

Transcript of Aviel D. Rubin, Ph.D.

Date: August 14, 2025
Case: Genius Sports Ltd. -v- Sportscastr, Inc. (d/b/a Panda Interactive) (PTAB)

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IPR2024-01307
Genius Sports v. Sportscastr
Genius Sports Ex. 1063

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

- - - - - - - - - - - - - -

GENIUS SPORTS LTD.,

Petitioner

v.

SPORTSCASTR INC.

(d/b/a PANDA Interactive),

Patent Owner.

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IPR2024-01305
U.S. Patent No. 10,805,687
IPR2024-01307
U.S. Patent No. 10,805,687
IPR2024-01308
U.S. Patent No. 10,425,697
IPR2024-01309
U.S. Patent No. 10,425,697
IPR2024-01310
U.S. Patent No. 11,039,218
IPR2024-01311
U.S. Patent No. 11,039,218

Deposition of AVIEL D. RUBIN, Ph.D.
Annapolis, Maryland
Thursday, August 14, 2025
9:10 a.m.

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Reported by: Janet A. Hamilton, RDR

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Pursuant to Notice, before Janet A. Hamilton, Registered Diplomate Reporter and Notary Public in and for the State of Maryland.

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A P P E A R A N C E S

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C O N T E N T S

EXAMINATION OF AVIEL D. RUBIN, Ph.D. PAGE
By Mr. Baker 6

E X H I B I T S

(Attached to the transcript)

RUBIN DEPOSITION
Exhibit A US Patent Application 2013/0018960 (Knysz) 54

EXHIBITS PREVIOUSLY MARKED

Exhibit 2002 Curriculum Vitae of Dr. Rubin
Exhibit 2001 Declaration of Aviel Rubin, Ph.D. In Support of Patent Owner's Preliminary Response
Exhibit 1009 US Patent No. 11,039,218
Exhibit 1001 Declaration of Dr. Wicker
Exhibit 1015 US Patent Application Publication 2015/0163379

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EXHIBITS PREVIOUSLY MARKED (Continued)

Exhibit 1016	US Patent Application No. 2014/0229992
Exhibit 1017	US Patent Application No. 2016/0036910
Exhibit 1001	Declaration of Dr. Stephen Wicker

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P R O C E E D I N G S

AVIEL D. RUBIN, Ph.D.,

a witness herein, being duly sworn, testified as follows:

EXAMINATION BY COUNSEL FOR PETITIONER

BY MR. BAKER:

Q Good morning, Dr. Rubin.

A Good morning.

Q We're here today to ask some questions related to your declarations. I believe you have two declarations for an IPR. Are you aware of the IPRs that we're discussing?

A Yes.

Q Do you recall how many IPRs you're discussing today?

A I believe there are four.

Q Correct. All right. So when I ask you questions, I hope that they're clear. To the extent that you need additional clarity, please request that from me, not from counsel here today. Do you agree with that?

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A Yes.

Q All right. Let's get started. I'm going to hand you what has been previously marked as Exhibit 2002.

Are you familiar with that document?

A Yes, I am.

Q And can you identify for the record what I've handed you?

A This is my CV.

Q When is the last time you updated your CV?

A I keep it up to date. I had a publication this year and a couple more testifying -- I gave testimony a couple of times since I submitted this, so I updated those three things on the CV since this was submitted.

Q Thank you. Dr. Rubin, can you describe your educational background, specifically your degrees and the focus of your doctoral research?

A Yes. So I have a Bachelor's of Science in computer science from the University of Michigan which I received in 1989, received a Master's in 1991 in computer science and engineering, also at

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Michigan, and my Ph.D. in 1994, also at Michigan. The thesis title I had was Non-Monotonic Cryptographic Protocols, and it was broadly about applied cryptography and computer security.

Q Did any of your research relate to streaming technologies?

A There were projects that I worked on when I was at AT&T Labs. So are you asking for my Ph.D.?

Q Anywhere along your educational path have you had experience studying the Internet or streaming technologies generally?

A Yes. I studied the Internet, and the Internet was pretty new at the time that I was in graduate school. I think of the Internet as starting in really 1993 when the web kind of was introduced, and I finished my Ph.D. in 1994. So in terms of my education it was focused more on networking and computer security than, you know, the modern Internet which didn't really exist yet.

Q As for work experience, you've worked at both Bellcore and AT&T Labs; is that correct?

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A That's right.
Q Can you elaborate on the nature of your work at those two institutions?
A Sure. So right after grad school I went to work full time at Bellcore. I was in the security group. We were called the Cryptography and Network Security Research Group. I worked on a project -- besides my research I also worked on an internal project called Bill Keeper at Bellcore which was used to send phone bills to customers of the phone company, and I worked on the security aspects of that, and I also -- it was -- it was somewhat of an academic-oriented job, so I went to conferences and did research and published papers, and the research was in computer security.
Then I went to AT&T Labs, and I worked there for I believe six years, and I worked on networking, some cellular projects and telecom as well as academic research in security.
Q Is it fair to characterize your focus as being network security or cryptography?
A I would say it's more network security and computer security and applied cryptography.
Q Can you tell me the distinction between network security and computer security?
A Sure. Network security is concerned with the protocols that are involved in communications between devices and things like IP SAT, like protecting the communication, protecting the access to a particular device, whereas computer security is focused on the device itself. So we think of the operating system and the applications that are running on the device as computer security.
Q Where were you on your professional path during the 2016-2017 time frame?
A I was a tenured full professor at Johns Hopkins, and I was technical director of the Information Security Institute at Johns Hopkins. I had been tenured and full since 2004.
Q Were you teaching classes then actively in that time frame?
A Yes.
Q Do you recall the classes you were teaching or the types of classes you were teaching at that point?
A Yes. So there were three primary classes that I taught pretty much for my whole time at Johns Hopkins. I taught the introductory undergraduate networking course. So that was a course where students learned what TCP IP was, what routing was, what various Internet protocols were, and then I taught a graduate course called Introduction to Computer Security, and then I taught a graduate course called Advanced Topics in Computer Security.
Q Did you use a textbook for the Intro to Networking class?
A Yes.
Q Do you recall which textbook you used?
A I don't recall what year I started using it but most of the years that I taught it I used Jim Kurose's book. The book title is Networks.
Q Can you spell his last name?
A Networks.
Q Can you spell his last name?
A K-U-R-O-S-E.
Q Kurose, yes.
A He may have had a co-author, but I actually know Jim, so I already remembered his name.
Q You've also authored or co-authored numerous books; is that correct?
A Yes.
Q Are those books primarily in either network security, applied cryptography or computer network -- or I'm sorry -- computer security? Is that fair?
A All but one of them. One of them is more focused on electronic voting security.
Q Security applied to electronic voting?
A Yes.
Q Will you be called into action soon to improve the voting?
A I have been several times.
Q I'm not surprised. Okay.
Do any of those books relate to streaming or socket architecture or any of those topics?

