p>20 "...having a third computer not already connected to</p> <p>21 said first computer respond to said connected port</p> <p>22 search message in a manner as to maintain an</p> <p>23 m-regular graph." So what we see from here is that</p> <p>24 a person of ordinary skill in the art reading this</p> <p>25 would understand that the message that's coming from</p>	<p style="text-align: right;">Page 116</p> <p>1 Q And it says, "Each former neighbor of the</p> <p>2 disconnected computer recognizes that it is short</p> <p>3 one connection (i.e., it has a hole or empty port)."</p> <p>4 What does that mean?</p> <p>5 A Oh, so what this is referring to is this --</p> <p>6 referring back now in the patent to this discussion</p> <p>7 giving an example of when M is 4 where each computer</p> <p>8 would have four internal ports that are connected to</p> <p>9 the other computers in the broadcast channel and one</p> <p>10 external port, for example, that could do other</p> <p>11 administrative tasks. So now here it's saying that</p> <p>12 when this unplanned disconnection happened, then one</p> <p>13 of its four internal ports is now empty or has a</p> <p>14 hole, is the metaphor they're using, that it's short</p> <p>15 a connection.</p> <p>16 You want to be maintaining, in this example,</p> <p>17 four neighbors. You've only got three. Now you're</p> <p>18 short one. You have an empty port or a hole, is the</p> <p>19 way it's talking about here.</p> <p>20 Q Okay. In your -- I'm sorry to jump around.</p> <p>21 But in paragraph 47 on page 24 of your</p> <p>22 declaration --</p> <p>23 THE REPORTER: I'm sorry, can you repeat that</p> <p>24 paragraph.</p> <p>25 MR. LIN: Paragraph 47.</p>
<p style="text-align: right;">Page 115</p> <p>1 the third computer has to be a message that will</p> <p>2 ultimately lead to an m-regular graph, that this is</p> <p>3 a process that will lead to that. But it did not</p> <p>4 say, for example, here, so as to result in an</p> <p>5 m-regular graph.</p> <p>6 Instead, "so as to maintain an m-regular</p> <p>7 graph." So it -- and, indeed, when we talk -- when</p> <p>8 we go back and look at the text we just read, each</p> <p>9 of these neighbors would -- could potentially have</p> <p>10 to do the steps in order to ultimately get to an</p> <p>11 m-regular graph. Which is why when I was reading</p> <p>12 earlier from column 8 it says that -- it's referring</p> <p>13 to "When the broadcast channel is in a steady state</p> <p>14 (i.e., no computers connecting or disconnecting from</p> <p>15 the broadcast channel)." And elsewhere it talks</p> <p>16 about how the broadcast channel would be m-regular</p> <p>17 in a steady state.</p> <p>18 Q You see that the next sentence that says,</p> <p>19 "Each former neighbor of the disconnected computer</p> <p>20 recognizes that it is short one connection (i.e., it</p> <p>21 has a hole or an empty port)," correct? I'm sorry,</p> <p>22 let me --</p> <p>23 A What line were you on again?</p> <p>24 Q Column 9, line 31 to 33.</p> <p>25 A Yes, I see that.</p>	<p style="text-align: right;">Page 117</p> <p>1 THE WITNESS: I'm at paragraph 47.</p> <p>2 BY MR. LIN:</p> <p>3 Q Yes.</p> <p>4 A That's correct.</p> <p>5 Q Yes. It's your construction of "healing a</p> <p>6 disconnection of a first computer from a second</p> <p>7 computer."</p> <p>8 A Yes, I see that.</p> <p>9 Q Does "involuntarily been disconnected," does</p> <p>10 that mean the same thing as unplanned manner?</p> <p>11 A Yes.</p> <p>12 Q Why? Actually, I'm sorry, let me -- let me</p> <p>13 try it this way.</p> <p>14 A Okay.</p> <p>15 Q If I'm playing a game and my wife comes by</p> <p>16 and yanks the power cord out of the socket, I'm</p> <p>17 disconnected. It was voluntary on her part, it was</p> <p>18 planned on her part.</p> <p>19 Does that constitute an involuntary</p> <p>20 disconnection?</p> <p>21 A Yes.</p> <p>22 MR. LEE: Objection. Form.</p> <p>23 THE WITNESS: Yes, absolutely. In fact, it's</p> <p>24 anticipated here in column 9, line 27. "When a</p> <p>25 computer disconnects in an unplanned manner, such as</p>

<p style="text-align: right;">Page 118</p> <p>1 resulting from a power failure." You just gave me</p> <p>2 an example where your computer just had a power</p> <p>3 failure, and that's an unplanned disconnection from</p> <p>4 the perspective of the computer.</p> <p>5 BY MR. LIN:</p> <p>6 Q Okay. So the voluntary or unplanned has to</p> <p>7 be from a particular perspective, correct?</p> <p>8 MR. LEE: Objection. Form.</p> <p>9 THE WITNESS: I'm using this word</p> <p>10 "involuntary" to refer to this aspect to contrast it</p> <p>11 from the disconnection in a planned manner where the</p> <p>12 computer disconnecting is doing this deliberately</p> <p>13 and in a way that has -- sending messages to correct</p> <p>14 its planned disconnection. So this involuntary</p> <p>15 aspect is -- is referring to the fact that you don't</p> <p>16 have that -- components that you have with the other</p> <p>17 claims like claims 1 through 5.</p> <p>18 BY MR. LIN:</p> <p>19 Q So when you say involuntarily been</p> <p>20 disconnected, what you mean is to be coextensive</p> <p>21 with whether a computer disconnects in an unplanned</p> <p>22 manner; is that correct?</p> <p>23 A I'm not sure what you mean by "coextensive."</p> <p>24 Q You mean the same thing.</p> <p>25 A I think it -- I thought it meant the same</p>	<p style="text-align: right;">Page 120</p> <p>1 A I'm there.</p> <p>2 Q I believe it's referring to Figure 5B.</p> <p>3 A That's correct.</p> <p>4 Q I guess the full cite would be from lines 43</p> <p>5 to 51 in column 9.</p> <p>6 A 42, but who's quibbling.</p> <p>7 Q Okay. Can you explain to me how do computers</p> <p>8 A, I, E and F know who to connect to?</p> <p>9 A Yes.</p> <p>10 Q Could you, please.</p> <p>11 A Sure. So this is this lead-in to what's now</p> <p>12 occurring when we begin in 52. So in this scenario,</p> <p>13 H has been disconnected in an unplanned way. Each</p> <p>14 of his neighbors, A, E, F and I, recognize the</p> <p>15 disconnections. Again, they did that because they</p> <p>16 tried to send H a message and it was unsuccessful,</p> <p>17 so they recognize, ooh, we're not connected to H</p> <p>18 anymore. So each neighbor broadcasts a port</p> <p>19 connection request indicating that it needs to fill</p> <p>20 an empty port. In this example it's doing a</p> <p>21 shortcut discussion, and then it says, "As shown in</p> <p>22 the dashed lines, computers F and I and computers</p> <p>23 E" -- "A and E respond to each other's requests and</p> <p>24 establish a connection."</p> <p>25 Q It's not your opinion, though, that a</p>
<p style="text-align: right;">Page 119</p> <p>1 thing when I said that, that it's referring to the</p> <p>2 disconnection in an unplanned manner. That's why I</p> <p>3 keep saying that over and over again, for example,</p> <p>4 in page 4- -- in paragraph 48.</p> <p>5 Q Okay. Thank you. But it's not entirely</p> <p>6 clear to me that it means the same thing. But now</p> <p>7 that I know that it means the same thing to you, it</p> <p>8 makes the construction -- I understand it. You also</p> <p>9 use the term, I think, "abruptly" to discuss this</p> <p>10 term. I can't seem to find it at the moment.</p> <p>11 Do you recall that?</p> <p>12 MR. LEE: Objection. Form.</p> <p>13 THE WITNESS: Not as I sit here today. I</p> <p>14 don't see that in these paragraphs.</p> <p>15 BY MR. LIN:</p> <p>16 Q We'll get to it. But would you say that</p> <p>17 abruptly does not mean the same thing as an</p> <p>18 unplanned disconnection?</p> <p>19 MR. LEE: Objection. Form.</p> <p>20 BY MR. LIN:</p> <p>21 Q We'll just come across -- we'll deal with it</p> <p>22 when we come across it --</p> <p>23 A Okay.</p> <p>24 Q -- in your declaration. So do you see the</p> <p>25 lines, column 9, 45 to 51?</p>	<p style="text-align: right;">Page 121</p> <p>1 connection port search message needs to contain all</p> <p>2 of these details, is it?</p> <p>3 A I'm not following that question. What do you</p> <p>4 mean "all of these details"?</p> <p>5 Q The details that you just described in how</p> <p>6 these computers connect to one another in an</p> <p>7 unplanned manner.</p> <p>8 MR. LEE: Objection form.</p> <p>9 THE WITNESS: I'm sorry, I'm still not</p> <p>10 following the question. What do you mean by "all of</p> <p>11 these details"? I'm not following with what you're</p> <p>12 including in all of those -- could you, like, recap</p> <p>13 or rephrase?</p> <p>14 BY MR. LIN:</p> <p>15 Q The method of the port connection request.</p> <p>16 A I'm still confused. I'm sorry, I'm not --</p> <p>17 can you start over at the beginning --</p> <p>18 Q Yes.</p> <p>19 A -- and just ask the question. I'm sorry</p> <p>20 about that.</p> <p>21 Q No problem. Let me try to -- earlier we said</p> <p>22 a connection port search message -- I'm sorry,</p> <p>23 strike that.</p> <p>24 Earlier we said, maybe ten minutes ago, that</p> <p>25 a port connection request is one embodiment of a</p>

<p style="text-align: right;">Page 122</p> <p>1 connection port search message. 2 A I believe that's correct. 3 Q Is it the only embodiment of a connection 4 port search message? 5 A As I sit here today, I'm not thinking of 6 another one. But I'm -- that doesn't mean that it's 7 not categorically possible. As I sit here today, I 8 can't think of another possibility. 9 Q I think my question was bad. Let me try one 10 more time. In -- in lines column 9, line 33 to 37, 11 that seems to be describing one type of port 12 connection request; is that correct? 13 A It literally says "port connection request" 14 in the sentence. It says, "When a connected 15 computer detects that one of its neighbors is now 16 disconnected, it broadcasts a port connection 17 request on the broadcast channel, which indicates 18 that it has one internal port that needs 19 connection." 20 Q Is that embodiment different than the one 21 described in lines 45 to 51? 22 A It looks to be the same type of a message 23 because it says, here down at line 45, "When each of 24 its neighbors, computer A, E, F and I, recognizes 25 the disconnection, each neighbor broadcasts a port</p>	<p style="text-align: right;">Page 124</p> <p>1 column 10, line 2, it says, "condition check message 2 to the other neighbor." You can read the full 3 sentence if that will help you. 4 A Okay. Okay. I've read the paragraph up to 5 that point. 6 Q Does a connection port search message have to 7 have a condition check message? 8 A No. 9 Q Is a connection check message another way to 10 execute the port connection request? 11 A I'm not understanding the question. What do 12 you mean by "execute the port connection request"? 13 Q It's a fair question. Let me try to sum up 14 differently -- in column 9, line 52 to -- it looks 15 like column 10, line 65, they're talking about 16 various scenarios that may happen when computers are 17 trying to connect to one another in order to 18 maintain an m-regular graph, correct? 19 MR. LEE: Objection. Form. 20 THE WITNESS: It's this whole discussion that 21 we just highlighted in this area from column 9, 52 22 to 10, 65 and then illustrated with some examples 23 that even come after that is discussing various ways 24 you can then be recovering from and fixing and 25 getting back to being an m-regular network.</p>
<p style="text-align: right;">Page 123</p> <p>1 connection request indicating that it needs to fill 2 an empty port." 3 Q Okay. 4 A Oh, there is a subtle difference here that 5 this is saying that this port connection says -- is 6 indicating it needs to fill an empty port and the 7 other one is identifying a call-in port for the 8 requesting computer. 9 Q So they're different? 10 A I don't know if they're necessarily 11 different. I think it's highlighting different 12 aspects of what can be included in a port connection 13 request. You can be including, for example, the 14 call-in port. Hey, call me back on this port, you 15 know, to tell me how to -- how to -- how to heal. 16 Or the other case it's saying I need to just -- you 17 know, I need to heal. Help me out. 18 Q So they're different ways to fulfill the 19 purpose of the port connection request, correct? 20 A These are different examples of things you 21 can include in the port connection request. 22 Q And is the port connection request limited to 23 it has to have a -- sorry, strike that. 24 I mean, okay. Let me -- let me see if I can 25 ask this a different way. On line 10 -- sorry,</p>	<p style="text-align: right;">Page 125</p> <p>1 BY MR. LIN: 2 Q Agreed. Port connection request in this 3 scenario can be executed in different ways using -- 4 strike that. 5 So a condition check message may be used as a 6 part of the connection port search message to 7 getting back to being an m-regular network, correct? 8 A No. I wouldn't characterize it that way. 9 Q How would you characterize it? 10 A So it's talking about a response because it 11 says here, up at the top of 10 -- actually, starting 12 at the bottom of 9, "To detect this condition in the 13 large regime" -- that's when we have a large-enough 14 number in the nodes in the broadcast channel -- 15 "which would be a problem if not repaired, the first 16 neighbor to receive the port connection request 17 recognizes the condition and sends a condition check 18 message to the other neighbor." So what we see here 19 is that the condition check message is in response 20 to a port connection request. 21 Q Okay. Is that -- is the condition check 22 message in the claim of claim 6 or 1 or 11? Let's 23 just focus on 6, actually. 24 MR. LEE: Objection. Form. 25 THE WITNESS: So we have, in claim 6, this</p>

<p style="text-align: right;">Page 126</p> <p>1 element here at the end "having a third computer not 2 already connected to said first computer respond to 3 said connection port search message in a manner as 4 to maintain an m-regular graph." So here we have an 5 example of an embodiment of something that would be 6 a message that's in response to this port connection 7 request message, and with this further being a 8 message that is going to be leading to maintaining 9 m-regular graph. 10 BY MR. LIN: 11 Q Is this -- is this limitation "having a third 12 computer not already connected to said first 13 computer respond to said connection port search 14 message in a manner as to maintain an m-regular 15 graph," is it limited to the use of a condition 16 check message? 17 A No. 18 Q Okay. Can you go to column 10, lines -- what 19 I -- what I would like you to focus on is 29, which 20 is a "condition double check message." 21 A I see that. 22 Q Can you read the sentence that it contains. 23 A Certainly. 24 Q Please. 25 A In fact, why don't we go up to line 25 at the</p>	<p style="text-align: right;">Page 128</p> <p>1 Q And same question: Is that limitation having 2 a third computer not already connected to said first 3 computer respond to said connection port search 4 message -- does it require a condition repair 5 request? 6 A It requires that it fulfill this claim 7 language, which is you must respond in a manner as 8 to maintain an m-regular graph. These are examples 9 of ways that are responses as to maintain an 10 m-regular graph. There may be others, but certainly 11 we have an embodiment that is described here in the 12 patent. 13 Q Can you -- can you tell me what the -- I 14 guess the commonality is between -- no, you know, 15 never mind. 16 So we've mentioned a disconnect message, a 17 connection port search message, a port connection 18 request, a condition check message, a condition 19 double-check message and a condition repair request, 20 correct? I can repeat it if you need it. 21 A No. I believe that's correct. 22 Q Sorry, it's a lot of messages. Are those 23 messages limited to a particular type of programming 24 language? 25 A Do you have a place in my declaration where I</p>
<p style="text-align: right;">Page 127</p> <p>1 beginning of the paragraph. 2 Q Okay. 3 A "It is possible that two original neighbors 4 with the condition" -- it's referring back to the 5 previous condition -- "may have the same set of 6 neighbors. When the neighbor that receives the 7 condition check message determines that the sets of 8 neighbors are the same, it sends a condition double 9 check message to one of its neighbors other than the 10 neighbor who also has the condition." 11 Q So same question. Is having a third computer 12 not already connected to said first computer respond 13 to said connection port search message in a manner 14 as to maintain an m-regular graph limited to the use 15 of a condition double-check message? 16 A No. Because it could also be a condition 17 check message as we just established. 18 Q Can you also go to column 10, line 58, where 19 it says, "condition repair request." 20 A I'm there. 21 Q Can you read that sentence too. 22 A "When computer D received the condition 23 repair request, it disconnected from one of its 24 neighbors (other than computer E), which is computer 25 G in this example."</p>	<p style="text-align: right;">Page 129</p> <p>1 discuss that? 2 Q No. Well, I guess -- I guess the -- I 3 guess -- I guess what I would refer you to would be 4 your OSI model. But I mean -- 5 A Just sitting here today, I don't see how it 6 depends on a particular programming language. 7 Q Why? 8 A I don't see how the particular programming 9 language you used to implement these steps is 10 relevant, just sitting here today. 11 Q But isn't there a different standard as to 12 how messages are formulated? 13 MR. LEE: Objection. Form. 14 THE WITNESS: I'm not following. I'm sorry. 15 In what context? In what languages? I don't 16 understand your question. 17 BY MR. LIN: 18 Q Let me see if I can ask it in another way. 19 In columns -- in the section that we've just spent 20 the last 30 minutes or so talking about, talks about 21 a variety of different messages. It appears to be 22 your opinion that these messages can be implemented 23 on different types of programming languages; is that 24 correct? 25 A I don't see how the programming language is</p>