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A Well, the book with Bellovin and Cheswick called Firewalls and Internet Security: Repelling the Wily Hacker, second edition, the second one listed on my CV. There's a discussion, quite a bit of discussion of sockets because that's fundamental to firewalls.

Q Okay. Do any of your numerous publications relate to sockets?

A Sockets are a fundamental construct in networking, and so to the extent that a lot of my publications relate to networking they would involve sockets.

Q You have a list of patents on page 10 of your CV; is that correct?

A Yes.

Q Is it fair to say that all of those patents fall in one of three buckets: Either network security, computer security or cryptography?

A Broadly speaking, I think that's fair.

Q How about your work at Harbor Experts and Harbor Labs? Well, first, you are a founder of

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those two entities. Is that accurate?

A Yes.

Q Is it fair to say that your consulting also relates to one of the three buckets: Either network security, computer security or applied cryptography?

A So I would take the two companies separately for that.

Q Please.

A Harbor Labs I founded in 2011, and then I think about a year and a half ago I split out Harbor Experts from Harbor Labs, so I took some of the people that were in the company and went to one company and some went to the other, got a CEO for one of the companies.

So Harbor Labs is focused exclusively on medical devices and it's a company that provides guidance to medical device manufacturers on the security of their devices and helps shepherd them through the FDA certification process.

Harbor Experts is mostly former students of mine and a few other people that I recruited

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and myself working in litigation; like what I'm doing right now is through Harbor Experts. In that company a lot of the work has been on many different topics besides security. There have been several payment system cases. There have been cases related to streaming. There have been cases related to telecom. So I think that the work in Harbor Experts is much broader.

Q And for some of your expert work you have served as an expert in IPRs before the Patent Trial and Appeal Board; is that correct?

A Yes.

Q Have any of those IPRs involved streaming technologies?

A I don't remember. I would have to look.

Q Do you recall how many IPRs you've been an expert for?

A We have my CV here, but if I -- if I'm guessing off the top of my head, I would say 20 or 25.

Q What page of your CV has the list of your IPRs?

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A So I should point out that the list which starts on page 16 and ends on page 22, that is a list of all the cases in which I provided testimony.

Q Okay.

A So I have worked on IPRs. If I wasn't deposed, then it didn't make the list here, and your question was how many I worked on. So I don't recall. But provided testimony, we could -- I always say what the jurisdiction is in here, so when it's PTAB, I have that listed here.

Q So your work as an expert in litigation here listed on, starting on page 16 lists both your work where your expert testimony was used in district courts and at the PTAB?

A Correct.

Q Is that accurate?

A Right.

Q And you've only listed cases where you submitted a declaration or given some form of testimony?

A The latter. The testimony -- if I gave a

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declaration but I wasn't deposed, then it's not on the list.

Q You're familiar with the concept of one-to-many socket architecture; correct?

A I am familiar with that concept.

Q In your academic or industry work have you ever developed or evaluated a system that uses a one-to-many socket architecture?

A I have -- before this case I had not looked at something that was referred to that way that's specific to this, to the patents at issue here, and it's -- it's I think a higher level of abstraction of looking at sockets than what we traditionally look at with TCP sockets.

Q So the phrase one-to-many sockets, that's not a term of art. Is that accurate or fair to say?

A I think that's correct.

Q So it doesn't have a widely understood meaning in the field?

A I think that the words are simple enough that one would hear that and have a pretty good

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idea of what's meant by that, but prior to working on this case I was not familiar with that term.

Q I used the word "field." Do you have an understanding of what the relevant field is for the IPR we're here to discuss?

A I think I have that covered in my report, so.

Q Let me -- so I can give it to you so this doesn't have to be a memory test.

So I will hand you what has been previously marked as Exhibit 2001 for the '318 -- I'm sorry -- the '218 patent IPR.

A Okay. And can I please have the patent as well?

Q Yeah. Yes. So I'm also going to hand you what has been previously marked as Exhibit 1009.

A Thank you.

Q So I'll repeat the question and give you a chance.

What is the relevant field of these IPRs?

A I would say Internet video streaming, Internet communication and related protocols.

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Q My apologies. No shot at you, but if I had real time, I would look at that answer.

A Would you like me to repeat?

Q If you could repeat.

A I would say that Internet video streaming, Internet communication and related protocols, and I reference to page 42 of my declaration under level of ordinary skill in the art.

Q Is that page 42 or paragraph 42?

A Page 42, paragraph 95. I'm sorry, paragraph 96.

Q And what would be some of the related protocols?

A So those are discussed in my report. Page 21 I mention real-time streaming protocol, real-time messaging protocol, web real-time communication, adaptive bit rate protocols such as HLS and MSS, and the protocols involved with CDNs, content distribution networks.

Q And you also give a definition of a person of ordinary skill in the art; is that correct?

A Yes.

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Q Which paragraph is that found on?

A 96.

Q You indicate that a person of ordinary skill in the art would have at least some experience with live streaming network architecture. What do you mean by at least some experience? What would that constitute?

A I'm not sure I see where you're -- where you're talking about.

Q So I'm in paragraph 97. I'm reading the definition of a POSA, and about three-fourths down that paragraph you indicate that that hypothetical person would at least have some experience with live streaming network architecture.

A So that is not my definition. That's the Petitioner's definition. My definition is on paragraph 96.

Q Okay. Thank you for that clarification. Do you have an understanding what differences, if any, are made in your definition of a person of ordinary skill in the art and Petitioner's definition?

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A I think for the purposes of my analysis in this case they're close enough that it holds under both.

Q Okay. Would you agree that a person of ordinary skill in the art would need some level of experience in networking architecture?

A Yes.

Q Any particular live streaming networking architecture?

A I haven't looked at it from that perspective. I didn't offer that specific opinion, but I think that experience with live streaming network architecture does fit into something that a POSITA or POSA as we call it -- I call it a POSITA.

Q Same thing.

A Yeah -- is likely to be familiar with, and then in my definition I also say that more advanced degrees and/or training in a related discipline can compensate for shorter work experience.