<p style="text-align: right;">Page 130</p> <p>1 relevant other than the fact that there has to be 2 some format for these messages in order for it to be 3 understood. And the patent description talks about 4 this issue in column 14. So if we go to column 14 5 beginning on line 20, it talks about the "External 6 Data Representation" and it says, "The computers 7 connected to the broadcast channel may internally 8 store their data in different formats. For example, 9 one computer may use 32-bit integers, and another 10 computer may use 64-bit integers. As another 11 example, one computer may use ASCII," A-S-C-I-I, "to 12 represent text and another computer may use 13 Unicode," U-n-i-c-o-d-e. "To allow communications 14 between heterogeneous computers, the messages sent 15 over the broadcast channel may use the XDR" or 16 "(eXternal Data Representation) format." And then 17 the next paragraph talks about this. 18 But then we still get into this issue that is 19 reflected, again, in claim 6. When we get down to 20 line -- let's see, 52 it says, "In the embodiment 21 described above, each fully connected computer has 22 four internal connections. The broadcast technique 23 can be used with other numbers of internal 24 connections. For example, each computer can have 6, 25 8, or any even number of internal connections. As</p>	<p style="text-align: right;">Page 132</p> <p>1 computers. Some can be 32-bit and 64-bit. The 2 messages they send can be in this standard format, 3 as an example, the eXternal Data Representation or 4 XDR format, but we have to have this property that 5 all these messages that are being sent are being 6 sent in order to maintain this network to be 7 m-regular in the steady state. And it talks about 8 what that means to be in the steady state and what 9 are examples when you're toggling between that 10 steady state and the unsteady state. 11 Q Thank you. Does it matter what type of 12 network? Can these messages be used on any type of 13 network? 14 A So as we talked about earlier today, the 15 claim 6 also had this language at the beginning that 16 talks about that you have to have a broadcast 17 channel where the broadcast channel being m-regular 18 graph where m is at least 3. So when we go back and 19 understand what that is meaning, we have to be 20 talking about a broadcast channel so that the 21 network must satisfy that limitation. And as I 22 opined, beginning in my paragraph 50, that has to be 23 a "logical channel that overlays an underlying 24 point-to-point communications network." 25 Q So can it be executed on top of any</p>
<p style="text-align: right;">Page 131</p> <p>1 the number of internal connections increases, the 2 diameter of the broadcast channel tends to decrease, 3 and thus propagation time for message tends to 4 decrease. The time that it takes to connect a 5 seeking computer to the broadcast channel may, 6 however, increase as the number of internal 7 connections increases. When the number of internal 8 connections is even, then the broadcast channel can 9 be maintained as an m-regular and m-connected (in 10 the steady state)." 11 And again, we refer back to this steady state 12 discussion from column 8 that says when nobody is 13 coming and going. Then it says, "If the number of 14 internal connections is odd, then when the broadcast 15 channel has an odd number of computers connected, 16 one of the computers will have less than an odd 17 number of internal connections. In such a situation 18 the broadcast channel is neither m-regular nor 19 m-connected. When the next computer connects to the 20 broadcast channel it can again become m-regular and 21 m-connected. Thus, with an odd number of internal 22 connections, the broadcast channel toggles between 23 being and not being m-regular and m-connected." 24 So what we see here is, first, in this 25 preferred embodiment we can have heterogenous</p>	<p style="text-align: right;">Page 133</p> <p>1 underlying point-to-point network, these messages? 2 MR. LEE: Objection. Form. 3 THE WITNESS: It has to satisfy this -- this 4 claim language of a logical channel that overlays an 5 underlying point-to-point communication network. 6 BY MR. LIN: 7 Q Does that matter -- 8 A If it satisfies that, it can be a broadcast 9 channel. The problem with the prior art is that 10 none of them satisfied that limitation. 11 Q Can I -- if I -- if I look at columns 9 12 through 10 where it talks about all these different 13 types of messages -- never mind. 14 A Okay. 15 Q You were talking earlier on about m being 16 even in, I think, line column 14, lines 52 to column 17 5 (sic), lines -- line 5. 18 A I think 15, line 5. Yeah. 19 Q 15 line 5. That's what I meant. Can the 20 m-regular network in claim 6, can m be odd -- 21 A Yes. 22 Q -- and still satisfy the claim limitation? 23 A Absolutely. Because what claim 6 says is 24 that m has to be at least 3. 3 is odd, so you 25 would -- could have it be 3 and it would satisfy the</p>

<p style="text-align: right;">Page 134</p> <p>1 claim language.</p> <p>2 Q Even though it says here -- in column 14,</p> <p>3 line 64 it says, "If the number of internal</p> <p>4 connections is odd, then when the broadcast channel</p> <p>5 has an odd number of computers connected, one of the</p> <p>6 computers will have less than that odd number of</p> <p>7 internal connections." Is that --</p> <p>8 A That's accurate.</p> <p>9 Q What does that mean?</p> <p>10 A That means that when m is odd and the number</p> <p>11 of nodes is odd in that graph, that that would not</p> <p>12 be a steady state. That would not be one of those</p> <p>13 instances when it's m-regular.</p> <p>14 Q So would claim 6 apply when the number of</p> <p>15 internal connections is odd and the number of</p> <p>16 computers connected are odd as well?</p> <p>17 A Now, when you say apply, are you refer to</p> <p>18 apply at the beginning, before the disconnection, or</p> <p>19 after the disconnection?</p> <p>20 Q That's a good question. So why don't we --</p> <p>21 why don't we -- let's start over.</p> <p>22 A Okay.</p> <p>23 Q We'll start -- we'll start one at a time.</p> <p>24 MR. LEE: And, Counsel, at some point we were</p> <p>25 good to take that bio break.</p>	<p style="text-align: right;">Page 136</p> <p>1 at the very beginning of the claim, healing a</p> <p>2 disconnection from something. So it's like healing</p> <p>3 a disconnection from the something or where the</p> <p>4 something is that broadcast channel that is an</p> <p>5 m-regular graph.</p> <p>6 BY MR. LIN:</p> <p>7 Q Okay. And then at the end, the last</p> <p>8 paragraph where it says, "having a third computer</p> <p>9 not already connected to said first computer respond</p> <p>10 to said connection port search message in a manner</p> <p>11 as to maintain an m-regular graph."</p> <p>12 A Right.</p> <p>13 Q So is that the -- is m the same at the end as</p> <p>14 in the beginning?</p> <p>15 MR. LEE: Objection. Form.</p> <p>16 BY MR. LIN:</p> <p>17 Q Let me try one more time.</p> <p>18 A There's nothing in the claim language that</p> <p>19 says that.</p> <p>20 Q Let me try one more time. So when you --</p> <p>21 let's say you have a 4-regular graph that you're</p> <p>22 starting with.</p> <p>23 A Okay.</p> <p>24 Q When you end do you have to have a 4-regular</p> <p>25 graph?</p>
<p style="text-align: right;">Page 135</p> <p>1 THE WITNESS: Well, actually we're getting</p> <p>2 close to 12:30, almost lunchtime.</p> <p>3 BY MR. LIN:</p> <p>4 Q Do you --</p> <p>5 A I don't mind going through a few questions.</p> <p>6 I need to use the restroom, too, though.</p> <p>7 Q I really want to ask this question. I really</p> <p>8 need to know the answer to this question. Give me</p> <p>9 five minutes. Is that okay?</p> <p>10 A Five minutes is fine with me.</p> <p>11 Q Okay. Five, ten minutes. Depends on your --</p> <p>12 the length of your answer.</p> <p>13 A Fair enough.</p> <p>14 Q So claim 6 says, "A method for healing a</p> <p>15 disconnection of a first computer from a second</p> <p>16 computer, the computer's being connected to a</p> <p>17 broadcast channel, said broadcast channel being an</p> <p>18 m-regular graph where m is at least 3."</p> <p>19 And then I think if we -- is that referring</p> <p>20 to the broadcast channel before the method is</p> <p>21 performed?</p> <p>22 MR. LEE: Objection. Form.</p> <p>23 THE WITNESS: That's referring to the</p> <p>24 broadcast channel before it has this unplanned</p> <p>25 disconnection of a node because it's talking about,</p>	<p style="text-align: right;">Page 137</p> <p>1 A You have to have -- eventually you have to be</p> <p>2 maintaining an m-regular graph. These responses</p> <p>3 that you are -- you know, getting from the third</p> <p>4 computer have to be in a manner as to maintain an</p> <p>5 m-regular graph. I don't see from the claim</p> <p>6 language how that is -- has to be the same m as the</p> <p>7 m in the beginning, but it has to be something that</p> <p>8 would be leading to an m-regular graph. Because it</p> <p>9 didn't say m for the same m or the m-regular, it</p> <p>10 said "an m-regular" in the claim language.</p> <p>11 Q So it's your opinion that -- so let's say --</p> <p>12 let's say the claim was -- the claim would be the</p> <p>13 same if you said, "A method for healing a</p> <p>14 disconnection of a first computer from the second</p> <p>15 computer, the computers being connected to a</p> <p>16 broadcast channel, said broadcast channel being an</p> <p>17 m-regular graph where m is at least 3" and then at</p> <p>18 the end it said "having a third computer not already</p> <p>19 connected to said first computer respond to said</p> <p>20 connection port search message in a manner as to</p> <p>21 maintain" a regular graph, it would mean the same</p> <p>22 thing?</p> <p>23 A Except that the --</p> <p>24 MR. LEE: Objection. Form.</p> <p>25 THE WITNESS: -- the problem with that</p>

<p style="text-align: right;">Page 138</p> <p>1 definition is that regular could be overused in that</p> <p>2 context. Whereas, here when you say m-regular, the</p> <p>3 patent has been very clear what that means. So that</p> <p>4 would be a confusing term, I think, if you just said</p> <p>5 regular. So I think it's more proper the way it's</p> <p>6 written.</p> <p>7 BY MR. LIN:</p> <p>8 Q What do you mean by "overused"?</p> <p>9 A Like regular could mean anything like regular</p> <p>10 gasoline. So you want to say m-regular to refer to</p> <p>11 the way that the patent keeps saying that word over</p> <p>12 and over and over again.</p> <p>13 Q Okay. I think we can break.</p> <p>14 A Okay.</p> <p>15 THE VIDEOGRAPHER: This is the end of media</p> <p>16 2, we're going off the record at 12:30.</p> <p>17 (Lunch recess.)</p> <p>18 THE VIDEOGRAPHER: This is the beginning of</p> <p>19 he media 3. We're back on the record at 1:25.</p> <p>20 BY MR. LIN:</p> <p>21 Q Good afternoon, Dr. Goodrich.</p> <p>22 A Thanks. You too.</p> <p>23 Q All right. So let's go back to column 9 and</p> <p>24 10.</p> <p>25 A I'm there.</p>	<p style="text-align: right;">Page 140</p> <p>1 5A?</p> <p>2 A So the dashed lines in 5A are showing the</p> <p>3 connections that would form after H leaves and sends</p> <p>4 this message to the nodes A, E, F and I for them to</p> <p>5 then connect with somebody else in order to maintain</p> <p>6 this as a 4-regular graph.</p> <p>7 Q So in Figure 1, m is equal to 4, correct?</p> <p>8 A Yes.</p> <p>9 Q And in Figure 5A, the end result of the plan</p> <p>10 disconnection, m is equal to 4, correct?</p> <p>11 A That is correct.</p> <p>12 Q So we can move to 5B. Figure 5B, what do the</p> <p>13 dotted -- so could you please recap what Figure 5B</p> <p>14 is again.</p> <p>15 A So Figure 5B is illustrating a state in this</p> <p>16 process after this node H has left in an unplanned</p> <p>17 manner.</p> <p>18 Q And then what do the dotted lines show?</p> <p>19 A They actually have different meanings with</p> <p>20 respect to the dot- -- dashed lines. Which one are</p> <p>21 referring to? There's two dashed lines.</p> <p>22 Q I to F.</p> <p>23 A So the I to F. If we go to the description</p> <p>24 of this figure in the text. Yeah. So what this is</p> <p>25 showing is that the computers are responding to</p>
<p style="text-align: right;">Page 139</p> <p>1 Q I think before lunch we agreed that Figure 1</p> <p>2 showed a 4-regular incomplete broadcast channel --</p> <p>3 MR. LEE: Objection. Form.</p> <p>4 BY MR. LIN:</p> <p>5 Q -- correct?</p> <p>6 A Yes, it does.</p> <p>7 Q And Figures 5A and 5B show the -- kind of a</p> <p>8 disconnect and recovery process for a planned</p> <p>9 connection and an unplanned disconnection; is that</p> <p>10 correct?</p> <p>11 MR. LEE: Objection. Form.</p> <p>12 THE WITNESS: So just to recap, Figure 5A is</p> <p>13 showing part of the configuration that happens with</p> <p>14 respect to a planned disconnection, 5B shows part of</p> <p>15 that process with respect to an unplanned</p> <p>16 disconnection.</p> <p>17 BY MR. LIN:</p> <p>18 Q So for Figure A, H is the node that is</p> <p>19 leaving, correct?</p> <p>20 A Yes.</p> <p>21 Q When H leaves, it sends a disconnect message</p> <p>22 to I, A, E and F, correct?</p> <p>23 A According to the preferred embodiment; that</p> <p>24 is correct.</p> <p>25 Q And then what is the dotted lines in Figure</p>	<p style="text-align: right;">Page 141</p> <p>1 these messages. So it says, beginning in line 45 in</p> <p>2 column 9, in reference to the Figure 5B, "When each</p> <p>3 of its neighbors, computers A, E, F and I,</p> <p>4 recognizes the disconnection, each neighbor</p> <p>5 broadcasts a port connection request indicating that</p> <p>6 it needs to fill an empty port. As shown by the</p> <p>7 dashed lines, computers F and I and computers A and</p> <p>8 E respond to other's requests and establish a</p> <p>9 connection."</p> <p>10 Q So what do we have at the end of -- when they</p> <p>11 establish the connection?</p> <p>12 A The problem, though, is in this picture A and</p> <p>13 E are already connected.</p> <p>14 Q Uh-huh. Okay.</p> <p>15 A So F and I, after this picture, will just</p> <p>16 form the connection and they'll be connected. But A</p> <p>17 and E are one of these examples that then gets</p> <p>18 talked about next where two nodes who respond to</p> <p>19 this message are themselves already neighbors. Now</p> <p>20 they've got to do more work in order to ultimately</p> <p>21 become 4-regular again in this example. And then</p> <p>22 that's what's shown in some of these other figures,</p> <p>23 for instance. So, for example, 5C is showing this</p> <p>24 and then it's discussed in more detail in column 10</p> <p>25 beginning at line 43.</p>

<p style="text-align: right;">Page 142</p> <p>1 Q What happens to Figure 5C?</p> <p>2 A 5C is like the next step after what happened</p> <p>3 in 5B. So it's showing that I and F did, indeed,</p> <p>4 get connected but A and E, since they were already</p> <p>5 connected, they have this so-called empty port that</p> <p>6 now needs to get fixed. And then there's a lot of</p> <p>7 details about how to do that.</p> <p>8 Q Let me see how I can phrase this. In columns</p> <p>9 9 and 10 -- 9 -- in columns 9 and 10 of the '147</p> <p>10 patent, m is equal to 4 in the beginning and there</p> <p>11 is a process that discloses a disconnect procedure</p> <p>12 and the result is -- and the result -- the resulting</p> <p>13 m after disconnection process is also 4?</p> <p>14 A That is correct.</p> <p>15 Q Is there any procedure in columns 9 and 10</p> <p>16 that discloses a procedure where m is one number in</p> <p>17 the beginning and at the end the desired result is a</p> <p>18 different m --</p> <p>19 MR. LEE: Objection. Form.</p> <p>20 BY MR. LIN:</p> <p>21 Q -- for anywhere in the patent?</p> <p>22 A Oh, yeah, there is. So this is what is</p> <p>23 referred to, for example, in columns 15, I think, or</p> <p>24 maybe 14. Let me see. No, 15. No. Yeah, wait.</p> <p>25 I'll find it. Just a second. Well, it's already</p>	<p style="text-align: right;">Page 144</p> <p>1 this disconnection process and then we're at</p> <p>2 line 64. It says, "When in the small regime, each</p> <p>3 computer will have less than four neighbors." And</p> <p>4 then "To detect this condition in the large regime,</p> <p>5 which would be a problem if not repaired." And then</p> <p>6 it has all this stuff you have to do.</p> <p>7 So it's already anticipating that after this</p> <p>8 either planned or unplanned disconnection, you might</p> <p>9 drop and not have four neighbors anymore because you</p> <p>10 dropped into the small regime. And then basically</p> <p>11 it's really easy to fix because there's so few</p> <p>12 nodes. You could just fix it amongst yourselves and</p> <p>13 then kind of stop there. And then if you're in the</p> <p>14 large regime, though, you've got some problems and</p> <p>15 you need to fix them. And it's like, well, all this</p> <p>16 detail coming next about how to fix it.</p> <p>17 Q So let's look at Figure 2 of the patent.</p> <p>18 A I'm there.</p> <p>19 Q Let's say node zero wants to leave --</p> <p>20 A Okay.</p> <p>21 Q -- and m is going to change. We'll say m</p> <p>22 changes to 3. How -- how would -- how does -- using</p> <p>23 the patent as a guide, how would we do that?</p> <p>24 MR. LEE: Objection. Form.</p> <p>25 THE WITNESS: I'm sorry if I wasn't clear.</p>
<p style="text-align: right;">Page 143</p> <p>1 here in this column 29, actually, also. There's</p> <p>2 this discussion about when you're in the small</p> <p>3 regime or the large regime and so there's this --</p> <p>4 there's this -- small regime is the case where</p> <p>5 there's not enough nodes for you to have m -- for</p> <p>6 the graph to be m-regular with the desired m.</p> <p>7 Let's say m is 4. If you only have four</p> <p>8 nodes in the graph, you can't be m-regular with m</p> <p>9 equals 4. There's a picture in front of you now</p> <p>10 with Figure 5E showing that example. But then you</p> <p>11 could add more, you know, nodes and it grows into</p> <p>12 this so-called large regime where you can have m</p> <p>13 equals 4 because now you have enough nodes. You can</p> <p>14 be -- either everybody can be connected to four</p> <p>15 other nodes.</p> <p>16 And so going backwards with that you could</p> <p>17 have that same scenario. You could start with</p> <p>18 something that has degree 4 and then end up with</p> <p>19 perhaps something that has smaller degree because</p> <p>20 there's not enough nodes anymore. So you might end</p> <p>21 up with only four nodes at the end of it and then</p> <p>22 what do you do, kind of thing.</p> <p>23 Q It might help if you pointed me to the column</p> <p>24 and line number that you were talking about.</p> <p>25 A Oh, yeah. So column 9 we're talking about</p>	<p style="text-align: right;">Page 145</p> <p>1 For this example, you'd be maintaining m with 4.</p> <p>2 BY MR. LIN:</p> <p>3 Q That's what's that the patent would --</p> <p>4 A That's what the patent is teaching with this</p> <p>5 example. But there's this instance when you go from</p> <p>6 the large regime to the small regime where you could</p> <p>7 still be m-regular, but now it's with a different m.</p> <p>8 That is exemplified in that -- that column I just</p> <p>9 read in column 9. Because you could be in -- you</p> <p>10 know, in one regime, but you're in the -- you go to</p> <p>11 the small regime, you lose somebody, now you're not</p> <p>12 the same m anymore. That could happen when you're</p> <p>13 in the small regime, for example.</p> <p>14 But here in Figure 2 you're strictly in the</p> <p>15 large regime even after you have the planned removal</p> <p>16 of node zero. So you'd still want to maintain m is</p> <p>17 equal to 4. Everybody else has four neighbors, then</p> <p>18 you need to have the guys who are left still before.</p> <p>19 Q I'm still trying to wrap my head around this</p> <p>20 small regime example you're giving me, so give me a</p> <p>21 second.</p> <p>22 A It's there in Figure 5E right in front of</p> <p>23 you. That's the small regime. With m equals 4,</p> <p>24 that would be an example of the small regime.</p> <p>25 Q Okay. You're going to have to walk me</p>

<p style="text-align: right;">Page 146</p> <p>1 through this. So in Figure 5E -- what is 5E?</p> <p>2 A 5E is an example of a -- of a -- I think of a</p> <p>3 broadcast -- as my recollection is, of a broadcast</p> <p>4 channel that's in the small regime. It's not in the</p> <p>5 so-called large regime.</p> <p>6 Q Okay.</p> <p>7 A I can try to find the citation to that in the</p> <p>8 text if you want to.</p> <p>9 Q No. It's okay. What's Figure 5 -- is Figure</p> <p>10 5F relevant to your explanation?</p> <p>11 A Not for this example, no.</p> <p>12 Q So Figure 5E is in the small regime and so</p> <p>13 how can the method of claim 6 be performed and cover</p> <p>14 this where m -- I'm sorry, strike that. Okay.</p> <p>15 So we're starting with Figure 5E. Then what?</p> <p>16 MR. LEE: Objection. Form.</p> <p>17 THE WITNESS: I'm not sure what the question</p> <p>18 is. Then what what?</p> <p>19 BY MR. LIN:</p> <p>20 Q Well, you were telling me it could -- how m</p> <p>21 could change from the small regime to the large</p> <p>22 regime. Are you -- are you saying claim 6 would</p> <p>23 apply during this -- only during this change?</p> <p>24 A Okay. So if your question is how could claim</p> <p>25 6 apply in this scenario where we would be going,</p>	<p style="text-align: right;">Page 148</p> <p>1 that after -- you have a first computer, you have a</p> <p>2 second computer and that's already in the beginning</p> <p>3 part. It says, "A method for healing a</p> <p>4 disconnection of a first computer from a second</p> <p>5 computer."</p> <p>6 Q So in -- in this picture that I've just</p> <p>7 drawn, what is the first computer and what is the</p> <p>8 second computer?</p> <p>9 A That's the trouble. Because when we go a</p> <p>10 little bit further down, we see that the third --</p> <p>11 the last step in this method is "having a third</p> <p>12 computer not already connected to said first</p> <p>13 computer respond" with stuff. And so in this</p> <p>14 example, still, there wouldn't be a third computer</p> <p>15 not already connected to one of the other ones who</p> <p>16 are left.</p> <p>17 So this still is not quite ready to be an</p> <p>18 example of what you could have at the beginning of</p> <p>19 step 6 -- of claim 6 as a hypothetical. Not because</p> <p>20 it's not -- but it is -- it satisfies all the</p> <p>21 beginning part. So if that's your question, can you</p> <p>22 have a graph that satisfies the beginning part and</p> <p>23 look like that? Absolutely. Because we have all of</p> <p>24 those elements. There'd be a first computer, a</p> <p>25 second computer. It's m-regular for m at least 3,</p>
<p style="text-align: right;">Page 147</p> <p>1 for example, from the large regime to the small</p> <p>2 regime. Is that your question?</p> <p>3 Q Yes.</p> <p>4 A Okay. So what could happen is you could</p> <p>5 start out with a graph that is m-regular for say m</p> <p>6 equals 4 like here.</p> <p>7 Q Do we need to add another node here?</p> <p>8 A I think you'd have to add at least one other</p> <p>9 node if we're going to go from 4 to 3 like in this</p> <p>10 example.</p> <p>11 Q Okay. So then we'll call this A, B, C -- C,</p> <p>12 D and we'll call this E?</p> <p>13 A Yeah.</p> <p>14 Q Is that fair? And then is E connected to</p> <p>15 every other node?</p> <p>16 A It would be in the case where m equals 4.</p> <p>17 Q Are we going to assume that m equals 4?</p> <p>18 A For this hypothetical I'm totally willing to</p> <p>19 assume --</p> <p>20 Q Okay.</p> <p>21 A -- m is equal to 4.</p> <p>22 Q So this is what we're starting out with?</p> <p>23 A Not quite. So there's another requirement</p> <p>24 that's in the claim itself -- not in the beginning</p> <p>25 part, but it's in the claim itself -- that requires</p>	<p style="text-align: right;">Page 149</p> <p>1 satisfies the elements of the beginning part.</p> <p>2 Q So -- but it wouldn't satisfy claim 6?</p> <p>3 A The problem is later on you need a third</p> <p>4 computer not already connected to first computer.</p> <p>5 In that example, even after E leaves, I don't see</p> <p>6 how you get to that just sitting here today.</p> <p>7 Q Okay. So is there any instance that you can</p> <p>8 think of in the specification that describes how</p> <p>9 claim 6 can be performed when m starts out at one</p> <p>10 number, performs the first two steps and -- I'm</p> <p>11 sorry, strike that.</p> <p>12 Can you -- is there an example in the</p> <p>13 specification in -- strike that.</p> <p>14 Is there an explicit example in the</p> <p>15 specification that shows that m can start at one</p> <p>16 number and at the end m is a different number?</p> <p>17 A Yeah. That -- that scenario wasn't required</p> <p>18 for my analysis, but just sitting here today I could</p> <p>19 imagine something that would be contemplated by the</p> <p>20 way that the preferred embodiment is described in</p> <p>21 the patent that would result in that.</p> <p>22 Q But is it in the specification?</p> <p>23 A As I sit here today --</p> <p>24 MR. LEE: Objection. Form.</p> <p>25 THE WITNESS: As I sit here today, I'm not</p>

<p style="text-align: right;">Page 150</p> <p>1 recalling if that would actually be a specific 2 example that was given, but it did talk about this 3 scenario where you'd be going from the large regime 4 to the small regime and that that's allowed by the 5 patent specification. 6 BY MR. LIN: 7 Q Okay. My paper's all messed up. Is it 8 possible to have a broadcast channel on one 9 computer? 10 MR. LEE: Objection. Form. 11 THE WITNESS: I don't see how that's 12 possible. It has to -- a broadcast channel has to 13 be a logical channel that overlays an underlying 14 point-to-point communication network. And then with 15 the definition of connected -- or, yeah, connected 16 is having a connection and then connects to be an 17 edge between two application programs connected to a 18 logical broadcast channel that overlays an 19 underlying network. I don't see how it's possible. 20 No, it's not possible to have a broadcast channel 21 with just one node. And it wouldn't make sense, 22 right, because you can already talk to yourself. 23 Why do you need to broadcast anything. 24 BY MR. LIN: 25 Q Can't you have two application programs</p>	<p style="text-align: right;">Page 152</p> <p>1 Q So how many, total, computers are required 2 for claim 6, at least a minimum? 3 MR. LEE: Objection. Form. 4 THE WITNESS: So in addition to just this 5 requirement you get from having a first computer, a 6 second computer and a third computer is your 7 question? 8 BY MR. LIN: 9 Q Correct. 10 A So in order to satisfy this beginning part 11 where it says you have -- you're going to be healing 12 a disconnection from a broadcast channel that's an 13 m-regular graph, where m is at least 3, you have to 14 have enough nodes in that graph so that you have an 15 m-regular graph where m is at least 3 just to 16 satisfy that beginning part. 17 Q Understood. How many more do you need to 18 fulfill the following limitations? 19 A Oh that -- sorry, that depends on m. 20 THE REPORTER: The following what, 21 limitations? 22 MR. LIN: Limitations. 23 THE WITNESS: So that depends on the value of 24 m. Do you have a more specific example you want to 25 give me for a particular m?</p>
<p style="text-align: right;">Page 151</p> <p>1 running on the same computer? 2 A Yes. But they don't need to use a network to 3 communicate. They can just communicate right on the 4 computer. There is no network needed. 5 Q Can you turn to paragraph 90 in your 6 declaration, please. 7 A Sure. And if I may, could I just add one 8 other thing to my answer from the previous and that 9 is in order to be performing claim 6 you need three 10 computers that at least start out on the broadcast 11 channel, the first computer, a second computer and a 12 third computer. That's also just required by claim 13 6. 14 Q That's a good question. Thanks for reminding 15 me. So what is the minimum number of computers you 16 need for -- for claim 6? 17 A You need three minimum. You have to have a 18 first computer, a second computer and a third 19 computer. That's absolutely required just by the 20 claim language. 21 Q But doesn't -- but doesn't it also require 22 however many number of computers in order to have a 23 broadcast channel said broadcast channel being an 24 m-regular graph where m is at least 3? 25 A Yes. Of course.</p>	<p style="text-align: right;">Page 153</p> <p>1 BY MR LIN: 2 Q Let's assume m is 3. 3 A So for m equals 3, in order to satisfy that 4 first part you need to have at least four nodes in 5 order to have everybody connected to three others. 6 Q And then how about being able to fulfill the 7 following limitations because I think, as you 8 mentioned, if m is at least 3 and there's four 9 nodes, then when one of the nodes leaves the last 10 limitation is not fulfilled having a third computer 11 not already connected to said computer respond to 12 said connection search port message in a manner as 13 to maintain an m-regular graph. 14 THE REPORTER: Could you please slow down a 15 little bit. Thank you. 16 THE WITNESS: Right. So with respect to now 17 not just the beginning part but also that other 18 limitation, you also need that -- there to not only 19 have a graph that has m-regular before the 20 disconnection occurs but there needs to be after the 21 disconnection a third computer that's not already 22 connected to the first computer that can respond to 23 this broadcast message on the broadcast channel. So 24 in order for that to occur, again, it depends on 25 what m is in order to tell what is the minimum</p>

<p style="text-align: right;">Page 154</p> <p>1 number of nodes necessary. So if we're continuing 2 with the example of m equals 3, it wasn't required 3 for my analysis. But I think, just sitting here 4 today, you'd need at least six nodes at the 5 beginning. 6 BY MR. LIN: 7 Q Okay. So let me walk through this claim a 8 little bit because there's -- I have a confusion 9 about the temporal nature of claim 6. It says, "A 10 method for healing a disconnection of a first 11 computer from a second computer." 12 So does that mean that a disconnection has 13 already occurred? 14 MR. LEE: Objection. Form. 15 THE WITNESS: So the proper way that a person 16 of ordinary skill in the art would understand this 17 in that full beginning part, the whole part, because 18 it says, "A method for healing a disconnection of a 19 first computer from a second computer, the computers 20 being connected," plural "computers," plural, "being 21 connected to a broadcast channel." Said broadcast 22 channel being an m-regular graph where m is at least 23 3. And then we see from the limitations that follow 24 that it's the second computer that is having this 25 unplanned disconnection. So the temporal nature of</p>	<p style="text-align: right;">Page 156</p> <p>1 is -- is -- is being mentioned as a part of the 2 beginning part, that -- what you called the 3 preamble. So the computers being connected. Again, 4 I said computers, plural, being connected is not 5 referring to a past tense. They were connected to 6 this thing that was an m-regular graph where m is at 7 least 3. Now we need to heal the disconnection from 8 the fact that the second computer is leaving in an 9 unplanned manner. So the temporal language is 10 already there in the beginning part not just that 11 first element of the method. 12 Q So this -- so the -- so claim 6 requires a 13 disconnection to occur? 14 A I don't -- I don't see how it can read on 15 anything else, actually. It says healing a 16 disconnection right at the beginning. 17 Q Would it be possible that claim 6 could occur 18 after the disconnection, a disconnection has already 19 occurred, and then this procedure is invoked? 20 A I thought that is what connect- -- I'm 21 confused now. I thought that -- that is what claim 22 6 is saying, how to heal it after it occurs. 23 Q Let me see if I can explain it in the context 24 of claim 1. 25 A Okay.</p>
<p style="text-align: right;">Page 155</p> <p>1 this is that this discussion at the beginning is 2 applying to the m-regular property before the second 3 computer is disconnected in an unplanned way. 4 BY MR. LIN: 5 Q So the -- so claim 6 requires a 6 disconnection, correct? Sorry, let me -- let me try 7 that again. 8 It seems to me what you're saying is that if 9 you read claim 6, the preamble as a whole, we have 10 an m-regular graph where m is at least 3. Then -- 11 A That's right. 12 Q I apologize. 13 THE REPORTER: Did you say that's right or 14 that's fine? 15 THE WITNESS: That's right. 16 BY MR. LIN: 17 Q Then at this limitation attempting to send a 18 message from the first computer to the second 19 computer, has the disconnection occurred yet from 20 the first computer and the second computer? Has the 21 disconnection occurred already? 22 A It could be coincident with that. So again, 23 going back to that beginning part, it says, "A 24 method for healing a disconnection." So already, 25 even in the beginning part, we see the disconnection</p>	<p style="text-align: right;">Page 157</p> <p>1 Q So in claim 1 it says, "the first 2 computer" -- strike that. 3 It says, "A method of a disconnecting a first 4 computer from a second computer, the first computer 5 and the second computer being connected to a 6 broadcast channel" -- 7 A Right. 8 Q Okay. So we have a broadcast channel such as 9 the one in Figure 1 that exists. -- "said broadcast 10 channel forming an m-regular graph where m is at 11 least 3." Figure 1, m is equal to 4. Then the 12 limitation says, "...when the first computer decides 13 to disconnect from the second computer, the first 14 computer sends a disconnect message to the second 15 computer, said disconnect message including a list 16 of the...first computer." So in -- in claim 1, 17 there is an active step or limitation of 18 disconnecting of the first computer, which is 19 computer H in Figure 5B. Sorry, sorry. Figure -- 20 Figure H and Figure 5A deciding to disconnect from 21 I, A, F and E. 22 MR. LEE: Objection. Form. 23 THE WITNESS: I think that's true. That's -- 24 that's what's being exemplified in Figure 5A. 25 BY MR. LIN:</p>