Q The '218 patent -- and I'm going to use

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that as a representative patent for most of my discussion today.

A Okay.

Q And you have that in front of you; right? Exhibit 1009?

A I do.

Q Is it fair to say that the '218 patent discusses reduction of latency and synchronization errors in live streaming environments? Is that a fair characterization?

A I don't recall discussing a reduction in latency. If there's somewhere in my report that I do say that, then you can point me to that, but it is about synchronizing events with a video stream.

Q Does synchronizing an event with a video stream present any special challenges that you believe is resolved by the '218 patent?

A So if we look at column 2, line 45, it talks about latency being the delay between a first user generating a live video stream for transmission via the Internet and a second user receiving a copy of the live video stream via the

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Internet for viewing, and it talks about how one stream could take 15 seconds for one user and 10 seconds for another so the synchronization of the stream so that videos see them at the same time is the problem.

Q Does that passage reflect that latency is a challenge that's confronted by the '218 patent?

A That type of latency, yes.

Q What do you mean by "that type of latency"?

A The delay between a first user generating a live video stream for transmission and the second user receiving a copy of live video, that's a type of latency.

Q Are there other types of latency?

A Yes.

Q Can you identify those?

A Like you can have transmission latency which is how long it takes me to send something to you, for example. That's different from what's described here with two different users receiving something from the same source.

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Q Okay. Are there other forms of latency related to, broadly speaking, network architecture?

A Yes.

Q Can you identify those, please?

A So, like, there's latency caused by the physical hardware. So, for example, if you have a network, you have two computers communicating, and packets come in to one of the computers, they're processed, and then they're transmitted to the other computer, you have the processing latency, you have the physical latency of the hardware copying the bits from one interface to another interface. These are all -- in my course on networks we cover the effect of all of these different latencies on the total end-to-end latency, which is another type of latency.

Q So there's end-to-end latency and there are components that impact or affect that overall end-to-end latency. Is that --

A That's fair.

Q Okay. What are some of the events that

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can impact the overall end-to-end latency?
A Broadly speaking?
Q Mm-hmm.
A There can be a network outage. There can be old hardware or newer hardware. You could have algorithms that take a long time to process data before it's transmitted. You could have high quality networking equipment or lower quality networking equipment, so the quality of the networking equipment could affect it. You could have firewalls. You could have in a network traffic could be collected until it's checked whether it's secure or not and then allowed to cause latency. Computer can be down. Routers can be down. Routing protocols can reroute traffic. All of those are off the top of my head. I don't think those are in my report, but you're asking broadly, so...
Q Yes. And would a POSA be familiar with all those forms of latency?
A Yes.
Q Okay. And would a POSA be familiar with

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approaches or tools for reducing latency?
A They would be, yes. Not -- not every possible -- you know, obviously you can have novel inventions that can lead to other ways of reducing latency, but, you know, things like buying better hardware a POSITA would be familiar with.
Q Just confirming, I'm look at page 162 of Exhibit 2001. That is your signature?
A Yes.
Q Is that a wet signature or an e-signature?
A That's my JPEG added to this document.
Q Did you add that signature or did you authorize counsel to add that signature?
A I don't recall.
Q All right. In preparing for this deposition did you review any materials not identified in this declaration, Exhibit 2001?
A No.
Q In preparing your declaration, Exhibit 2001, did you review the prosecution file history for the '218 patent?
A In preparing the declaration?

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Q The declaration, yes.
A Yes.
Q And is that discussed in paragraph 5 of your declaration? Is that accurate?
A That is mentioned in paragraph 5.
Q Do you recall why you reviewed the '218 file history?
A That's my standard practice when I work on cases like this.
Q So whenever you evaluate a patent part of that process involves reviewing the file history for the patent?
A If I am working on validity issues, then yes.
Q Is it your understanding that a prosecution history of a patent informs a person of ordinary skill in the art of the scope of the claims?
A My understanding from lawyers I've worked with in the past that the prosecution history is one of the things to consider when looking at the scope of the claims.

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Q Do you also consult the prosecution history when reviewing a prior art patent?
A The prosecution history of that patent?
Q Yes.
A Not always.
Q You've had occasion to; it depends on the circumstance?
A I don't recall if I've done that or not.
Q Let's take a 10- or 15-minute break and give you a chance to see if you can connect.
(A recess was taken.)
BY MR. BAKER:
Q I do want to revisit one of your answers from earlier this morning. Do I recall correctly, did you say that as of 2003 sockets were fundamental?
A So sockets have been around since the 1970s and the idea of a TCP IP connection. TCP requires sockets. Those are different from the way that the patent refers to sockets which is the many-to-one kind of higher level abstraction of communication.

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Q In 2003 or as of 2003 could you use sockets to transmit real-time information?
A Yeah. You -- anything with a TCP connection, whether it was real-time or non-real-time, anything that traveled over a network connection that was using TCP would use a socket. UDP also uses sockets but those sockets were different.
Q So UDP sockets were different than TCP sockets?
A Yes.
Q All right. Let's put Exhibit 2001 in front of you. You got it?
A That is the report?
Q That's your report.
A Yes.
Q Just so we don't have to have a line of questioning I'm also going to hand you what's been -- I'm not sure there is an exhibit number on there. That's your supplemental declaration.
A Okay.
MR. BAKER: Counsel, I believe it's

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Exhibit 2041. Is that consistent with your memory?
MR. SOLOMON: I can confirm.
Yeah. This is Exhibit 2041.
MR. BAKER: Okay. Thank you.
BY MR. BAKER:
Q And, Doctor, can we turn to paragraph 78 of your declaration, please, 2001?
A Okay.
Q So this is where you indicate that the '218 patent describes a one-to-many socket architecture; correct?
A I say that in this paragraph.
Q Do you have an understanding of what a one-to-many socket architecture is?
A Yes.
Q Can you provide your explanation -- I mean can you please explain your understanding?
A If we look at the next page where we see a diagram.
Q So you're on page 33?
A Yes, and there's a red box around the

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socket server, and we can see that the socket server can offer sockets to different client applications.
Let me look at the patent.
Q So you're looking at the '218 patent now?
A I am, and I'm in column 20, line 16. I'm sorry. I'm refreshing myself.
Q Take your time.
A Okay. I don't remember what the question was.
Q I was asking what your understanding is of what is meant by the term one-to-many socket architecture.
A Right. So if we look at column 22 starting line 5, we see that the webserver provides an EventID and that there can be an event socket. 602A would be a socket for a particular event, and a second socket could be for another event, and so the clients that are connecting to each of those sockets for the particular event there would be multiple clients and one socket. So that's why it's many-to-one, or one-to-many.

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Q So the one aspect of that in this example would be the first event socket 602A; is that correct?
A Yes.
Q And what would be the many aspect of that? Where is the many explained?
A So if we look at paragraph -- sorry -- at line 31, still on column 22, it says, "In particular, the socket server similarly establish one or more first chat/system event sockets 604A dedicated to the first broadcaster's live stream of digital content and one or more second chat/system event sockets dedicated to the second broadcaster's live stream of digital content. So we have one or more event sockets per live stream. So the one-to-many is the live stream to the number of sockets.
Q And it's your opinion that this concept wasn't known before the disclosure of the '218 patent?
A I have not seen that before that.
Q In particular, what had you not seen?

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A Just one or more socket relationship for each live stream.
Q Was live streaming a known concept at the time, the relevant time period which we're going to call 2016-2017, if you agree?
A Live streaming was known then.
Q Did live streaming evolve to the use of sockets?
A Typically.
Q And is it your opinion that there was a one-to-one socket relationship for live streaming?
A Before this invention, yes.
Q Before this invention?
A Well, there were things called multicast, but that's -- that's different.
Q How is multicast different?
A Multicast is using a different type of addressing, and so in multicast you have a multicast address where something is being sent out on the Internet to different clients, but it's more viewed in terms of messaging than in terms of like video streaming.

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Q So there's no multicast streaming on the 2016-2017 time frame?
A Not using the routing protocol called multicast.
Q Can you put in front of you your supplemental declaration, Exhibit 2041?
A If you can keep referring to it as the supplemental because I don't have an exhibit number on it.
Q We will refer to it as the supplemental declaration from here on out.
A Thank you.
Q Absolutely. And can you turn your attention to paragraph 28 of your supplemental declaration?
A Okay.
Q In that paragraph you discuss a webserver; is that correct?
A Yes.
Q What is a webserver?
A I'm just going to read this paragraph.
Q Please, take your time.

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A Can I hear the question again, please?
Q I'm inquiring about your understanding of what a webserver is.
A It's broadly in its most broad form a server that speaks the HTTP protocol.
Q In the context of the '218 patent what is a webserver?
A So the patent -- the webserver described in the patent is an orchestrator webserver which helps connect clients to particular media without necessarily serving as an intermediary for all of the media.
Q So let's unpack that a little bit. Does the term webserver have an ordinary meaning to a person of ordinary skill in the art?
A Yes.
Q Does the '218 patent use the term webserver in a manner that's consistent with that ordinary meaning?
A So the patent describes a webserver with much more limited functionality than what could be generally understood to be a webserver.

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Q And what in the '218 patent are you referring to as the basis of that opinion?
A The webserver is described as providing stream identifiers to client systems. In a broad webserver description outside of this patent a webserver could be something that maintains all the content and that serves it to clients.
Q What portion of the '218 are you referring to?
A One place where this is discussed is at the top of column 24. It says, "In particular the webserver or servers would provide to the first viewer client device the first stream identifier, the first StreamID, that corresponds to the first chat/system event socket and provide to the second viewer client device the second stream identifier that corresponds to the second chat/system event socket."
So you're asking about the difference between that type of a webserver, and the way the term is understood a webserver can be like Amazon.com server which provides all the content

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directly to the users or like my home page webserver that I can program myself versus one here that's designed to provide stream identifiers.

Q In your example is the Amazon.com server an orchestrator type webserver or a relay type of webserver?

A Maybe not a good example because the Amazon server's actually a very complicated network of servers, but one that -- one that provides all of the, all of the content wouldn't necessarily be a relay server.

Q So can you explain to me the difference between a relay type server and orchestrator type server?

A If we look on paragraph 28, I say, "An orchestrator-type webserver may be used to facilitate connections between various components of a computer architecture or distributed network. A relay-type webserver may function by serving as an intermediary between different computing modules, itself carrying the data between two

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modules, whereas an orchestrator webserver facilitates the establishment of connections between different computing modules so that those computing modules may transmit data between themselves."

So the difference is that a relay will receive and send all of the content between clients and some source, whereas an orchestrator will point the client directly to the source and then the media will transfer without going through the webserver.

Q So I don't see a citation to anything for that opinion. What's the basis of your conclusion that there is this distinction between an orchestrator type and a relay type of web server?

A Being an expert in the field and having taught web communication protocols for years.

Q Is this distinction discussed by Kurose, Jim Kurose in Intro to Networking?

A I don't recall specifically what's in that book, but that is a well-known understood distinction that I think a POSITA would know

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about.

Q So you testified earlier that in the patent the webserver is an orchestrator-type web server which helps connect clients to particular media without necessarily serving as an intermediary for all of the media. Do you recall that?

A That -- I agree with that.

Q What do you mean by without necessarily serving as an intermediary for all of the media?

A It's the difference between relaying the data and not relaying the data. So let me kind of give you the two examples.

So let's say that counsel to my right is, is the web server and I have a video stream that you want to see.

Q Yes.

A So you go to the web server and you ask for the media, and in an orchestrating web server he would send you my address and you would come to me for the video and I would send it directly to you. In a relay you would go to him for the video

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and I would send -- he would ask me for the video. I would send him the video and it would flow from me to you through him.

Q So is it your opinion that webservers were invented by the '218 inventors?

A No.

Q It's your opinion that the '218 invented a narrower form of a web server?

A The '218 invented the claims of the '218 patent, the full claims, all the steps, and my opinion is that Dr. Wicker has not shown that the prior art references combinations that he's suggesting disclose that and that those combinations would not have made sense to a POSITA.

Q Is there something in the '218 claims you could point to regarding webservers that you believe is new and nonobvious?

A What I -- if you look at paragraph 30 of the supplemental report, I point out at the top of page 20 that Spivey/Herzog combination describes relay-type webservers and that those are not the

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type of webserver that is in the '218 claims, and so I'm saying that Petitioner and Dr. Wicker have not shown that there -- that there is a -- the type -- they have not disclosed the type of webserver that is described in the patents.

Q Can you point to a specific limitation in the '218 patent claims that is not taught by Spivey and Ellis? And I would like to focus on the webserver aspect of the claims, if possible.

A The combination does not disclose claim element 1, section C, subsection or sub-element C, or element C. At least one webserver communicates communicatively coupled to be at least one socket server to transmit to the first viewer client device, and then the two things that are supposed to be transmitted to the -- to the first viewer client device because this type of a webserver that's described in the '218 patent is not the type of webserver that's described in the combination, and so these -- these steps do not take place, or these components don't exist.