<p style="text-align: right;">Page 158</p> <p>1 Q And then the second limitation of claim 1</p> <p>2 says, "...when the second computer receives the</p> <p>3 disconnect message, the second computer" -- strike</p> <p>4 that. Let me start over. So there is a</p> <p>5 disconnect -- strike that.</p> <p>6 In Figure 5A, computer H takes an active step</p> <p>7 to disconnect; is that correct?</p> <p>8 MR. LEE: Objection. Form.</p> <p>9 THE WITNESS: I think that sounds right.</p> <p>10 It's a planned disconnection --</p> <p>11 BY MR. LIN:</p> <p>12 Q Okay.</p> <p>13 A -- and it's sending a message in order to</p> <p>14 disconnect as described here in claim 1.</p> <p>15 Q Okay. So in -- in -- in claim 6 is there a</p> <p>16 step -- let me see if I can break this out, kind of</p> <p>17 one by one. Outside of the preamble, is there a</p> <p>18 step of disconnecting?</p> <p>19 MR. LEE: Objection. Form.</p> <p>20 THE WITNESS: I don't see a step of</p> <p>21 disconnecting because it's happened in an unplanned</p> <p>22 manner.</p> <p>23 BY MR. LIN:</p> <p>24 Q Okay. And -- but -- okay. And in -- in --</p> <p>25 in claim 6 do you see a step for disconnecting from</p>	<p style="text-align: right;">Page 160</p> <p>1 BY MR. LIN:</p> <p>2 Q -- in the preamble? I'm sorry, let me try</p> <p>3 again, Dr. Goodrich.</p> <p>4 A Yeah.</p> <p>5 Q So your construction is connecting a first</p> <p>6 computer to another computer in order to maintain an</p> <p>7 m-regular network after -- after the second computer</p> <p>8 has been in involun- -- has involuntarily been</p> <p>9 disconnected?</p> <p>10 A That's correct.</p> <p>11 Q So is this phrase "after the second computer</p> <p>12 has involuntarily been disconnected," is that a</p> <p>13 limita- -- is that a requirement of the claim?</p> <p>14 A Yes, absolutely, as we've just been</p> <p>15 discussing, that the plain -- under the BRI standard</p> <p>16 definition of what is healing a disconnection of a</p> <p>17 first computer from a second computer. And when I</p> <p>18 read the decision from the PTAB to institute these</p> <p>19 proceedings, my interpretation of what they were</p> <p>20 saying is that claim 6 applies to this unplanned</p> <p>21 disconnection where something has been</p> <p>22 involuntar- -- a computer has been -- involuntarily</p> <p>23 been disconnected. Now we need to heal it.</p> <p>24 And so to make that language precise is why</p> <p>25 I'm giving this claim construction so there's no</p>
<p style="text-align: right;">Page 159</p> <p>1 the broadcast channel?</p> <p>2 A To have the step of disconnecting, the way</p> <p>3 that's talked about in claim 1, would be a planned</p> <p>4 disconnection. Instead, claim 6 is all about</p> <p>5 healing a disconnection of a first computer from a</p> <p>6 second computer. So it's healing something that's</p> <p>7 already happened and then the rest of that beginning</p> <p>8 part says those "computers," plural, "being</p> <p>9 connected," in the past, "to an m-regular graph.</p> <p>10 Q So --</p> <p>11 A And so that's perhaps one of the reasons why</p> <p>12 I thought it was necessary to give a claim</p> <p>13 construction for that phrase "healing a</p> <p>14 disconnection of a first computer from a second</p> <p>15 computer." And according to the standard of a</p> <p>16 broadest reasonable interpretation in light of the</p> <p>17 patent specification, the proper way to understand</p> <p>18 that phrase is connecting a first computer to</p> <p>19 another computer in order to maintain m-regular</p> <p>20 network after the second computer has involuntarily</p> <p>21 been disconnected -- been disconnected.</p> <p>22 Q So you say -- so it is a limitation under</p> <p>23 your construction that the second computer is</p> <p>24 disconnected --</p> <p>25 MR. LEE: Objection. Form.</p>	<p style="text-align: right;">Page 161</p> <p>1 more confusion. That it's absolutely clear that the</p> <p>2 disconnection has occurred, it's been disconnected.</p> <p>3 But before that happened you had an m-regular graph</p> <p>4 with m at least 3. Now, afterwards you're trying to</p> <p>5 do a connection in order to maintain something to be</p> <p>6 an m-regular graph.</p> <p>7 Q I have a thought process that I would like to</p> <p>8 walk you through. Claim 6, you say, is un- -- is</p> <p>9 related to unplanned disconnections; is that</p> <p>10 correct?</p> <p>11 A Yes. The -- I thought the PTAB agreed with</p> <p>12 that. I mean that's, I thought, why we're here</p> <p>13 today.</p> <p>14 Q Is it possible, even if it relates to</p> <p>15 unplanned disconnections, can it also relate to</p> <p>16 other types of disconnections?</p> <p>17 MR. LEE: Objection. Form.</p> <p>18 THE WITNESS: Just sitting here today, I</p> <p>19 don't see how that would make sense when you're</p> <p>20 talking about healing a disconnection. I don't see</p> <p>21 that.</p> <p>22 BY MR. LIN:</p> <p>23 Q What is the basis for your opinion that</p> <p>24 the -- healing a disconnection means -- is related</p> <p>25 to an involuntary disconnection?</p>

<p style="text-align: right;">Page 162</p> <p>1 A I provide this discussion in my paragraph 48 2 of my declaration -- it's just -- with some examples 3 citations, but also applying my reading of the 4 entire patent. These are simply meant to be 5 exemplary, here, in paragraph 48. 6 Q What's the -- what's the evidence that you 7 cite in paragraph 48? 8 A I cite a number of evidences, first from -- 9 in the -- from the '147 patent description itself, 10 column 2, 49 to 63, then column 8, line 66 to column 11 9; line 51, Figures 5A and 5B. Also I cite to 12 line -- column 9 from 27 to 51 and I also cite to 13 the file history for the '15 -- '47 patent where it 14 states (as read), "Claims [6 to 10] relate to the 15 situation where a computer is involuntarily 16 disconnected" -- this is the reason why I used that 17 word -- "from the M-regular graph computer network. 18 Claim [6] has been amended to indicate...the healing 19 process of a computer network as performed in a way 20 such as to maintain the M-Regular graph nature of 21 the computer network," and then I cite to the file 22 history there. So this is why I chose these words 23 the way I did fully supported from the specification 24 and the file history. 25 Q And so does -- what does the phrase "relate</p>	<p style="text-align: right;">Page 164</p> <p>1 Q So even if you were to say this term relates 2 to one meaning, does it exclude -- does that mean 3 other meanings are excluded? 4 MR. LEE: Objection. Form. 5 THE WITNESS: It might. You have to 6 understand from the context. Are we talking, for 7 example, about the saw that you use with your eyes 8 or that you use with a power tool? 9 BY MR. LIN: 10 Q Okay. 11 A But here it's clear what it relates to, is 12 claim 6 through 10 are relating only to this concept 13 of an involuntary disconnection. Can I see the -- 14 the decision to institute from the PTAB because I -- 15 I have this recollection that that's what they said 16 in their decision -- 17 Q I don't -- 18 A -- also. 19 Q I didn't print that one out. I'm sorry. 20 A Okay. 21 Q Can we move to paragraph 90 of your 22 declaration. 23 A Certainly. I'm there. 24 Q I think we talked about this on -- on 25 Wednesday and to make sure that I recap correctly,</p>
<p style="text-align: right;">Page 163</p> <p>1 to" mean to you? 2 MR. LEE: Objection. Form. 3 THE WITNESS: So when I read that in the file 4 history, I just used the plain meaning of those 5 words from that -- from that phrase, that claim 6 6 relates to that situation where you have an 7 involuntary disconnection. 8 BY MR. LIN: 9 Q Can something relate to one thing and also 10 relate to something else? 11 MR. LEE: Objection. Form. 12 THE WITNESS: I'm sorry, I don't understand 13 that question in this context. 14 BY MR. LIN: 15 Q Can a -- generally speaking, can a concept 16 relate to more -- strike that. 17 Can a term relate to multiple concepts? 18 MR. LEE: Objection. Form. 19 THE WITNESS: I'm really confused. So if 20 you're asking can a word have multiple meanings? 21 Again, just talking in general and outside the scope 22 of my declaration and the patent, the answer is yes. 23 Dictionaries commonly have multiple definitions for 24 the same spelling of a word. 25 BY MR. LIN:</p>	<p style="text-align: right;">Page 165</p> <p>1 Dr. Bims -- his report related to the nexus between 2 secondary considerations and whatever he was 3 discussing -- strike that. 4 Dr. Bims -- his report on secondary 5 considerations, that report focused on nexus; is 6 that correct? 7 MR. LEE: Objection. Form. 8 THE WITNESS: What do you mean by "nexus" 9 here, because nexus, I thought, has a reference to 10 something. 11 BY MR. LIN: 12 Q Okay. Let me try -- let me start over. 13 A Okay. 14 Q To show secondary considerations of 15 nonobviousness, you have to show that there are 16 multiple factors such as praise, as you mentioned 17 earlier before, commercial success, licensing and 18 other factors. 19 A Yes. 20 Q You understand that? 21 A Yes. I cite to that in my paragraph 90. 22 Q Correct. Dr. Bims, his report -- strike 23 that. 24 In order to prove that secondary 25 considerations are relevant, there must be a nexus</p>

<p style="text-align: right;">Page 166</p> <p>1 between these factors and the claims of a patent.</p> <p>2 A That's my understanding.</p> <p>3 Q Okay. And is it correct Dr. Bims -- his</p> <p>4 report provided analysis of whether or not there was</p> <p>5 a nexus relating to secondary conditions?</p> <p>6 A Yes. That's also my opinion.</p> <p>7 Q Did you perform any independent analysis of</p> <p>8 secondary considerations of nonobviousness?</p> <p>9 A No. For this I'm relying on Bims' report as</p> <p>10 I'm citing to here in paragraph 90. And then just</p> <p>11 expressing this conclusion that I got from reading</p> <p>12 his report including all of those exhibits that go</p> <p>13 along with it, "In my opinion, the secondary</p> <p>14 considerations are relevant here because" --</p> <p>15 "especially because the '147 patent was licensed to</p> <p>16 Sony for use in Sony's multi-user gaming platform</p> <p>17 known as Playstation. The fact that Sony</p> <p>18 specifically sought to license the patent from</p> <p>19 Boeing shows that Sony thought the patent was</p> <p>20 nonobvious and relevant."</p> <p>21 Q And that conclusion is based entirely on</p> <p>22 Dr. Bims' report; is that correct?</p> <p>23 A Yeah. I didn't do any additional analysis</p> <p>24 other than to look at his report and the exhibits</p> <p>25 that went along with it.</p>	<p style="text-align: right;">Page 168</p> <p>1 A I did read it. If your question is did I</p> <p>2 read every single word, I'm not recalling if I read</p> <p>3 every single word.</p> <p>4 Q Did you read only those excerpts that you've</p> <p>5 attached to your declaration?</p> <p>6 A As I sit here today, I don't believe so, but</p> <p>7 I don't have a specific recollection of what other</p> <p>8 parts I would have read.</p> <p>9 Q Why did you use this exhibit? What was the</p> <p>10 purpose of this exhibit?</p> <p>11 MR. LEE: Objection. Form.</p> <p>12 THE WITNESS: So I cite to this exhibit for a</p> <p>13 number of purposes. The first is to show how a</p> <p>14 person of ordinary skill in the art would understand</p> <p>15 network layers showing this OSI model, for example,</p> <p>16 on what's marked on page 5. And then the discussion</p> <p>17 of the different layers and what they mean, which</p> <p>18 comes after that. Then I also cite to this</p> <p>19 reference for discussions that talk about the</p> <p>20 differences between the token bus framework and the</p> <p>21 token ring framework for doing networking. And that</p> <p>22 goes for several, several pages. I cite to some.</p> <p>23 In fact, I excerpt, in my declaration, some of the</p> <p>24 words and figures from those sections. And then</p> <p>25 finally, at the end, I have discussions that I</p>
<p style="text-align: right;">Page 167</p> <p>1 MR. LIN: I'm handing the witness Exhibit</p> <p>2 2007, which is a Computer Networks by Tanenbaum.</p> <p>3 Sorry, it's previously been entered as an exhibit in</p> <p>4 this proceeding as Exhibit 2007. I didn't print a</p> <p>5 copy for myself. Oh, well.</p> <p>6 Q Have you seen this exhibit before,</p> <p>7 Dr. Goodrich?</p> <p>8 A Yes. It looks familiar to me.</p> <p>9 Q What is it?</p> <p>10 A As we just talked about, it's excerpts from</p> <p>11 this book by Tanenbaum, Computer Networks, Third</p> <p>12 Edition, that was entered as Exhibit 2007</p> <p>13 previously.</p> <p>14 Q Did you read the entire book?</p> <p>15 A Just sitting here today, I don't have a</p> <p>16 recollection if I read the entire book or not. I</p> <p>17 don't -- I don't recall.</p> <p>18 Q Did you have the book?</p> <p>19 A I have a copy of this book, yes.</p> <p>20 Q Did you read that copy of this book in</p> <p>21 preparation for this interparticery (sic) review?</p> <p>22 A You mean yesterday when I did a review of</p> <p>23 documents. Is that what you're asking?</p> <p>24 Q No. Just in -- ever. I mean, in prepar- --</p> <p>25 in preparing your declaration.</p>	<p style="text-align: right;">Page 169</p> <p>1 excerpt that talk about routing algorithms.</p> <p>2 THE REPORTER: I'm sorry, routing?</p> <p>3 THE WITNESS: Routing, r-o-u-t-i-n-g,</p> <p>4 algorithms. And that goes to the end of this</p> <p>5 excerpt.</p> <p>6 BY MR. LIN:</p> <p>7 Q Could you go to page 299, please, top</p> <p>8 right-hand corner.</p> <p>9 A What Bates page is that?</p> <p>10 Q I'm not sure.</p> <p>11 A 299. I think it's 24. I'm there.</p> <p>12 Q You see that section 4.3.4 --</p> <p>13 A Yes. I see that.</p> <p>14 Q -- "Comparison of 802.3, 802.4 and 802.5"?</p> <p>15 A Yes.</p> <p>16 Q What's 802.3, 802.4 and 802.5?</p> <p>17 A These are different IEEE standards that talk</p> <p>18 about the way that certain types of architectures</p> <p>19 are set up. So, for example, 802.4 is in</p> <p>20 relationship to the token bus architecture, as I</p> <p>21 cite to on this page Bates 12, and 802.5 is in</p> <p>22 relationship to the token ring, as I cite to</p> <p>23 begin -- or, yeah, beginning on page 17.</p> <p>24 Q What was your conclusion about the</p> <p>25 ability -- strike that. Did you include pages</p>

<p style="text-align: right;">Page 170</p> <p>1 300 -- the section -- did you -- strike that.</p> <p>2 Did you include the section in your Tanenbaum</p> <p>3 excerpts about the comparison of 802.3, 802.4 and</p> <p>4 802.5?</p> <p>5 A It begins here at the bottom of my page 24.</p> <p>6 Q Do you remember if you've considered that</p> <p>7 section when determining whether or not</p> <p>8 what -- strike that.</p> <p>9 Did you -- did you review that section when</p> <p>10 analyzing token ring and token bus and token grid</p> <p>11 networks?</p> <p>12 A May I see a copy of that section, please.</p> <p>13 MR LIN: This will be Goodrich 11.</p> <p>14 (Exhibit 11 was marked for identification</p> <p>15 by the court reporter and is attached hereto.)</p> <p>16 BY MR. LIN:</p> <p>17 Q Do you recognize the document I've just</p> <p>18 handed you marked Goodrich 11?</p> <p>19 A I see that it has the page 299 in it, the way</p> <p>20 we discussed a minute ago, and then it has a page</p> <p>21 300 and 301 after that.</p> <p>22 Q Do you remember considering this section?</p> <p>23 A As I sit here today, I don't recall.</p> <p>24 Q Do you think -- do you know why you</p> <p>25 weren't -- why you didn't include this section in</p>	<p style="text-align: right;">Page 172</p> <p>1 Exhibit 2007?</p> <p>2 MR. LEE: Objection. Form.</p> <p>3 THE WITNESS: I don't recall, as I sit here</p> <p>4 today, that I thought it was relevant. I still</p> <p>5 don't, actually, even after reading it.</p> <p>6 BY MR. LIN:</p> <p>7 Q Do you -- do you -- the first sentence of</p> <p>8 page 300 says, "To start with, it is worth noting</p> <p>9 that the three LAN standards use roughly similar</p> <p>10 technology and get roughly similar performance."</p> <p>11 Do you agree with that statement as it</p> <p>12 relates to 802.4 and 802.5?</p> <p>13 A So that statement -- what it's -- what it's</p> <p>14 describing is a -- the kind of -- and then we see</p> <p>15 the kind of comparisons that are done after this in</p> <p>16 the paragraphs that follow. What we see is what</p> <p>17 this is discussing is performance and ease of the</p> <p>18 deployment issues that compare between these</p> <p>19 different technologies. And the very next sentence</p> <p>20 says, "While computer scientists and engineers can</p> <p>21 discuss the merits of coax versus twisted pair for</p> <p>22 hours on end if given half a chance, the people in</p> <p>23 marketing, personnel, or accounting departments</p> <p>24 probably do not really care that much one way or the</p> <p>25 other."</p>
<p style="text-align: right;">Page 171</p> <p>1 Exhibit 2007?</p> <p>2 A I did include the beginning part of it. I</p> <p>3 just don't recall why the excerpt stopped at 299.</p> <p>4 Q Okay. Why don't we start on page 300.</p> <p>5 A Okay.</p> <p>6 Q The first -- first sentence, could you read</p> <p>7 that, please.</p> <p>8 A "To start with, it is worth noting that the</p> <p>9 three LAN standards use roughly similar technology</p> <p>10 and get roughly similar performance."</p> <p>11 Q And what is the three LAN standards that's</p> <p>12 talking about?</p> <p>13 A 802.3, 802.4, 802.5.</p> <p>14 Q Do you disagree with that statement?</p> <p>15 A Can you show me the excerpts for the 802.3</p> <p>16 discussion, because that doesn't seem to be here</p> <p>17 either.</p> <p>18 Q Let's just focus on 802.4 and 802.5.</p> <p>19 MR. LEE: Objection. Form.</p> <p>20 THE WITNESS: All right. So again, what's</p> <p>21 your question? I've now read this section.</p> <p>22 BY MR. LIN:</p> <p>23 Q Now that you -- let's start over.</p> <p>24 Now that you've read this section, do you</p> <p>25 remember why it wasn't included in your original</p>	<p style="text-align: right;">Page 173</p> <p>1 And so we see here already from the context</p> <p>2 of this paragraph this is talking about the kind of</p> <p>3 similarity and performance characteristics that one</p> <p>4 would get from, say, a marketing person. But a</p> <p>5 computer scientist, which now we're talking in the</p> <p>6 context of the '147 patent, a person of ordinary</p> <p>7 skill in the art would see fundamental differences</p> <p>8 between these things that they could discuss for</p> <p>9 hours on end if given half a chance. And, indeed,</p> <p>10 when we go through the discussions of -- of the</p> <p>11 paragraphs that follow this, we, indeed, see already</p> <p>12 in this discussion, as well as going back to the</p> <p>13 ones that were included in -- in Exhibit 2007, there</p> <p>14 are fundamental differences that a person of</p> <p>15 ordinary skill in the art would understand you can't</p> <p>16 just translate an algorithm written for one standard</p> <p>17 into the other.</p> <p>18 In one standard, say on the bus, we have a</p> <p>19 physical medium that is a broadcast medium. It's</p> <p>20 not a point-to-point network. Everybody hears</p> <p>21 everything on the bus. Whereas, in a token ring, we</p> <p>22 have stations that are going around in a ring and</p> <p>23 when you send a message you have to only send it to</p> <p>24 the next one in line. Fundamentally different.</p> <p>25 When we go to say the prior art references like</p>