Q So I don't want to put words in your

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mouth, but tell me if you agree. Is part of what you are saying about claim 1C is that it requires a direct connection between the webserver and the client device? Is that part of the novelty?

A I don't believe I offered an opinion on that.

Q Do you agree with that position or is that not accurate?

A I haven't considered that.

Q You said you have not considered or offered that opinion in your declaration before today; correct?

A I mean, if it's in my declaration, the declaration speaks for itself. As I sit here, I do not recall offering that specific opinion.

Q Okay. Do any of the independent claims for the '218 patent require synchronization?

A I don't believe I analyzed that or provided any opinions on that in either of my declarations.

Q Turning back to that limitation 1C.

A Okay.

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Q So it's your opinion that the arrangement of at least one webserver communicatively coupled to the at least one socket server to transmit to the first viewer client device, it's your opinion that that's -- that was new and nonobvious during the relevant time period?

A I'm saying that the prior combinations put forth by Dr. Wicker do not disclose this type of a webserver within the context of this claim.

Q Can you read claim 15 to yourself, please? And we're still in Exhibit 1009, the '218 patent.

A Claim 15?

Q Yes.

A So I'm also going to look at 12 which is what it depends on.

Q Okay.

A Okay.

Q Claim 15 recites transferring first real-time information; correct?

A It does.

Q Claim 15 does not require receiving chat information; correct?

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A I have not looked at that question.

Q Do you have an opinion here at this moment?

A If it's in my report and you can point me to it, we can discuss it, but sitting here I don't have an opinion on that.

Q Okay. Let's turn to paragraph 132 of your original declaration, Exhibit 2001.

A Okay.

Q Why don't you go ahead and read that to yourself, just that paragraph, or whatever else you think you need for context, and I'll ask you a question when you're done.

A Okay. I've read it.

Q In that paragraph you acknowledge that a websocket connection supports a two-way communication between entities; correct?

A Yes.

Q Is it true that in the 2016-2017 time frame that websockets were used to build chat applications?

A There were chat applications that used

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sockets.
Q When you say sockets, do you specifically mean websockets?
A No. They usually -- chat applications were, they use different port numbers than AD or the web ones, so I wouldn't call them websocket.
Q So you're not aware of websockets being used for that application in the 2016-2017 time frame?
A I would have to go back and look. There may have been web-based chat protocols where, where that was possible, but I -- in the applications themselves that were used would not be websockets.
Q When we were discussing the '218 patent earlier, you mentioned event socket. Do you recall that?
A Yes.
Q What is your understanding of what an event socket is in the context of the '218 patent?
A So the '218 patent describes a socket server which has event sockets which are a

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construct of the patent, and it refers to a socket that clients can connect to which relate to a particular event. So there can be multiple sockets that relate to the same event.
Q Can you identify which passage in the '218 you're referring to or what figure you're looking at?
A Yes. I am looking at Figure 2.
Q And in Figure 2 where are event sockets illustrated?
A Okay. So 602A is an example of an event socket, and it's described in column 22, line 11 and 12.
Q Column 22. I'm sorry, which lines?
A Column 22 around line 12. It says, "Event socket 602A." A few lines down it talks about event socket 602B. So those are the little boxes at the bottom of the socket server box on Figure 2.
Q Okay. So let's focus on that paragraph for now.
A Okay.

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Q Column 22, lines 55 to 25 [sic]. Do you need to reread those or --
A Well, that's not where I was but I can look down there.
Q So where were you on 22?
A I was in line 12.
Q That's part of the passage. I want 5 to 25.
A Oh, okay. I thought you said 55.
Q I'm sorry. I might have spoken too quickly. Let's look at column 22, lines 5 to 25.
A Sure.
Q And let me know when you're done.
A Okay.
Q Okay. So is it fair to say that according to the '218 specification an event socket is a uniquely addressable communication endpoint because, one, it is accessible through a URL, and to, includes an EventID?
A I want to hear that question again.
Q I'll read it back to you. So is it fair to say that according to the '218 specification an

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event socket is a uniquely addressable communication endpoint because, first, it is accessible through a URL, and second, it includes an EventID?
A Uniquely identified -- what was the first?
Q Uniquely addressable communication endpoint.
A Right. The URL is sufficient for that.
Q What is the function of the EventID?
A So that the socket server knows which event it corresponds to.
Q And can you tie that answer into Figure 2?
A So it seems that the EventID is part of the URL.
Q Okay. Let's take a ten-minute break.
A Sure.
(A recess was taken.)
BY MR. BAKER:
Q Back on the record. Dr. Rubin, I'm going to hand you what has been previously marked as Exhibit 1017. Are you familiar with this document?

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A Yes, I am.
Q And it's okay if we just refer to it as Spivey?
A Spivey, sure.
Q Let's keep out Spivey and for now your original declaration, Exhibit 2001.
A Okay.
Q Let's go ahead and have you read paragraph 233 of Exhibit 2001 to yourself. Then I'll ask some questions.
A Okay.
Q So you agree that in Spivey the live data access server is uniquely addressable; correct?
A Yes.
Q And that's because it has a URL associated with it?
A Yes.
Q And paragraph 82 of Spivey identifies an example URL torq.cbssports.com/torq; is that correct?
A Yes. That's an example it gives.
Q And an exemplary EventID in Spivey may be

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gamecenter.nfl.ravenssteelers, for example?
A Where -- where are you referring to?
Q I can't recall if I made that up or if that's an actual example. One second, please. But I can simplify it.
Does Spivey identify what would constitute an EventID associated with a URL?
A I don't recall the term EventID appearing in Spivey.
Q Not that the term itself EventID, but we have an understanding of what an EventID is; is that correct?
A Yes.
Q And what is the meaning of an EventID?
A It's the way in the '218 patent that sockets that relate to particular event are identified.
Q Does Spivey have an approach or nomenclature for identifying an event for chat?
A I don't recall off the top of my head there being a particular identifier that way for an event. I don't recall one way or the other.

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The example of a torq that you just gave does not uniquely address any topic queue at all, so just identifies the live access server.
Q So let's turn to paragraph 104 of Spivey.
A Okay.
Q Go ahead and read that to yourself.
A Okay.
Q Is it your opinion that the EventID has to be part of the URL to qualify as an event topic?
A I don't have an opinion on that.
Q Did Spivey put an EventID come in the form of a topic label?
A Spivey does not disclose EventIDs. There are topic labels disclosed in Spivey, but they don't necessarily map to events.
Q What part of Spivey are you citing to in support of that answer?
A I'm just -- I, you know, know I've read Spivey. I'm familiar with it. I've read '218 which does disclose EventIDs. I didn't see EventIDs disclosed in Spivey. Spivey discloses topics. Topics have labels, but Spivey did not

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describe that labels correspond to one particular event.
Q Could you turn to paragraph 52 of Spivey, please?
A Okay.
Q You can go ahead and read that to yourself, and let me know when you're done.
A Okay.
Q Doesn't that passage indicate that a topic may be "gamecenter.nfl.ravenssteelers," which may relate to a specific game between two NFL teams?
A It does say that in the context of explaining how these are hierarchically related. Other topics that are described there are not related to a particular event.
Q Why in your opinion would the term gamecenter.nfl.ravenssteelers not constitute an EventID as described by the '218 patent?
A Because in the '218 patent an EventID is used in order for a client who wishes to view a video to identify which socket it's communicating on. Spivey has nothing to do with video. It has

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nothing to do with the client's requesting from a socket server the socket for a particular EventID. So I think they're just completely unrelated.

Q Paragraph 51 of Spivey explains that data payloads are placed and pushed to a subscribing -- subscribing LDAS; correct?

A Yes.

Q And what does the LDAS do with that pushed data payload?

A So the LDAS can, can serve data to clients.

Q How does the LDAS know what data to give to a specific client?

A Based on what the client subscribed to.

Q And when a client subscribes to something, does it identify a particular event that it wants to receive data for?

A I don't recall Spivey going into the details of how clients specify what they want, but they specify certain topics that they're interested in, and so those, whatever those topics are, when there's data related to those topics, it

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gets pushed to the client.

Q Thank you. Let's look at paragraph 234 of your original declaration, Exhibit 2001. Let me know when you're there.

A Okay.

Q You testify or state in your declaration in the last sentence of 234 that "There is no disclosure of any connection for the client to anything other than the live data access server, and certainly no disclosure that each topic queue is a uniquely addressable communication endpoint"; correct?

A Yes.

MR. BAKER: Counsel, we're going to introduce one new exhibit today.

(Deposition Exhibit A was marked for identification.)

Q Thank you. Dr. Rubin, are you familiar with the US Publication 2013 0018960 to -- I'm going to mangle this. So we're going to have to agree how to say it -- Knysz? I think the K is silent. I'm going to call it Knysz. I'm not

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certain. You can choose a different way to pronounce it and I'll go along, but let's call it the 960 publication, if you agree.

A Unless I'm missing it, I don't see it in my exhibit list, and it does not look familiar to me.

Q Can we turn to Figure 2 of the 960 publication?

A Okay.

Q Would you describe this configuration. And take your time to look at it and any corresponding disclosure, but would you consider this a traditional architecture for a webserver?

MR. SOLOMON: Objection to form.

A The patent describes in the brief description of the drawings that Figure 2 is a schematic of an example of a system architecture that enables the formation of groups for collaborating around common content over a network.

I'm not familiar with this document but it seems that they are creating an architecture in

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order to enable some sort of group protocol. I've not seen this architecture, this specific architecture before, and I don't have any opinions about it.

Q Fair enough. I'm going to ask you some basic questions. You can offer an opinion or if you elect not to, we'll go forward.

Element 102 is the client in Figure 2; correct?

A Yes.

Q Element 104 is identified as a webserver; is that correct?

A Yes.

Q And element 214 is a message queueing system?

A Yes. You've read those correctly.

Q Can you turn to paragraph 71 of the 960 publication?

A Do you want me to read it?

Q Read it to yourself, please, yeah. Let me know when you're done.

A Okay. Okay. I've read it.

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Q Are you familiar with RabbitMQ?
A Where -- where are you?
Q Paragraph 71, maybe about two-thirds of the way down.
A I've heard of it.
Q When you say you've heard of it, have you ever used it or studied it?
A No. I believe that appears in some documents that I read in this case. It's recognizable to me but I have not worked with it.
Q How about Pusher?
A I'm not familiar with that.
Q Can you turn your attention to paragraphs 91 through 93 of the 960 publication? You can take your time to read those three, please.
A Okay.
Q In paragraph 93 do you see the statement -- actually, let's take a step back. Paragraph 91 of the 960 publication indicates that the following section is directed to other system architecture implementations; correct?
A Yes.

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Q And can we turn your attention to paragraph 93, the first sentence. It states, "In addition, the message queueing system 214 of architecture 700 can communicate directly with either the application server 104 or with the client device 102."
Do you see that?
A Yes.
Q Do you understand that sentence to mean that the Figure 2 of the 960 patent there can be a direct connection between the message queueing system and a user client device?
A I don't know. I'm not familiar with this document, and I have no context for this.
Q Okay. Do you think that paragraph 93 speaks for itself?
A I have no idea.
Q All right. Let's turn our attention back to Spivey. And if you can give the marked copy back to the court reporter, please.
A Spivey or --
Q Did she put a sticker on one?

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A Yes.
Q Is it fair to characterize your opinion regarding Spivey that it requires all client connections to be provided through the live data access server?
A Yes.
Q All right. Let's turn to Spivey which is Exhibit 1017, and let's focus on paragraph 36. Let me know when you've read that.
A Okay.
Q And that passage reads, "In some embodiments, message queue server 120 is not accessible to clients over the network directly."
Is that a correct reading?
A Yes.
Q Do you have an understanding of the phrase "in some embodiments"?
A Yes.
Q What does that mean to you?
A In this particular document everything is referred to as "may include" or "in some embodiments." They're saying that that's the

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disclosure. It is not the case that they are implying that there are other embodiments where this is not true.
Q What do you mean by that they're saying that's the disclosure?
A For example, in paragraph 35 right above it says, "The system may include a message queue server 120." That's the disclosure of a message queue server 120, and it's not saying that it's possible for the system to not include the message queue server even though it uses the word "may." Similarly when it says "in some embodiments," those are the embodiments that are being disclosed, and there's no disclosure anywhere of an embodiment where that's not true.
Q So you're saying whenever the passage in Spivey uses the term may, in effect it means it does include that particular structure or functionality?
A I wouldn't go so far as to say that would necessarily be the case everywhere that it says may, but there are places where it says may and it

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means does.
Q How do I know when may means optional and how do I know when may means does?
A You would have to ask Spivey.
Q How do you know as the POSA reading the specification?
A Well, when I see that it says the system may include a message queue server in the context of this patent application, I say, well, it has to because the invention doesn't make any sense without it. So in that -- I mean I can look at it case by case and say I don't recall seeing a place where it said may and may not would have been possible.
Q So are you saying absent the LDAS the disclosure of Spivey doesn't make sense? Is that your opinion?
A Absent the LDAS?
Q Mm-hmm.
A I don't recall offering that opinion in my report. If I did, then the report would speak for itself.