<p style="text-align: right;">Page 174</p> <p>1 Rufino and Todd, we see that their methods for</p> <p>2 handling disconnections are so fundamentally</p> <p>3 different that a person of ordinary skill in the art</p> <p>4 could not possibly translate one to the other in an</p> <p>5 easy way that would be obvious.</p> <p>6 Q So I see that you've marked some annotations</p> <p>7 on -- on the exhibit. Could you walk us through</p> <p>8 what each one of those annotations are. If you</p> <p>9 could number it, that would be helpful too.</p> <p>10 A So I first made a mark next to that paragraph</p> <p>11 that we just read.</p> <p>12 Q Okay.</p> <p>13 A Then I circled the word "token bus" in the</p> <p>14 middle, 802.4, 802.3. Then I circled "token ring."</p> <p>15 Then on the next page I underlined the sentence "One</p> <p>16 can always find a set of parameters that makes one</p> <p>17 of the LANs look better than the others." And then</p> <p>18 I highlighted that whole paragraph as well.</p> <p>19 Q Why -- excuse me. Why did you highlight that</p> <p>20 paragraph?</p> <p>21 A Just jumped out at me. I underlined it</p> <p>22 because it sounded cool. I should number it too.</p> <p>23 We're up to 6.</p> <p>24 MR. LIN: I'm going to put in an unannotated</p> <p>25 copy into the exhibit as Goodrich 12.</p>	<p style="text-align: right;">Page 176</p> <p>1 of the IEEE Standards Board."</p> <p>2 Q Why do they put together IEEE standards or</p> <p>3 why are IEEE standards put together?</p> <p>4 A Do you have like a section that you want to</p> <p>5 point me to in this or should I just --</p> <p>6 Q No. Let's go to page 4.</p> <p>7 A Okay.</p> <p>8 Q I mean, generally speaking, do you know why,</p> <p>9 what's the purpose of IEEE standards?</p> <p>10 MR. LEE: Objection. Form.</p> <p>11 THE WITNESS: As I sit here today, I think</p> <p>12 it's because you would want to have a standard for</p> <p>13 things that there's a common language when referring</p> <p>14 to common architectures, common protocols for doing</p> <p>15 various kinds of functions.</p> <p>16 BY MR. LIN:</p> <p>17 Q What is the -- strike that.</p> <p>18 On page 4 there is a graphic that says,</p> <p>19 "802.1," "802.2," "802.3," "802.4," "802.5."</p> <p>20 A I see that.</p> <p>21 Q And this document refers to these five</p> <p>22 standards as a family; is that correct?</p> <p>23 A Where do you see that?</p> <p>24 Q In the par- -- in the sentence right below</p> <p>25 the graphic.</p>
<p style="text-align: right;">Page 175</p> <p>1 If I -- could I see the stapler, please.</p> <p>2 (Exhibit 12 was marked for identification</p> <p>3 by the court reporter and is attached hereto.)</p> <p>4 BY MR. LIN:</p> <p>5 Q You can put that aside if you want to staple</p> <p>6 it.</p> <p>7 A It sounds like that's the version that's</p> <p>8 going to go into evidence anyway.</p> <p>9 Q Or both of them are.</p> <p>10 A Oh, okay. Whatever.</p> <p>11 MR. LIN: I'm handing the witness what has</p> <p>12 been previously entered as Exhibit 2014 labeled</p> <p>13 "Part 4: Token-passing bus access method and</p> <p>14 physical layer specifications."</p> <p>15 A Thank you.</p> <p>16 Q How many pages is this thing?</p> <p>17 MR. LEE: Objection. Form.</p> <p>18 THE WITNESS: It's 278 pages. We have 278</p> <p>19 here in the exhibit. Yes.</p> <p>20 BY MR. LIN:</p> <p>21 Q Okay. What is an IEEE standard?</p> <p>22 A So if we go to page 3 in this exhibit, we see</p> <p>23 it says, "IEEE standards documents are developed</p> <p>24 within the Technical Committees of the IEEE</p> <p>25 Societies and the Standards Coordinating Committees</p>	<p style="text-align: right;">Page 177</p> <p>1 A This family. Yeah, I see that.</p> <p>2 Q Why do they call it a family of standards</p> <p>3 that deal with physical and data link layers?</p> <p>4 MR. LEE: Objection. Form.</p> <p>5 THE WITNESS: I don't know why the authors of</p> <p>6 this document would call this a family.</p> <p>7 BY MR. LIN:</p> <p>8 Q Do you -- do you under- -- do you know if</p> <p>9 there is a relationship between 802.1, 802.2, 3, 4</p> <p>10 and 5?</p> <p>11 A With -- I'm not understanding your question</p> <p>12 what you mean by "relationship."</p> <p>13 Q Okay. Do you -- do you see that sentence</p> <p>14 where it says I trip- -- still on page 4, it says</p> <p>15 "IEEE 802.1 (a series of related standards)</p> <p>16 describes the relationship among the family of 802</p> <p>17 standards and their relationship to the ISO Open</p> <p>18 Systems Interconnection Basic Reference Model in</p> <p>19 more detail"?</p> <p>20 A I see that sentence.</p> <p>21 Q Do you know what that sentence means?</p> <p>22 A Do you have a copy of IEEE 802.1 that it's</p> <p>23 referring to?</p> <p>24 Q No, I do not.</p> <p>25 A Just sitting here today, I don't have an</p>

<p style="text-align: right;">Page 178</p> <p>1 immediate reaction.</p> <p>2 Q Okay. What is 802.4?</p> <p>3 A This is 802.4 that we have in front of us</p> <p>4 from 1990. It's describing the token-passing bus</p> <p>5 access method and physical layer specifications.</p> <p>6 Q Why did you provide this document in your --</p> <p>7 accompanying your declaration?</p> <p>8 A For primarily the reason that, as I recall,</p> <p>9 one of the alleged prior art references cited to</p> <p>10 this document.</p> <p>11 Q Okay. Do you -- do you remember if some of</p> <p>12 the references cited to 802.5?</p> <p>13 A That's my recollection, that some cited to</p> <p>14 802.5 as well.</p> <p>15 Q Did you read 802.4, this document?</p> <p>16 A I did not read every word, as I sit here</p> <p>17 today, based on my recollection, but I skimmed it to</p> <p>18 understand what it's referring to and understanding</p> <p>19 that it's talking about this token-passing bus --</p> <p>20 Q Did you read a --</p> <p>21 A -- specification.</p> <p>22 Q Excuse me, sorry. Did you review a similar</p> <p>23 document for 802.5?</p> <p>24 A As I sit here today, I don't recall if I did</p> <p>25 that or not. Can you give me my -- all the exhibits</p>	<p style="text-align: right;">Page 180</p> <p>1 A I don't think so. I don't see it. But we do</p> <p>2 have, in front of us already, the Tanenbaum</p> <p>3 reference that itself summarizes, to a person of</p> <p>4 ordinary skill in the art, both of these standards</p> <p>5 as we've been reading and talks about, in sufficient</p> <p>6 detail, how the token bus architectures differ from</p> <p>7 the token ring architectures, and that is already</p> <p>8 demonstrated in Exhibit 2007 how fundamentally</p> <p>9 different these two architectures are.</p> <p>10 Q Can you turn to page 15 of Exhibit 2014.</p> <p>11 A I'm there.</p> <p>12 Q Do you see Figure 1-1?</p> <p>13 A Yes, I do.</p> <p>14 Q What is that?</p> <p>15 A It says, "Relationship of Adjacent Protocol</p> <p>16 Layers."</p> <p>17 Q Does it make any sense to you?</p> <p>18 MR. LEE: Objection. Form.</p> <p>19 THE WITNESS: I don't understand that</p> <p>20 question. I'm sorry. I see the words. I can read</p> <p>21 the words. If that's your question, yes, I can read</p> <p>22 the words of this figure.</p> <p>23 BY MR. LIN:</p> <p>24 Q Does the concept of adjacent protocol layers</p> <p>25 on Figure 1-1 correspond to the network layer</p>
<p style="text-align: right;">Page 179</p> <p>1 that I cited for my declaration to see if it's</p> <p>2 included?</p> <p>3 Q I don't know about all of the exhibits.</p> <p>4 Here, let me try to ask a different question.</p> <p>5 A Okay.</p> <p>6 Q Do you remember reviewing 802.5?</p> <p>7 A As I sit here today, I don't have a specific</p> <p>8 recollection of that. But if you could give me all</p> <p>9 my exhibits that I cite to I can see if it's</p> <p>10 included.</p> <p>11 Q Do you think it would be important to compare</p> <p>12 802.4 to 802.5 in rendering your opinion?</p> <p>13 MR. LEE: Objection. Form.</p> <p>14 THE WITNESS: I want to give as -- a complete</p> <p>15 and accurate answer as possible. And as I sit here</p> <p>16 today, I don't have a specific recollection of</p> <p>17 having read the 802.5, but I may have read it and</p> <p>18 just I'm not remembering today. So if you could</p> <p>19 show me if I cited it and show me the exhibits, I</p> <p>20 could be able to answer your question more fully.</p> <p>21 BY MR. LIN:</p> <p>22 Q Well, I can tell you that you don't have a</p> <p>23 document like this in your -- accompanying your</p> <p>24 declaration. I don't know if you have a table of</p> <p>25 contents in your declaration you can look at.</p>	<p style="text-align: right;">Page 181</p> <p>1 protocol, the OSI network layer protocol?</p> <p>2 MR. LEE: Objection. Form.</p> <p>3 THE WITNESS: I'd need to study this in more</p> <p>4 detail to be able to answer that question. It's</p> <p>5 been a while since I've even looked at this. I'd</p> <p>6 have to look at it again. It could take a while.</p> <p>7 BY MR. LIN:</p> <p>8 Q Sitting here now could you tell me what a</p> <p>9 logical link control is? Strike that.</p> <p>10 Sitting here now could you tell me what a</p> <p>11 logical link control sublayer is?</p> <p>12 A Yes. But it would -- it would take some</p> <p>13 time.</p> <p>14 Q Okay. And I assume that's the same answer</p> <p>15 for media access control and physical sublayer?</p> <p>16 A To understand what this document is referring</p> <p>17 to by those terms; that is correct.</p> <p>18 Q How about medium?</p> <p>19 A The word "medium" I would understand to be</p> <p>20 just the medium, the actual token bus itself, like a</p> <p>21 metal bar or a wire.</p> <p>22 Q Can you turn to -- sorry. Would you like to</p> <p>23 look at the document? I was going to --</p> <p>24 A No. I'm done.</p> <p>25 Q -- move on to another topic.</p>

<p style="text-align: right;">Page 182</p> <p>1 A Yeah.</p> <p>2 Q You can set that aside.</p> <p>3 A Okay. Another good time for another break,</p> <p>4 by the way?</p> <p>5 MR. LIN: Yeah. Let's do it.</p> <p>6 THE VIDEOGRAPHER: We're going off the</p> <p>7 record, the time is 2:35.</p> <p>8 (Recess.)</p> <p>9 THE VIDEOGRAPHER: This is the beginning of</p> <p>10 media 4. We're back on the record at 2:44.</p> <p>11 BY MR. LIN:</p> <p>12 Q Welcome back, Dr. Goodrich.</p> <p>13 A Thank you.</p> <p>14 Q So going back to claim 6, we said earlier the</p> <p>15 result of the performance of claim 6 doesn't have to</p> <p>16 result in an m-regular graph; is that correct?</p> <p>17 A Yes. It has to have this requirement,</p> <p>18 however, that whatever is happening at the end of</p> <p>19 step three that the -- when the third computer is</p> <p>20 responding, it has to be done in a manner so as to</p> <p>21 maintain an m-regular graph.</p> <p>22 Q Could you explain what -- what you mean in a</p> <p>23 manner as to maintain an m-regular graph, please?</p> <p>24 A Yes. So what is meant by this and what a</p> <p>25 person of ordinary skill in the art would understand</p>	<p style="text-align: right;">Page 184</p> <p>1 Q I just gave you the English translation.</p> <p>2 A Oh, yeah. So the original document was in a</p> <p>3 foreign language. I don't remember if it was Polish</p> <p>4 or Czech or Hungarian.</p> <p>5 Q Hungarian.</p> <p>6 A Hungarian. Got to love the Hungarian</p> <p>7 mathematicians. So this Denes reference has in it a</p> <p>8 discussion of transformations that you can make to a</p> <p>9 graph and then studies whether or not they can be</p> <p>10 applied so as to maintain an m-regular graph. In</p> <p>11 particular it has here, on page 2, this thing that's</p> <p>12 called the ET-1 equation which I believe Dr. Karger</p> <p>13 was citing to to say this is a way that you could be</p> <p>14 maintaining m-regular graph using this equation.</p> <p>15 But unfortunately for Dr. Karger that's not what's</p> <p>16 being taught here in Denes.</p> <p>17 Instead, what this equation is applying to is</p> <p>18 only for the case when the node P that is leaving</p> <p>19 would be a member of the graph already. So it would</p> <p>20 not apply, for example, in the unplanned</p> <p>21 disconnection case. It would, theoretically, only</p> <p>22 apply in the planned theoretical case. But even in</p> <p>23 that case if we go to the next page -- actually, to</p> <p>24 the bottom of this page and then to the next page,</p> <p>25 we see that it's talking about these theorems that</p>
<p style="text-align: right;">Page 183</p> <p>1 by this phrase is that it's referring to the steps</p> <p>2 that this method performs have to be leading to</p> <p>3 getting to this state where you would, again, in a</p> <p>4 steady state, as the patent talks about, when no one</p> <p>5 is leaving or coming anymore, that you would have an</p> <p>6 m-regular graph.</p> <p>7 Q So if you looked at an application how would</p> <p>8 you determine whether or not that step is occurring?</p> <p>9 A Are you asking now about the prior art</p> <p>10 because that's precisely what I did with respect to</p> <p>11 the prior art.</p> <p>12 Q I'm talking about any software.</p> <p>13 A Okay. So take, for example, software that</p> <p>14 could implement the method that -- of this Denes</p> <p>15 reference, D-e-n-e-s, reference that was cited as</p> <p>16 prior art.</p> <p>17 Q Would you like that reference?</p> <p>18 A Yes, please.</p> <p>19 Q I brought all these exhibits I want to get</p> <p>20 rid of.</p> <p>21 A Fair enough.</p> <p>22 MR. LIN: I'm handing to the witness</p> <p>23 Exhibit 1017.</p> <p>24 THE WITNESS: Okay.</p> <p>25 BY MR. LIN:</p>	<p style="text-align: right;">Page 185</p> <p>1 show that there's actually an infinite number of</p> <p>2 graphs that even in the planned case you cannot</p> <p>3 apply this equation in order to be maintaining an</p> <p>4 m-regular graph.</p> <p>5 So this would be an example, like you spoke</p> <p>6 of, had this been reduced to software, where you'd</p> <p>7 have a software implementation of something that</p> <p>8 would not be maintaining an m-regular graph because</p> <p>9 this description doesn't work, first, for the</p> <p>10 healing case and it doesn't work for lots of example</p> <p>11 graphs where this ET-1 equation cannot be applied.</p> <p>12 Q So -- and my translator told me that it's</p> <p>13 pronounced "Danish," so I hope it doesn't confuse</p> <p>14 you?</p> <p>15 A That's fine.</p> <p>16 Q So in (3) ET-1 on page 2 --</p> <p>17 A Yes.</p> <p>18 Q -- it says, "neighbors of p but pairwise not</p> <p>19 neighbors." It's a mouthful to say, but it seems</p> <p>20 that it needs to know P number of edges; is that</p> <p>21 correct?</p> <p>22 MR. LEE: Objection. Form.</p> <p>23 THE WITNESS: No. Actually, what this --</p> <p>24 first, there's the definition (3), which I think you</p> <p>25 read from and the important factor here in</p>