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Q If I understand you correctly, you're saying where Spivey uses the term may you have to decide as the reader as a POSA whether or not the invention makes sense with or without that particular structure to determine whether or not may means optional or may means required. Do I understand you correctly?
A I think you're putting words in my mouth that I never said. What I'm saying, and it is described in my report, is that there are examples in Spivey using the language may where there is no logical way to understand it if it did not include it.
Would you like me to find that in my report?
Q Let's look at that, yes.
A This is where I miss Zoom depositions where my report is searchable.
Q That's a good point. You can put this on. That's fine. I have had cases where experts ask to have the computer with it all loaded so they can word search.

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A I've done that.
Q Real time.
A I wasn't that organized today. I found it though.
Q Is that paragraph 15 of your supplemental?
A Five-zero you said?
Q One-five of your supplemental I believe.
A I sure hope so.
Q I found it.
A I don't think that's what I was looking for. I think it's in my main report where I specifically address the word may in Spivey.
You know what, I think it was in the claim-by-claim section, so I should get there soon.
Okay. Paragraph 177. Yeah. That's the point I was trying to make.
Q Okay. Having reviewed your paragraph 177 in Exhibit 2001 can you explain to me what Spivey's use of may suggests to a POSA reading the specification?
A I say that "The use of the word 'may' in

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the context of Spivey, Spivey, does not, in fact, teach a POSITA how Spivey's system and alleged benefits would be achieved in the absence of a live data access server."
The beginning of the paragraph is Dr. Wicker places much emphasis on the fact that Spivey states that the system may include a live data access server. By the same logic Spivey's system may include a message queue server or not despite the fact that the message queue server is critical and necessary to achieving Spivey's invention.
So saying that in Spivey when he says something may be the case, it can be the case that it must be the case.
Q Can you point to any technical reason in Spivey that would preclude a client from connecting directly to the message queue server?
A Yes. The message queue server is a data structure. It doesn't have -- well, there's no disclosure anywhere of a client device being able to connect to a topic in the message queue server,

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and with respect to whether something is theoretically possible I haven't looked at that.

Q But I was asking is there anything that in Spivey or Spivey that would preclude or would teach a POSA, look, there's -- it's not possible to connect the client directly with the message queue server?

A Well, there's teaching that you would want to connect to a live access server for performance reasons, and so I think it teaches away from that type of a solution. I have not looked at whether it would be feasible or there's anything that precludes it.

Q So what are you looking at in Spivey related to the performance reasons for using the LDAS?

A Well, one way to look at it is in the background section. The last sentence said, "However, the content providers may encounter obstacles to providing the data to mobile devices in real time and with minimal delays."

This patent is about real-time minimal

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delay access to topics, and so adding to the data structure that was designed to speed up access, something that would require communications with outside clients would affect the performance that my experience as a computer scientist.

Q Sorry. You're reading paragraph 2?

A Yes.

Q Or you're referring to paragraph 2?

A Yes.

Q On Exhibit 1017?

A Yes.

Q Okay. And when you discuss adding to the data structure that was designed to speed up access, something that would require communications with outside clients, are you discussing the LDAS in that context?

A I was saying that if you were to add the LDAS functionality to the message queue server, it would negatively impact performance.

Q Okay. But if you remove the LDAS, isn't that one less component involved in the network?

A I don't see how that system would work in

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that case. I don't see how subscriptions would be managed and how clients would be able to connect to the system.

Q We'll get back to that. Let me ask you a question about paragraph 34 of Spivey.

A Okay.

Q Go ahead and read that paragraph, please, and in particular let's focus on the last sentence in paragraph 34.

A Okay.

Q So do you see the passage "may include more or fewer elements in alternate topologies as desired for a given implementation"? Do you see that?

A Yes.

Q What do you understand this passage to mean?

A This is kind of standard language that you see in patents to try to say that the invention isn't limited just to everything in the document, but it doesn't give any other specific details.

Q Does it suggest that Spivey's architecture

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is modular and flexible?

A I don't know about that. It does say it could include more or fewer elements in alternate topologies, but in order for the system to function it would need to at least -- let me start that answer over.

It doesn't say more than it says it says. It could include more or fewer elements, but nowhere in the specification does it give examples of that.

Q Aren't figures 21 and 22 alternate topologies disclosed in Spivey?

A Yes.

Q And Figure 1 is a centralized configuration. Is that accurate?

A Well, Figure 1 is a high level view of the system. It doesn't give the details that are in Figures 21 and 22.

Q So I'm sorry. Figure 21 is a centralized version of Figure 1. Is that accurate?

A Of part of Figure 1.

Q Which part of figure 1?

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A The live data access server, and it's also showing a device which presumably could be a client device. It's focused on giving more detail of what a system looks like.

Q What about Figure 22, same question. How does it provide an alternative embodiment of Figure 1?

A It drills down into more details.

Q So is Figure 22 just a more focused discussion of Figure 1 or is it an alternative embodiment to Figure 1?

A That question is outside the scope of what I provided opinions on, so I haven't studied that.

Q I don't recall. You don't discuss Figure 22 in your --

A I don't --

Q -- declaration?

A I'm sorry. I thought you finished. I don't recall that. If I do, I'm happy to talk about it. If we can take a quick second.

Q Let me do a word search. Let's see. I don't recall either.

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When you consider a prior art reference, do you consider that reference as a whole for all that it teaches?

A It depends on the task that I'm given. When I consider a prior art reference in an IPR like this, I read the whole reference, and then I focus on rebutting what the expert on the other side said if I'm writing a rebuttal report.

Q When you reviewed Tom Spivey, had you reviewed Figure 22?

A I looked at it with respect to the text that I was reading, but I did not perform any analysis if I don't discuss it in my report.

Q Let me clarify. When you prepared your original report 2001 and you reviewed Spivey, do you recall reviewing Figure 22?

A I read the entire patent but I don't believe I performed any analysis on Figure 22. If it's in my report, then my memory is wrong and I can look at what I wrote.

Q Let's take a look at paragraphs 157 through 160 of Spivey.