<p style="text-align: right;">Page 186</p> <p>1 definition (3) is right in the middle where it says</p> <p>2 "{p}" and then there's like a little element, kind</p> <p>3 of looks like a three backwards, that says -- and</p> <p>4 then capital P. What is that referring to is that</p> <p>5 that node P, the one that now is going to be removed</p> <p>6 from the graph, has to be a member of that graph in</p> <p>7 order for this equation to apply.</p> <p>8 And then later on when we actually see the</p> <p>9 equation that's equation (3), that's the ET-1</p> <p>10 equation, if you take that first line, starts with a</p> <p>11 number (3) take it all the way across until you see</p> <p>12 the little {p} at the end. What that's referring to</p> <p>13 now is that we have this new set of nodes with the</p> <p>14 {p} -- little {p} removed. And even more</p> <p>15 importantly we see the next line, which talks about</p> <p>16 the new edges to add in. And the new edges to add</p> <p>17 in are illustrated, for example, here in Figure 1</p> <p>18 that if you have p1 not connected to p2 and p3 not</p> <p>19 connected to p4 and so on all the way around, then</p> <p>20 you could just add those connections and then you're</p> <p>21 back to being m-regular again.</p> <p>22 BY MR. LIN:</p> <p>23 Q All right. You're --</p> <p>24 A Unfortunately, that doesn't apply in an</p> <p>25 infinite number of graphs that you have such a</p>	<p style="text-align: right;">Page 188</p> <p>1 me -- let's just start over and then we can --</p> <p>2 looking at claim 6, can the method of claim 6 be</p> <p>3 performed when m is, let's say, 3?</p> <p>4 A Yes.</p> <p>5 Q How does -- if we start with m equals -- if</p> <p>6 we start with a broadcast channel where m is equal</p> <p>7 to 3 and we perform the steps of claim 6, is it</p> <p>8 possible to fulfill the last limitation of having a</p> <p>9 third computer not already connected to said first</p> <p>10 computer respond to said connection port search</p> <p>11 message in a manner as to maintain an m-regular</p> <p>12 graph?</p> <p>13 A Yes.</p> <p>14 Q How?</p> <p>15 A So if we go in --</p> <p>16 Q Sorry, let me -- let me -- let me try a</p> <p>17 different -- a different approach if you don't mind.</p> <p>18 MR. LEE: Objection. Form.</p> <p>19 BY MR. LIN:</p> <p>20 Q I'm going to draw a graph where I believe</p> <p>21 it's m equals to 3 and incomplete and we'll go from</p> <p>22 there.</p> <p>23 Is that okay?</p> <p>24 A Okay.</p> <p>25 Q Bear with me. I apologize for the --</p>
<p style="text-align: right;">Page 187</p> <p>1 scenario.</p> <p>2 Q You're correct. What I meant to ask is if</p> <p>3 you were to implement Denes in code, would the</p> <p>4 software need to know what k is as it defines k as</p> <p>5 in k-regular -- k-regular graphs?</p> <p>6 A Yes.</p> <p>7 Q In order to execute this formula -- I'm</p> <p>8 sorry, strike that.</p> <p>9 In order to execute formula ET-1, the</p> <p>10 software would need to know what k is; is that</p> <p>11 correct?</p> <p>12 A Yes. It would need the node K and the node</p> <p>13 p, both, and all of its neighbors.</p> <p>14 Q Okay. You can set that aside.</p> <p>15 A Okay.</p> <p>16 Q I think we had -- earlier we were talking</p> <p>17 about whether or not claim 6 would -- would work if</p> <p>18 m was an odd number.</p> <p>19 Do you remember?</p> <p>20 A I do recall that discussion.</p> <p>21 Q And I forget what your answer was. Could you</p> <p>22 remind me, please.</p> <p>23 A I'm not immediately remembering the details</p> <p>24 of that discussion either other than that we had it.</p> <p>25 Q That's how I feel sometimes too. Okay. Let</p>	<p style="text-align: right;">Page 189</p> <p>1 A No problem.</p> <p>2 Q It's a lot easier. So I have drawn you a</p> <p>3 graph that I believe has a ten nodes where m is</p> <p>4 equal to 3.</p> <p>5 I'm handing it to Dr. Goodrich and we're</p> <p>6 going to mark it as Goodrich 13.</p> <p>7 (Exhibit 13 was marked for identification</p> <p>8 by the court reporter and is attached hereto.)</p> <p>9 BY MR. LIN:</p> <p>10 Q Do you agree that that is a -- could be a</p> <p>11 broadcast channel where m is 3?</p> <p>12 A It's an example of a drawing of an m-regular</p> <p>13 graph where m is equal to 3.</p> <p>14 Q And there are ten nodes, correct?</p> <p>15 A There are ten nodes in this graph; that's</p> <p>16 correct.</p> <p>17 Q So could you show me how the method of claim</p> <p>18 6 could be performed on that graph, Goodrich 13, and</p> <p>19 fulfilling this last limitation in a manner as to</p> <p>20 maintain an m-regular graph?</p> <p>21 A Which of these graphs would you now want to</p> <p>22 remove in an unplanned manner?</p> <p>23 Q Whichever one you want. I'm not picky.</p> <p>24 A Can I mark this now --</p> <p>25 Q Yeah, of course.</p>

<p style="text-align: right;">Page 190</p> <p>1 A -- with my red pen?</p> <p>2 Q Yes.</p> <p>3 A Okay. So let's assume that node 1 is going</p> <p>4 to leave in an unplanned away not telling his</p> <p>5 neighbors which are 2, 6 and 5, that it is leaving.</p> <p>6 Q Okay.</p> <p>7 A Okay. And so now he would be -- these three</p> <p>8 that are left would realize, only when they tried to</p> <p>9 send a message to 1, 1's not there anymore. We then</p> <p>10 would do this next step of broadcasting. Each of</p> <p>11 them would then be broadcasting on the remaining</p> <p>12 broadcast channel I need another connection.</p> <p>13 I need another connection.</p> <p>14 I need another connection.</p> <p>15 Q Which is 5, 6 --</p> <p>16 A 5, 6 and 3 would then be sending out these</p> <p>17 messages.</p> <p>18 Q Would you mind writing a connection port</p> <p>19 search message if that's what you --</p> <p>20 A Yeah. I think that's what it's called in</p> <p>21 claim 6 --</p> <p>22 Q Yeah.</p> <p>23 A -- connection port search message. Okay.</p> <p>24 Q Okay.</p> <p>25 A And then we get to -- so step three. Having</p>	<p style="text-align: right;">Page 192</p> <p>1 And then it talks about if m is odd. "If the</p> <p>2 number of internal connections is odd, then the</p> <p>3 broadcast channel has an odd number of computers</p> <p>4 connected, one of the computers will have less than</p> <p>5 the (sic) odd number of internal connections." Like</p> <p>6 in this picture it would be node 2. Then we go to</p> <p>7 the top of column 15 and it says, "In such a</p> <p>8 situation, the broadcast network is neither</p> <p>9 m-regular nor m-connected. When the next computer</p> <p>10 connects to the broadcast channel, it can again</p> <p>11 become m-regular and m-connected. Thus, with an odd</p> <p>12 number of internal connections, the broadcast</p> <p>13 channel toggles between being and not being</p> <p>14 m-regular and m-connected."</p> <p>15 So that's what's happening here. We did the</p> <p>16 step three. We did have a message from a third</p> <p>17 computer that is sufficient to maintain an m-regular</p> <p>18 graph. We're just not there yet because we still</p> <p>19 need one more insertion or deletion to get back to</p> <p>20 the steady state.</p> <p>21 Q More than one more insertion or deletion in</p> <p>22 this case, correct?</p> <p>23 A No. One more will get us back, either</p> <p>24 insertion or deletion. Either planned or unplanned</p> <p>25 will get us back because then we'll have an even</p>
<p style="text-align: right;">Page 191</p> <p>1 a third computer not already connected to said first</p> <p>2 computer -- so one of these would be the said first</p> <p>3 computer. Let's say it's number 5 -- could have</p> <p>4 some other node that's responding back to it that --</p> <p>5 in a manner as to maintain m-regular graph. So, for</p> <p>6 example, 6 could respond back and say let's connect</p> <p>7 up, 5 and 6. And now, 5, your three connected, 6,</p> <p>8 your three -- I mean, you have three neighbors.</p> <p>9 Even after losing 1 and 6, you have three neighbors</p> <p>10 even after losing your connection to 1.</p> <p>11 Q But how about 2?</p> <p>12 A 2 would still have degree 2 and so we'd be in</p> <p>13 this regime that it's talking about in column 14 and</p> <p>14 15, that when m is odd, then you can only have the</p> <p>15 steady state of it being m-regular when you get back</p> <p>16 to m being even again. Either deleting another node</p> <p>17 or adding another node to get back to an even number</p> <p>18 of nodes. So that -- when you have -- m is odd, the</p> <p>19 patent is already saying you have to have an even</p> <p>20 number of nodes in order to be in that steady state.</p> <p>21 And it's very particular about this in column 14</p> <p>22 because it says, "When the number of internal</p> <p>23 connections is even, then the broadcast channel can</p> <p>24 be maintained as" an "m-regular and m-connected (in</p> <p>25 the steady state)."</p>	<p style="text-align: right;">Page 193</p> <p>1 number of nodes either way.</p> <p>2 Q So do you have to eventually end up in an</p> <p>3 m-regular graph? Sorry, let me strike that.</p> <p>4 What is the one more step? You said it needs</p> <p>5 one more step to create the m- -- to create an</p> <p>6 m-regular network.</p> <p>7 MR. LEE: Objection. Form.</p> <p>8 BY MR. LIN:</p> <p>9 Q What -- what -- what's that step?</p> <p>10 A It's just like what's talked about in -- that</p> <p>11 I just read from the patent.</p> <p>12 Q I know, but in the -- in the figure could you</p> <p>13 show me what -- where the one more step would be,</p> <p>14 one more --</p> <p>15 A Sure. One example would be if one came -- if</p> <p>16 a new version of node number 1 was added to the</p> <p>17 graph and then it would get connected up, say, to 5,</p> <p>18 6 and 2, now we'd be back to m-regular again.</p> <p>19 Simple.</p> <p>20 Q What about just the way it is? Sorry, strike</p> <p>21 that.</p> <p>22 So you've said the connection between 5 and 6</p> <p>23 meets the limitation in a manner as to maintain an</p> <p>24 m-regular graph, correct?</p> <p>25 A So that the messaging that occurred to create</p>

<p style="text-align: right;">Page 194</p> <p>1 that connection would, indeed, satisfy so as to 2 maintain an m-regular graph because they've repaired 3 the issue for them. Now they both have three 4 neighbors. As the patent says, when you have an odd 5 number of nodes and m is odd, somebody's got to be 6 having one less than m number of neighbors. In this 7 case it would be node number 2. So this would not 8 be the steady state. But you did form a step so as 9 to maintain an m-regular graph. You did that, 10 unlike Denes, which doesn't do that. It doesn't 11 work, first, because there's no equation for the 12 case of an unplanned removal of a node and even in 13 the planned case, the ET-1 equation does not apply to 14 lots and lots of graphs like, for example, in his 15 Figure 2.</p> <p>16 Q Does the broadcast channel have to be in the 17 steady state in order to satisfy this limitation 18 that's in a manner as to maintain an m-regular 19 graph?</p> <p>20 A No, absolutely not. That's clear. Because 21 when m is, say, 4 you have to have two pairs of a 22 first and second computer to order to finally get 23 back to the steady state again. So after doing the 24 steps of 6 just once, even when m is 4 you've still 25 got to do it again in order to get back to the</p>	<p style="text-align: right;">Page 196</p> <p>1 interrupt. I mean, just with those nine computers. 2 A Those nine computers would not be in a steady 3 state in that case as the patent itself says, as I 4 read in column 15. You toggled between being 5 m-regular and not m-regular when m is odd. That's 6 precisely from the specification. So the 7 specification is saying you're not in a steady state 8 when m is odd and the number of nodes is odd. You 9 neither have m even or the number of nodes even to 10 get back to a steady state.</p> <p>11 And the steady state is mentioned again in 12 column, as I recall, 8. So if you turn to column 8 13 it says, "When the broadcast channel is in a steady 14 state (i.e., no computers connecting or 15 disconnecting from the broadcast channel)." And 16 then it's talking about what happens with 17 out-of-order messages in the steady state. Then 18 you're fine. So it's clear it's repeating over and 19 over again this idea that the steady state is 20 referring to nobody's coming and going. And in this 21 case you'd be in the steady state of being 22 m-regular.</p> <p>23 Q So you're reading in -- I'm sorry, strike 24 that.</p> <p>25 So you're requiring this m-regular graph in</p>
<p style="text-align: right;">Page 195</p> <p>1 steady state. But even if you've done it once, 2 you've still done it. You've fulfilled all the 3 steps of claim 6 because, even in this case, you did 4 step three in a manner as to maintain an m-regular 5 graph, but the prior art never did anything close to 6 that.</p> <p>7 Q Can you turn to page -- your paragraph -- 8 your declaration paragraph 41.</p> <p>9 A I'm there.</p> <p>10 Q Can you read that -- so you have a sentence 11 in the middle of the paragraph where it says, "That 12 is, a network is m-regular when each node is 13 connected to m other nodes in an steady state, and a 14 computer would become disconnected from the 15 broadcast channel only if all m of the connections 16 to its neighboring nodes fail."</p> <p>17 A Yes.</p> <p>18 Q So is it -- is it possible with those nine 19 computers where m is equal to 3 to achieve m-regular 20 in an steady state?</p> <p>21 A Yes. All you've got to do is add one more 22 node or delete one more node --</p> <p>23 Q I mean --</p> <p>24 A -- and then you're back to the steady state.</p> <p>25 Q Excuse me, I'm sorry, I didn't mean to</p>	<p style="text-align: right;">Page 197</p> <p>1 claim 6 to be in the steady state; is that correct?</p> <p>2 A Which m-regular graph are we talking about?</p> <p>3 Q Both of them.</p> <p>4 A Again, I'm confused. Which one are we -- 5 when you say requiring it to be in the steady state, 6 what are we referring to, what phrase in claim 6?</p> <p>7 Q Let me rephrase my question.</p> <p>8 Where is the term "steady state" in claim 6?</p> <p>9 A The word doesn't appear in claim 6. It's 10 just understood as being a part of this phrase in a 11 manner as to maintain an m-regular graph. Again, as 12 I mentioned earlier today, it does not say, for 13 example, in a manner as to result in an m-regular 14 graph. That distinction is absolutely important 15 that it says "as to maintain" not to result in. A 16 person of ordinary skill in the art seeing "as to 17 maintain" would understand this step three 18 absolutely has to get you to an m-regular graph but 19 it doesn't have to do it on the very next step, but 20 it has to get you there as to maintain an m-regular 21 graph.</p> <p>22 Q Thank you, Dr. -- Dr. Goodrich. Can you turn 23 back to Figure 2 of the patent.</p> <p>24 A Yes. I'm there.</p> <p>25 Q If you were to add a connection from computer</p>

<p style="text-align: right;">Page 198</p> <p>1 zero to computer 1 --</p> <p>2 A Okay.</p> <p>3 Q -- would that be -- would that broadcast</p> <p>4 channel be m-regular?</p> <p>5 A It would not be in the steady state of being</p> <p>6 m-regular anymore. One node would have five</p> <p>7 neighbors. Well, you have to be a little bit</p> <p>8 careful here. So when you say add this connection</p> <p>9 between zero and 1, would this be a connection on</p> <p>10 the internal ports or a connection using external</p> <p>11 ports?</p> <p>12 Q Just a connection like the other edges.</p> <p>13 A Yeah. In that case you would no longer be</p> <p>14 m-regular. It wouldn't be in the steady state.</p> <p>15 Q What does steady state mean?</p> <p>16 A So steady state is referring to this property</p> <p>17 as discussed in the patent that in column 8. If we</p> <p>18 go to line 4 it says, "When the broadcast channel is</p> <p>19 in a steady state (i.e., no computers connecting or</p> <p>20 disconnecting from the broadcast channel)." And</p> <p>21 then we see, again, that same phrase --</p> <p>22 Q I'm sorry, column 8 where?</p> <p>23 A Line 4, I think. Yeah, 4.</p> <p>24 Q Okay.</p> <p>25 A So that's one place. Another place is column</p>	<p style="text-align: right;">Page 200</p> <p>1 Q Okay. So let's assume Figure 2 is some other</p> <p>2 network that's not the claimed network and it has a</p> <p>3 connection between computer zero and computer 1.</p> <p>4 A Okay.</p> <p>5 Q And there's no computers coming and going so</p> <p>6 it is in the steady state.</p> <p>7 MR. LEE: Objection. Form.</p> <p>8 BY MR. LIN:</p> <p>9 Q Do you follow?</p> <p>10 A So far I follow, yeah.</p> <p>11 Q Would that network be m-regular?</p> <p>12 A Again, if we're talking about the connection</p> <p>13 from zero to 1 being an internal connection and an</p> <p>14 internal port, that graph would not be m-regular, so</p> <p>15 it would not be m-regular in a steady state. It's</p> <p>16 not m-regular at that point. But again, it depends</p> <p>17 on the nature of that edge from zero to 1. If</p> <p>18 that's just a communication that's outside the</p> <p>19 broadcast channel, then the other edges would</p> <p>20 still -- are a member of the broadcast channel,</p> <p>21 would be m-regular -- belonging to an m-regular</p> <p>22 graph.</p> <p>23 Q Okay. So in your -- in the figure Goodrich</p> <p>24 13, after computers 5 and 6 have connected, and</p> <p>25 computer 2 has two connections, do you follow?</p>
<p style="text-align: right;">Page 199</p> <p>1 14 starting in line 62 that I read, again, earlier</p> <p>2 today. "When the number of internal connections is</p> <p>3 even, then the broadcast channel can be maintained</p> <p>4 as an m-regular and m-connected." And in</p> <p>5 parentheses it says, "in the steady state." So</p> <p>6 again, a person of ordinary skill in the art reading</p> <p>7 this realizes what the patent is talking about when</p> <p>8 you need to be m-regular is when you're in the</p> <p>9 steady state.</p> <p>10 And then immediately after that it talks</p> <p>11 about the case when m is odd and how you have to be</p> <p>12 toggling between the steady state and the nonsteady</p> <p>13 state. First you're m-regular, then you're not,</p> <p>14 then you are, then you are (sic). When you're</p> <p>15 adding -- say if you're -- when it says toggle, what</p> <p>16 that means is if you keep adding nodes in a</p> <p>17 sequence, then you'd toggle between these two states</p> <p>18 or if you keep deleting nodes in a sequence, you</p> <p>19 would toggle going back and forth between these two</p> <p>20 states of being m-regular in the steady state and</p> <p>21 then not, m-regular then not and so on.</p> <p>22 Q And that's in the context of the '147 patent,</p> <p>23 correct?</p> <p>24 A It's literally from the text of the '147</p> <p>25 patent, yes.</p>	<p style="text-align: right;">Page 201</p> <p>1 A Yes.</p> <p>2 Q Why is that not in the steady state?</p> <p>3 A Because it falls into this framework that's</p> <p>4 discussed in the patent specification in column 15</p> <p>5 at the top. So it's talking about now in the case</p> <p>6 where m is odd. It says -- and the number of nodes</p> <p>7 is odd. It says, "In such a situation, the</p> <p>8 broadcast network is neither m-regular nor</p> <p>9 m-connected. When the next computer connects to the</p> <p>10 broadcast channel, it" -- "it" -- now the broadcast</p> <p>11 channel -- "can again become m-regular and</p> <p>12 m-connected. Thus, with an odd number of internal</p> <p>13 connections, the broadcast channel toggles between</p> <p>14 being and not being m-regular and m-connected."</p> <p>15 Q Okay. I think I understa- -- I think I</p> <p>16 follow. Let me see if I -- if I have this -- if I</p> <p>17 understand this correctly.</p> <p>18 m, in the case of Figure Goodrich 13, is 3.</p> <p>19 Each of the computers that are numbered knows that m</p> <p>20 is 3, correct?</p> <p>21 A Yes. In this hypothetical I'm willing to</p> <p>22 accept that.</p> <p>23 Q And this network is -- I'm not going to -- I</p> <p>24 don't think I'm going to be using the right word,</p> <p>25 here, so help me out. But it wants to be m equals 3</p>

<p style="text-align: right;">Page 202</p> <p>1 and it's not in the steady state because it's 2 waiting for another computer to come into the 3 network or leave so that m can now become 3; is that 4 correct? 5 A It's, I think, a layperson's way of 6 explaining that, but it doesn't seem, as I sit here 7 today, to be that far off from what's really going 8 on. You're anthropomorphizing the nodes a little, 9 which I'm willing to accept now that it's late in 10 the day on a Friday. Otherwise, it doesn't sound so 11 horrible the way you're expressing it. 12 Q Thank you, Dr. Goodrich. I try. Okay. So 13 earlier in the day I think we were talking about 14 columns 15 and 16 -- 15 A Yes. 16 Q -- and I promised you that we would get back 17 to it. 18 A Okay. 19 Q Can you tell me what a component is. 20 A Which -- which place are you seeing that 21 word? 22 Q Oh, I'm sorry, column 15, line 6. 23 A Line 6. Yeah. So here it's referring to 24 Figure 6 and it says (as read), "Figure 6 is a block 25 diagram illustrating components of a computer that</p>	<p style="text-align: right;">Page 204</p> <p>1 try to ask this slightly different. In claim 6 is 2 the connection port search message an internal 3 message or an external message? 4 MR. LEE: Objection. Form. 5 THE WITNESS: I don't see that claim lang- -- 6 the claim language internal or external as a part 7 of -- 8 BY MR. LIN: 9 Q Okay. 10 A -- the claim itself. 11 Q Then let's try this the original way I wanted 12 to try it, is what is an external and internal 13 message? 14 MR. LEE: Objection. Form. 15 THE WITNESS: So the patent specification 16 talks about this, for example, beginning in column 6 17 starting at lines 10. And this is all in the 18 context of an example where m for this m-regular 19 network is 4. So it says, "Each computer connected 20 to the broadcast channel allocates five" -- not 21 four -- "five communication ports for communicating 22 with other computers. Four of the ports are 23 referred to as 'internal' ports because they are the 24 ports through which the messages of the broadcast 25 channels are sent. The connections between internal</p>
<p style="text-align: right;">Page 203</p> <p>1 is connected to a broadcast channel." 2 Q So what's a component? 3 A I believe what is being referred to here in 4 Figure 6 are the different boxes that are drawn in 5 Figure 6. 6 Q Why are boxes used to represent components. 7 Sorry, let me -- let me try again one more time. 8 Let's look at Figure 7 instead. 9 A Okay. I'm looking at Figure 7. 10 Q What's a block diagram? 11 A So Figure 7 is referenced also in column 15 12 beginning at line 66. It says (as read), "Figure 7 13 is a block diagram illustrating the sub-components 14 of the broadcaster component in one embodiment." 15 And so if we -- if we go back, for example, to 16 Figure 6, we see some squares marked as 602 here in 17 Figure 6. I believe what's being described here in 18 Figure 7 is a -- sort of a zoom-in of one of those. 19 Q And so they -- they talk about these things 20 called internal messages and external messages, 21 which you were trying to get at earlier. 22 Could you explain to me what the differences 23 are? 24 A Certainly. 25 Q Or, actually, let me -- let me try -- let me</p>	<p style="text-align: right;">Page 205</p> <p>1 ports of neighbors are referred to 'internal' 2 connections. Thus, the internal connections of the 3 broadcast channel form the 4-regular and 4-connected 4 graph. The fifth port is referred to as the 5 'external' port because it is used for sending 6 non-broadcast messages between two computers." 7 And this is why when we were talking before 8 about Figure 2, I was trying to get a clarification 9 about whether or not the connection you were 10 anticipating between zero and 1 was an internal 11 connection or an external connection. 12 BY MR. LIN: 13 Q Okay. So let me see if I can try to 14 understand the distinction better. I misplaced my 15 figures. I can do this from memory. So in Figure 16 5B, after an unplanned disconnection when node 17 computer H leaves, a connection port search message 18 is broadcasted. One is sent from -- okay. So 19 it's -- the connection port search message is 20 broadcasted; is that correct? 21 MR. LEE: Objection. Form. 22 THE WITNESS: I'm sorry, I'm a little 23 confused. I'm at Figure 5B and it's been a long 24 day, so now I'm confused what you're referring to. 25 Which nodes H -- so H --</p>

<p style="text-align: right;">Page 206</p> <p>1 Q Leaves.</p> <p>2 A Well, he's been -- he's --</p> <p>3 Q He's gone.</p> <p>4 A He's gone. He's got an unplanned</p> <p>5 disconnection, so he's gone, he's out of the</p> <p>6 broadcast channel.</p> <p>7 Q And I, A, E and F all broadcast a connection</p> <p>8 port search message; is that correct?</p> <p>9 A I'm willing to accept that that's something</p> <p>10 that the patent describes.</p> <p>11 Q Is that an internal message or an external</p> <p>12 message?</p> <p>13 A Do you have the place in the patent where now</p> <p>14 you're referring to this messaging?</p> <p>15 Q It's column 16.</p> <p>16 A Okay. Let me get there.</p> <p>17 Q It's not a perfect match, but it explains</p> <p>18 what these messages are.</p> <p>19 A Right. This is talking about the components.</p> <p>20 But now when we're talking about the port search</p> <p>21 message --</p> <p>22 Q Where the table that says "External Messages"</p> <p>23 starting on line 30 --</p> <p>24 A Oh.</p> <p>25 Q -- of column 16.</p>	<p style="text-align: right;">Page 208</p> <p>1 that.</p> <p>2 In Figure 5B -- I'll wait until you get</p> <p>3 there.</p> <p>4 A Okay. I'm there.</p> <p>5 Q In Figure 5B it seems that both you and I</p> <p>6 have been understanding that the connection port</p> <p>7 search message goes to the other computers in the</p> <p>8 broadcast channel; is that correct?</p> <p>9 A As it's talking about in claim 6, is your</p> <p>10 question?</p> <p>11 Q That's correct.</p> <p>12 A So if we go back to claim 6, then we go to</p> <p>13 the second step, which we haven't talked about a lot</p> <p>14 today. But it says, "When the attempt to send the</p> <p>15 message is unsuccessful, broadcasting from the first</p> <p>16 computer a connection port search message indicating</p> <p>17 that the first computer needs a connection." So in</p> <p>18 this context what we see is that that connection</p> <p>19 port search message is broadcast.</p> <p>20 Q Is it broadcast on the broadcast channel?</p> <p>21 A As I sit here today, I can't think of any</p> <p>22 other ways. Certainly, that's one way you</p> <p>23 definitely can. As I sit here today, I don't see</p> <p>24 any other way that's it disclosed in this patent</p> <p>25 besides using the broadcast channel.</p>
<p style="text-align: right;">Page 207</p> <p>1 A Okay.</p> <p>2 Q And then line 55 where it says "Internal</p> <p>3 Messages."</p> <p>4 A Yes, I see that.</p> <p>5 Q So there's a lot of message -- message types</p> <p>6 that it's talking about, and I'm wondering is the</p> <p>7 connection port search message an external message</p> <p>8 or an internal message?</p> <p>9 A Yeah. This type of analysis wasn't required</p> <p>10 for my declaration.</p> <p>11 Q Okay.</p> <p>12 A So when I look at this, I see, indeed,</p> <p>13 there's something called a connection port search</p> <p>14 statement in this table called Internal Messages.</p> <p>15 But the external messages, there's also something</p> <p>16 called a port connection call, a connected statement</p> <p>17 and a condition repair statement and even a</p> <p>18 connection request call. So I don't know how to</p> <p>19 answer your question without doing a little bit more</p> <p>20 analysis, as I sit here today, because this wasn't</p> <p>21 required to determine that these prior art</p> <p>22 references are missing broadcast channel, missing on</p> <p>23 how to repair something for m-regular and are so</p> <p>24 different it would be nonobvious to combine them.</p> <p>25 Q I think my question has been -- or strike</p>	<p style="text-align: right;">Page 209</p> <p>1 Q Okay. Because it's -- what I'm interested in</p> <p>2 is if in Figure 5B there is a -- if there was a</p> <p>3 computer Z that's not connected to the broadcast</p> <p>4 channel.</p> <p>5 MR. LEE: Objection. Form.</p> <p>6 BY MR. LIN:</p> <p>7 Q Are you following?</p> <p>8 A No, I'm not following. Sorry.</p> <p>9 Q Let's assume in Figure 5B there is a</p> <p>10 completely unconnected computer called Z as in</p> <p>11 zebra.</p> <p>12 A Just like H, here, is not connected to</p> <p>13 anybody?</p> <p>14 Q Yeah. That's correct.</p> <p>15 A Okay.</p> <p>16 Q So the connection search port message would</p> <p>17 not be transmitted to computer Z as in zebra; is</p> <p>18 that correct --</p> <p>19 MR. LEE: Objection. Form.</p> <p>20 MR. LIN: Sorry, Counsel.</p> <p>21 Q -- because it's not connected to the</p> <p>22 broadcast channel?</p> <p>23 A In this example embodiment, no, it wouldn't</p> <p>24 get it because it's -- in this example you're only</p> <p>25 broadcasting on the broadcast channel. Z would not</p>

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<p style="text-align: right;">Page 210</p> <p>1 receive that message because it's not connected to 2 the broadcast channel. 3 Q How about in claim 6, would it be -- would 4 that scenario be covered by claim 6? 5 A I'm not understanding now how this would now 6 apply -- this hypothetical applies back to claim 6. 7 Q Well, the hypo- -- the -- I'm -- my 8 understanding is that the hypothetical would not 9 apply to claim 6 because Z is not connected to the 10 broadcast channel; is that correct? 11 MR. LEE: Objection. Relevance. 12 THE WITNESS: I'm -- I'm not -- even then, 13 I'm not following your line of reasoning with 14 respect to this. I'm sorry. 15 BY MR. LIN: 16 Q Okay. Well -- 17 A Perhaps it's been a long week and -- a long 18 day and a long week. 19 Q It's been a long day. I think your -- your 20 answer that the broadcast of the connection port 21 search message must occur on the broadcast channel; 22 is that correct? 23 MR. LEE: Objection. Form. 24 THE WITNESS: I think my answer was that just 25 sitting here today that was not required for the</p>	<p style="text-align: right;">Page 212</p> <p>1 graph." Then I cite to some of the words that 2 petitioner makes and then explain that Denes does 3 not disclose any messages that would allow one to 4 respond. And then Karger is saying basically that 5 same thing in his testimony that I cite to in 6 paragraph 120. The ET-1 equation does not 7 effectively ever get to or maintain an m-regular 8 graph for those reasons we talked about earlier 9 today. And then I get to the paragraph 121 that (as 10 read) "Petitioner also argues that Rufino discloses 11 this claimed element." 12 Could I see a copy of Rufino, please? 13 BY MR. LIN: 14 Q Yes. 15 I'm handing a copy of Rufino to the witness. 16 It's already been entered in this proceeding as 17 Exhibit 1011. 18 A Right. So what we see from Rufino is that 19 this is a discussion of the token bus LAN 20 architecture and, therefore, this also doesn't have 21 a broadcast channel. There's no broadcast this way. 22 Moreover, as admitted by Dr. Karger the who-follows 23 query is sent on the physical bus, not on a 24 broadcast channel. It's sent just on this physical 25 bus that we talked about in this next picture</p>
<p style="text-align: right;">Page 211</p> <p>1 analysis because we're already missing in all the 2 prior art references, broadcast channel is -- is 3 explaining in the beginning part. So if you're 4 asking does that broadcasting step have to occur on 5 the broadcast channel, certainly that's what is the 6 preferred embodiment that's described in the patent. 7 And just sitting here today thinking about this, I 8 can't think of another way that you could do the 9 broadcasting except to use the broadcast channel. 10 BY MR. LIN: 11 Q Okay. Thank you. Can you go to your 12 declaration paragraph 121, page 64. 13 A I'm there. 14 Q I would like to ask you about -- I don't -- 15 it's been a long day. I don't -- I don't understand 16 paragraph 121 and the point that you're making in 17 121 and 122. 18 A Okay. 19 Q Could you -- could you try and rephrase it. 20 MR. LEE: Objection. Form. 21 THE WITNESS: So this is in the context of 22 that last step of claim 6 "...having a third 23 computer not already connected to said first 24 computer respond to said connection port search 25 message in a manner as to maintain an m-regular</p>	<p style="text-align: right;">Page 213</p> <p>1 beginning on my page 65. Therefore, now in 2 paragraph 122 (as read), "Accordingly, there is no 3 way that this claim element could be met by Rufino 4 that alleges a third station is already connected." 5 It should say already not connected. That's a 6 little typo. 7 Q "Accordingly, there is no way that this claim 8 element be met by Rufino because the alleged" -- "is 9 already" -- 10 A No. It's fine. Because it is already 11 connected. Whereas, if we go back to claim 6, we 12 have to have a third computer not already connected. 13 So Rufino is missing that part of the element. It 14 can't be a third. There can be no third computer 15 not already connected to the first computer when you 16 have a bus because everybody's connected to 17 everybody because they're connected to the bus. And 18 that's why I highlight this phrase out of Tanenbaum 19 where "each station receives the frame" anytime 20 anyone sends a message on the broadcast medium of 21 the bus. 22 Q So if you have an underlying network where 23 you're connected, that precludes being connected on 24 the overlay; is that correct? 25 A I think you're misunderstanding. So what</p>

<p style="text-align: right;">Page 214</p> <p>1 this is a saying is -- going back to the claim 2 language of being connected. I gave a definition of 3 that, which I believe is the proper definition under 4 the BRI standards. And then if we go to the claim 5 language for claim 6, again it says, "...having a 6 third computer not already connected to the first 7 computer respond." And we already talked about how 8 an exemplary third computer could be a member of the 9 broadcast channel responding to that broadcast 10 message that came on the broadcast channel. 11 So the first and the third computer can be 12 connected to the same broadcast channel, indeed, 13 that's a preferred embodiment. But they're not 14 connected directly to each other in a point-to-point 15 connection the way that I give as a definition of 16 connection in my claim construction. But now when 17 we turn to Rufino, Rufino can't -- can't match that 18 language because Rufino is a token bus architecture 19 where everyone is connected to everyone else. It's 20 a broadcast medium not a broadcast channel. 21 So anyone -- it's like if you and I were both 22 holding on to a wire and Michael, here, puts 23 electricity on the wire, we both feel it immediately 24 as a jolt. That's how the broadcast's bus works. 25 So everybody is connected to everybody. There is no</p>	<p style="text-align: right;">Page 216</p> <p>1 straight out of Rufino that is -- I give on page 16. 2 It talks about this. 3 Q What does the -- what does the modifier 4 "logical" mean? 5 A So I have a sentence where I say, "Thus the 6 stations need some protocol" -- this is in my 7 paragraph 35. "Thus, the stations need some 8 protocol for managing when they can send messages, 9 with one of the most common being to organize the 10 stations into a logical (not physical) ring and use 11 a small message token to facilitate message 12 passing." And this logical ring is illustrated by 13 the dotted lines from Rufino that I cite to from his 14 Figure 1 and also the figure on the next page on my 15 page 17 from Tanenbaum, which also highlights and 16 stresses that this is a logical ring. You logically 17 think of there being this sequence of stations that 18 goes around, but physically they're all connected to 19 the same broadcast medium, the bus. 20 MR. LIN: Counsel, I want to take a break. I 21 think I might only have a little bit left. Let me 22 just figure out what I need. 23 MR. LEE: Yeah. 24 THE VIDEOGRAPHER: We're going off the 25 record, the time is 3:37.</p>
<p style="text-align: right;">Page 215</p> <p>1 third station that can receive the message and then 2 respond to it and not be already connected. It is 3 already connected on that bus. It can't satisfy 4 claim 6. 5 Q Can you turn to Rufino, please. 6 A I'm there. 7 Q Can you turn to -- looks like the Bates label 8 didn't make it all the way through here. Oh, okay. 9 So, oh, it's just dark. Page 8. 10 A I'm there. 11 Q Sorry, that's not what I wanted to talk 12 about. Page 9, Bates page 9 -- 13 A I'm there. 14 Q -- in the upper right-hand corner. What does 15 it mean, "logical ring"? 16 A So the sentence I think you're pointing me to 17 is "Access control is performed by a token passing 18 protocol, which establishes a logical ring over the 19 physical bus." Is that what you're referring to? 20 Q That's correct. 21 A Yeah. I speak to this in my declaration, in 22 fact, when you go back to this general discussion of 23 the token bus networks in -- beginning in my 24 paragraph 35. And I have a figure right out of 25 Tanenbaum that talks about -- and as well a figure</p>	<p style="text-align: right;">Page 217</p> <p>1 (Recess.) 2 THE VIDEOGRAPHER: We're back on the record, 3 the time is 3:51. 4 BY MR. LIN: 5 Q All right. Let's go back to columns 9 and 6 10. 7 A In the patent? 8 Q Of the '147 patent. 9 A Okay. 10 Q Does -- when there is a disconnection in the 11 '147 patent, does it talk about reconfiguring the 12 entire broadcast channel to address a planned or 13 unplanned disconnection? 14 A I don't understand the question. 15 Q What do you mean by reconfiguring the whole 16 thing? 17 A So breaking all of the -- the -- the 18 connections and then reforming a new network or new 19 broadcast channel. 20 MR. LEE: Objection. Form. 21 THE WITNESS: You mean as a preferred 22 embodiment or whether or not that's allowed in -- in 23 the -- for claim 6? 24 BY MR. LIN: 25 Q In the specification does it describe it and</p>

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<p style="text-align: right;">Page 218</p> <p>1 then we can talk about it. Well, let me -- let</p> <p>2 me -- let me strike that. Let me rephrase it.</p> <p>3 Let's focus on the specification first.</p> <p>4 A Okay. So in the specification, yes, that is</p> <p>5 allowed.</p> <p>6 Q And is it described in the specification?</p> <p>7 A Yes.</p> <p>8 Q Where?</p> <p>9 A Here in the column 9. And then it says --</p> <p>10 it's very terse and so I could see how it could be</p> <p>11 missed at first. If you go down to line 62 in</p> <p>12 column 9, "Such a condition may also occur when the</p> <p>13 broadcast channel in the small regime." And as</p> <p>14 we've talked about elsewhere today, when the</p> <p>15 broadcast channel is in the small regime, you don't</p> <p>16 need a lot of whole messages. There's just a few</p> <p>17 computers there, so they just kind of get together</p> <p>18 and decide what to do amongst themselves.</p> <p>19 And that's kind of like -- those details are</p> <p>20 mentioned very briefly because it's so easy for a</p> <p>21 person of ordinary skill in the art to understand if</p> <p>22 there's only four computers and we're in the small</p> <p>23 regime, they might even be all connected to each</p> <p>24 other. They just say, hey, you're still there?</p> <p>25 And we're fine.</p>	<p style="text-align: right;">Page 220</p> <p>1 BY MR. LIN:</p> <p>2 Q Please. I think -- I think -- please. Go</p> <p>3 ahead.</p> <p>4 A Okay. So just thinking out loud, here, when</p> <p>5 we go to claim 6, and you're asking now with respect</p> <p>6 to claim 6, can you do a full-blown reconfiguration</p> <p>7 and have that allowed. What we need first to see</p> <p>8 you started with something that was m-regular, with</p> <p>9 m at least 3. You're healing a discretion, so this</p> <p>10 is in the framework that now one of those computers</p> <p>11 has left in an unplanned way. We want to heal it.</p> <p>12 You do a first step, attempting to send a message</p> <p>13 from a first computer to a second computer, check.</p> <p>14 That's allowed. Next one, when the attempt to send</p> <p>15 the message is unsuccessful, broadcasting from the</p> <p>16 first computer to a connection -- a connection port</p> <p>17 search message indicating that the first computer</p> <p>18 needs a connection. So you broadcast on -- in this</p> <p>19 example, in this hypothetical, be broadcasting on</p> <p>20 the broadcast channel that's left and then have a</p> <p>21 third computer not already connected to the first</p> <p>22 computer -- so we still have to have that element --</p> <p>23 respond in a manner as to maintain a m-regular</p> <p>24 graph.</p> <p>25 So if your question is can we then -- if</p>
<p style="text-align: right;">Page 219</p> <p>1 Great. We're in the small regime. We are</p> <p>2 fixed.</p> <p>3 So they could even sort of reconfigure</p> <p>4 who's -- the numbers and stuff and everything is</p> <p>5 good. So their small regime is a special case when</p> <p>6 you might completely reconfigure the network and</p> <p>7 then go on from there.</p> <p>8 Q How many computers are in the small regime?</p> <p>9 A It depends on what is m if we're trying to</p> <p>10 maintain an m-regular network.</p> <p>11 Q If m is at least 3, what's the smallest</p> <p>12 regime we can have?</p> <p>13 A You could have two nodes in the small regime</p> <p>14 and it would be -- again, you wouldn't get to m</p> <p>15 greater than 3 yet, but it would be in the small</p> <p>16 regime, hopefully, to build back up to that point.</p> <p>17 If you had m equals 3, the smallest number of nodes</p> <p>18 would be 4 to be in the small -- to be in the small</p> <p>19 regime.</p> <p>20 Q Is this reconfiguration in the small regime</p> <p>21 covered by claim 6?</p> <p>22 MR. LEE: Objection. Form.</p> <p>23 THE WITNESS: That question was not necessary</p> <p>24 for my analysis. I could try to think about some</p> <p>25 more as I sit here today if you'd like.</p>	<p style="text-align: right;">Page 221</p> <p>1 there's just a handful of computers and even if</p> <p>2 we're not quite in the small regime, the number of</p> <p>3 changes that you make are -- are basically the</p> <p>4 on- -- sometimes the only possible changes you can</p> <p>5 make that would be basically equivalent to</p> <p>6 reconfiguring everything. So I'm not sure how that</p> <p>7 would be different than even just having, you know,</p> <p>8 a couple computers hook up to each other. Yeah,</p> <p>9 maybe I'm not understanding the question. It's kind</p> <p>10 of late in the day.</p> <p>11 But as long as you're satisfying every step</p> <p>12 of the method, just sitting here today, I'm not</p> <p>13 immediately seeing how that would not be allowed.</p> <p>14 Again, that analysis wasn't needed for -- the term</p> <p>15 in those prior art references are missing on</p> <p>16 broadcast channel, maintaining an m-regular graph or</p> <p>17 that they would be nonobvious or that -- and the</p> <p>18 fact that they are nonobvious to combine.</p> <p>19 Q In column 6, lines 24 to 28 -- it actually,</p> <p>20 goes a little farther.</p> <p>21 A I'm there.</p> <p>22 Q It goes a little farther down. The '147</p> <p>23 patent is talking about creating these connections</p> <p>24 using a TCP/IP connection or protocol; is that</p> <p>25 correct?</p>

<p style="text-align: right;">Page 222</p> <p>1 A So what's being described here in column 6 is</p> <p>2 an example embodiment that's using TCP/IP</p> <p>3 connections to be the connections you do for the</p> <p>4 underlying network for the broadcast channel.</p> <p>5 Q Does the '147 patent disclose any other</p> <p>6 portal to create the underlying network?</p> <p>7 A Yes.</p> <p>8 Q Could you tell me where?</p> <p>9 A Certainly. If we'd turn to column 1 and go</p> <p>10 to line 46 it says, "The point-to-point network</p> <p>11 protocols, such as UNIX pipes, TCP/IP, and UDP,</p> <p>12 allow processes on different computers to include</p> <p>13 via point-to-point connections." Sorry.</p> <p>14 Q Do you need to get that?</p> <p>15 A No. I'll try not to -- turn it off.</p> <p>16 Q Is there anywhere else? Anything else?</p> <p>17 A As I sit here today, nothing else is coming</p> <p>18 to mind, but that doesn't mean there might not be</p> <p>19 something else I'm just not remembering right now.</p> <p>20 Q Okay. And earlier on you mentioned internal</p> <p>21 ports. Is that an port number?</p> <p>22 A So where are we talking about now?</p> <p>23 Q I'm sorry, it's also late in the day for me.</p> <p>24 Here, let's see. Okay. Why don't we go to column</p> <p>25 9, lines 30, to 33.</p>	<p style="text-align: right;">Page 224</p> <p>1 ordinary skill in the art. Ovals, for example,</p> <p>2 illustrate starting and ending places.</p> <p>3 For this little snippet of discussion,</p> <p>4 rectangles are representing actions and diamonds</p> <p>5 represent decisions. And then the lines that are</p> <p>6 connecting up these various shapes, show the various</p> <p>7 flow of control of how a computer would be</p> <p>8 performing these various actions. So that's why we</p> <p>9 call it a flow diagram. It's showing the flow of</p> <p>10 control of how a computer would perform these</p> <p>11 actions.</p> <p>12 Q So I'm going to start with the OSI reference</p> <p>13 model one more time.</p> <p>14 A Okay.</p> <p>15 Q It's on page 11 of your declaration.</p> <p>16 A Of my declaration, yes. Okay.</p> <p>17 Q So I'm going to pose a -- I'd like to</p> <p>18 understand how this flow diagram would be</p> <p>19 implemented in the context of the OSI diagram.</p> <p>20 MR. LEE: Objection to form.</p> <p>21 THE WITNESS: Are you asking about Figure 21</p> <p>22 now?</p> <p>23 BY MR. LIN:</p> <p>24 Q Yes.</p> <p>25 A Okay.</p>
<p style="text-align: right;">Page 223</p> <p>1 A I'm there.</p> <p>2 Q And it says, "Each former neighbor of the</p> <p>3 disconnected computer recognizes that it is short</p> <p>4 one connection (i.e., it has a hole or empty port)."</p> <p>5 So what is an empty port?</p> <p>6 A Yeah. So in this preferred embodiment it's</p> <p>7 referring to, for example, let's say TCP/IP ports</p> <p>8 and let's say again in this example we have -- that</p> <p>9 we're trying to maintain a four-connected network,</p> <p>10 which is the example that is often given in the --</p> <p>11 in the patent specification. And therefore, you</p> <p>12 have four internal ports that are the ports you use</p> <p>13 to communicate on the broadcast channel and say one</p> <p>14 or more external ports that you use for these</p> <p>15 overhead-type communications.</p> <p>16 Q Can you turn to column 24, line -- starting</p> <p>17 at line 20.</p> <p>18 A I'm there.</p> <p>19 Q What is a flow diagram?</p> <p>20 A So if we go to -- Figure 21 is what's being</p> <p>21 referenced here -- what we see is commonly referred</p> <p>22 to as a flow diagram. It's -- it's a diagrammatic</p> <p>23 way of expressing how you would do certain</p> <p>24 operations or instructions. In this case, certain</p> <p>25 shapes have certain meanings to a person in the</p>	<p style="text-align: right;">Page 225</p> <p>1 Q So let's start with just Figure 21. This</p> <p>2 hole -- it says fill hole in the oval on Figure 21,</p> <p>3 correct?</p> <p>4 A Uh-huh. Yes.</p> <p>5 Q And that's, let's say, a TCP/IP port number,</p> <p>6 correct?</p> <p>7 A A hole that -- okay -- that is now not</p> <p>8 connected. Yeah.</p> <p>9 Q And so if we have an application running on</p> <p>10 the OSI reference model, how would we -- how would</p> <p>11 we determine that a hole needs to be filled?</p> <p>12 A Because you no longer have -- because exactly</p> <p>13 the language of claim 6, that you attempted to send</p> <p>14 a message to one of your neighbors, it was</p> <p>15 unsuccessful, and so now you know, based on that</p> <p>16 lack of success, you need to fill a hole with that</p> <p>17 port. That guy got disconnected in an unplanned</p> <p>18 way. And all that happens at that application there</p> <p>19 because the broadcast channel is occurring and those</p> <p>20 connections are being maintained at the application</p> <p>21 there.</p> <p>22 Q Okay. Hold on, I'm waiting for the court</p> <p>23 reporter to catch up.</p> <p>24 So let me take this one step at a time. The</p> <p>25 application layer decides that it needs to send a</p>

<p style="text-align: right;">Page 226</p> <p>1 message from computer A to -- or let's just use the 2 language of the claim. So the application in the 3 first computer decides that it needs to send a 4 message to a second computer so the first computer, 5 the application will tell the transport layer that 6 it needs to send a message? 7 A That's not really the way that a person of 8 ordinary skill in the art would say it. Instead, 9 what you do is you use the API provided by the 10 transport layer to perform this action of sending -- 11 attempting to send the message to the other 12 computer, in this case the second computer. 13 Q So who tells the API to the transport layer 14 that a message needs to be sent, the application? 15 A The problem is we're anthropomorphizing maybe 16 a little too much now because this is all happening 17 now in software. The TCP/IP protocol stack in this 18 hypothetical example is being provided by a set of 19 interfaces in the programming language. We then use 20 this library in our software, the application layer, 21 to call this functionality, send a message to this 22 other computer and it uses its instructions now to 23 go down to the protocol stack to perform the actions 24 of attempting to send that message which then is 25 determined by the application layer to now be</p>	<p style="text-align: right;">Page 228</p> <p>1 A The hole is happening at the application 2 layer because that's how -- again, the broadcast 3 channel is something that's happening at -- between 4 the applications and the connection is stuff that 5 happens, as I opine, that a connection is "an edge 6 between two application programs connected to a 7 logical broadcast channel that overlays an 8 underlying network." 9 Q But how can -- maybe I'm misunderstanding 10 because I think we were talking about the hole as a 11 TCP/IP port number. So is there a TCP/IP port 12 number at the application layer? 13 A So in this example, the application layer 14 would be keeping track of these port numbers that it 15 wants to use for, say, internal connections as well 16 as an external connection. 17 Q So the application layer manages the port 18 numbers; is that correct? 19 A It depends on what you mean by "manages." So 20 again, going back to this discussion about APIs, the 21 concept of the Internet implementation of 22 networking, the concept of ports arrives at layer 4. 23 Layer 3 doesn't have a concept of ports. So this 24 whole concept of ports happens at layer 4 the 25 transport layer where both TCP and UDP can have this</p>
<p style="text-align: right;">Page 227</p> <p>1 unsuccessful. It returns with some kind of a 2 message of lack of success. I couldn't send the 3 message. Again, overanthropomorphizing yet again. 4 Q And then the first computer is unable to -- 5 strike that. 6 The attempt to send the message is -- from 7 the first computer to the second computer -- is 8 unsuccessful because it realizes that there's no 9 connection. The first computer realizes there's no 10 correction -- connection, correct? 11 A I think it's the other way around, that 12 it's -- according to the claim language when an 13 attempt to send the message is unsuccessful, then 14 you say from the first computer that you need to 15 send this connection port search message indicating 16 that the first computer needs a connection. So it 17 determines that message was unsuccessful, hey, I 18 needed a new connection. So that's what that is 19 saying in layman's terms. 20 Q So the first computer realizes that it has a 21 hole; is that correct? 22 A In a preferred embodiment that was the 23 language that the patent describes it as, yes. 24 Q And the hole that the first computer has 25 detected is located at the -- which layer?</p>	<p style="text-align: right;">Page 229</p> <p>1 notion of ports. There's roughly 65,000 2 possibilities. And that's now a part of the 3 interface that it gives to the application layer 4 above it. 5 So an application layer can say, oh, I want 6 to communicate on port 8041. And then it would 7 have, as a part of it's call, two methods that 8 implement things on layer 4 to give as input to that 9 the number 8041. So it does keep track of, in this 10 example -- this hypothetical example, it's keeping 11 track of the port numbers that it has to other nodes 12 in the broadcast channel. 13 Q Okay. And how -- how is that -- how does the 14 application layer fill the hole? 15 A So again, using this metaphor of a hole, 16 because we're trying to get back to some certain 17 m -- let's say m equals 4, having four connections 18 inside the broadcast channel, it would fill the hole 19 by getting this response from a third computer that 20 it then can use the message from that third computer 21 to figure out how to -- so called fill the hole. In 22 all this discussion of all these different ways -- 23 you know, messages and how that can all happen in an 24 exemplary way would be here described in columns 9 25 and 10.</p>

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1 Q And so when -- in Figure 5A -- I think it's
2 computers A and I are connecting; is that correct?
3 A 5A is the example of a planned disconnection.
4 Q Sorry, I mean 5B?
5 A 5B, so in 5B we have -- I think this is
6 illustrating the example where I and F might be
7 wanting to connect.
8 Q Thank you. I and F. That's what I meant.
9 Thank you. Does the application layer create a
10 TCP/IP connection between I and F?
11 MR. LEE: Objection. Form.
12 THE WITNESS: So in this example -- a
13 hypothetical using this example embodiment, it
14 would, indeed -- the application layer would be now
15 asking now, on top of the TCP/IP layers, to be
16 forming now a TCP/I connection -- TCP/IP connection
17 between I and F, but then it would also be
18 maintaining as a connection in the broadcast
19 channel.
20 BY MR. LIN:
21 Q Okay. Does this -- okay.
22 Counsel, I think I'm done.
23 MR. LEE: We reserve the right to review and
24 sign.
25 THE VIDEOGRAPHER: This is it?


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1 MR. LIN: We're done.
2 THE VIDEOGRAPHER: Okay. This concludes
3 today's testimony given by Dr. Goodrich. The total
4 number of media used was four and will be retained
5 by Veritext Legal Solutions. We're off the record
6 at 4:14.
7 (TIME NOTED: 4:14 p.m.)
8 _____
9 MICHAEL GOODRICH, Ph.D.
10
11 Subscribed and sworn to before me
12 this ____ day of _____, 2017
13 _____
14 NOTARY PUBLIC
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1 ERRATA SHEET
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5 516-608-2400
6 NAME OF CASE: ACTIVISION BLIZZARD VS. ACCELERATION BAY
7 DATE OF DEPOSITION: FEBRUARY 24, 2017
8 NAME OF DEPONENT: MICHAEL GOODRICH, Ph.D.
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21 _____
22 MICHAEL GOODRICH, Ph.D.
23 SUBSCRIBED AND SWORN TO BEFORE ME
24 THIS ____ DAY OF _____, 20__.
25 _____
26 (NOTARY PUBLIC) MY COMMISSION EXPIRES: _____

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1 I, the undersigned, a Certified Shorthand
2 Reporter of the State of California, do hereby certify:
3 That the foregoing proceedings were taken
4 before me at the time and place herein set forth; that
5 any witnesses in the foregoing proceedings, prior to
6 testifying, were administered an oath; that a record of
7 the proceedings was made by me using machine shorthand
8 which was thereafter transcribed under my direction;
9 that the foregoing transcript is a true record of the
10 testimony given.
11 Further, that if the foregoing pertains to the
12 original transcript of a deposition in a Federal Case,
13 before completion of the proceedings, review of the
14 transcript [] was [] was not requested.
15 I further certify that I am neither financially
16 interested in the action nor a relative or employee of
17 any attorney or any party to this action.
18 IN WITNESS WHEREOF, I have this date subscribed
19 my name.
20
21 Dated: February 27, 2017
22
23 
24 NANCY A. MORROW
25 CSR No. 11977

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