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A Okay. You said through 158 or --

Q 157 through 160.

A Oh, I need to read a couple more. Okay.

Q The 157 explains that the distributed system may include a variety of architectures; is that correct?

A It does.

Q And what type of architectures are contemplated on Spivey?

A A distributed system may include a client-server architecture, a 3-tier architecture, an N-tier architecture, a tightly-coupled or clustered architecture, a peer-to-peer architecture, a master-slave architecture, a shared database architecture, and other types of distributed systems.

Q Were those standard well-known architectures?

A Yes.

Q And looking at paragraph 158 does Spivey indicate that server device 2250 may "be the same

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or similar to" one or more of the following: Message queue server, live data access server, or the aggregator host server? Is that accurate?

A I think you read that right.

Q So in light of that passage doesn't Spivey contemplate a configuration wherein a client device requests and receives live data directly from a client server device 2250 that may be the same or similar to an LDAS?

MR. SOLOMON: Object to form.

A So what it says is that the distributed system 2200, and from the figure, I think it's Figure 22, the distributed system may have a client and a server device. The client device can be the same or similar as the client device 210. That's in Figure 1, and the server device may be the same or similar to the live data access server, the message queue server and/or aggregator host server, but it doesn't say that the client would make a direct connection to the message queue server.

Q But doesn't it illustrate that the client

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device makes a direct communication to the server device 2250?

A Yes.

Q And doesn't Spivey indicate that the server device 2250 may also implement some or all of the components of a server device such as the LDAS?

A Yes.

Q Can you turn to Figure 2 of Spivey?

A Okay.

Q Are you familiar with that figure?

A Yes.

Q So Spivey's client device does not require a subscription or interface component; is that correct?

A Figure 2 is an embodiment. It does not show a -- what did you say? Subscription?

Q A subscription or interface component.

A Well, it shows the client communication component which I would think would be an interface.

Q Does it show anything that interfaces with

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the LDAS?

A In the context of Figure 1, Figure 2 has direct connection to the LDAS, and it shows that it has the client communication component. So I think it -- between the two figures it does show that.

Q How about if you consider Figure 2 and Figure 22 together?

MR. SOLOMON: Objection to form.

A What's the question?

Q Does Spivey's client device require a subscription or interface component to communicate with a LDAS?

A I'm not sure that I understand what you're asking. Figure -- in the client device 200 and in the client device 2210 both have communication components which I read as an interface to communicate with the server, in this case the live data access server.

Q And in Figure 22 the server device 2250; is that correct?

A Yes.

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Q You think this is a good time to take a 45-minute break for lunch?

A Sure.

(A discussion was held off the record.)

(Lunch recess taken from 11:57 a.m. until 12:52 p.m.)

BY MR. BAKER:

Q Back on the record. Let's revisit one concept you discussed earlier. Do you recall that you testified that the one-to-many socket architecture related to multiple event sockets dedicated to a particular event?

A I don't recall using that language. So we can go back to that discussion.

Q Sir, continue to consider your passage or what you want to look at, but if you want me to, I can read back your answer as well.

A Okay. That's great.

Q So the question was: "What's your understanding of what is meant by the term one-to-many socket architecture?"

And your answer was: "So if we look at

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column 22 starting at line 5, we see that the webserver provides an EventID and that there can be an event socket 602A" -- I'm sorry "could be an event socket, 602A would be a socket for a particular event, and a second socket be for another event, and so the clients that are connecting to each of those sockets for a particular event there would be multiple clients and one socket, so that's why it's many-to-one or one-to-many."

A Can you give me a second?

Q Mm-hmm.

A Can you read back the last part of what you said that I said?

Q Yes. "And so the clients that are connecting to each of those sockets for the particular event there would be multiple clients and one socket. So that's why it's many-to-one, or one-to-many."

A Okay.

Q Is that your answer?

A Yes.

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Q Let's turn our attention to Spivey, paragraph 104.
A Okay.
Q And that paragraph discusses hiarch -- oh goodness -- hierarchically related topics; correct?
A Yes.
Q And according to Spivey data related to those topics are placed in their respective topic queues; is that correct?
A Yes.
Q And a topic queue could be, for example, related to a specific Ravens-Steeler game. Is that accurate?
A That's possible.
Q And an example of a topic queue dedicated to the Ravens-Steelers game could be ravenssteelers.stats and another could be ravenssteelers.plays. Is that a fair characterization of Spivey?
A Yes.
Q And information, according to Spivey,

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related to ravenssteelers.stats would not be placed in the ravenssteelers.plays topic queue; correct?
A I mean it doesn't specifically state that, but the understanding is that you would put each of the topics within the label that matches that topic.
Q Okay. So Spivey discloses using multiple topic queues dedicated to a single particular event; correct? In this case the Ravens-Steelers game?
A It doesn't have to relate to an event. In this case it talks about the Ravens-Steelers game which you could consider that to be an event, but whatever the topics are they can be placed in hierarchies, and topics can, can relate to each of those labels.
Q So I've been saying, and I misspoke a couple times, I referred to the 2016-2017 time frame. I meant to say the 2015-2016 time frame. Would any of your answers have changed if I referred to the earlier time frame?

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A I can't think of anything that I've said today that wouldn't change it -- that would change if we change to those dates.
Q Thank you.
Let's turn to the claims in Spivey. In particular can you read claim 7 to yourself?
A Okay.
Q Would you agree that claim 7 reads on an embodiment where the message queue server delivers data directly to client devices?
A Can I hear the question part again?
Q Would you agree that claim 7 reads on an embodiment where the message queue server delivers data directly to client devices?
A It doesn't disclose that.
Q Do you understand what I mean if I say the claim is broad enough to encompass certain subject matter? Do you understand that?
A I think so.
Q Is claim 7 broad enough to read on an embodiment where the message queue server delivers data directly to client devices?

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A I have not looked at that, and Dr. Wicker did not claim that, and I was responding to him. So I don't have any opinions on that.
Q Let's go to paragraph 24 of your supplemental dec.
A Okay.
Q Do you recall testifying with regard to RabbitMQ that you've heard of it, but when asked whether you've used it you said no?
A Right. I haven't used that protocol myself.
Q Okay. Go ahead and read paragraph 24 to yourself, please.
A Okay.
Q All right. So it's your opinion, according to paragraph 24 of your supplemental declaration, that "the RabbitMQ discussed at Spivey paragraph 58 would function according to the principles set forth in relation to Spivey Figures 1 and 4."
What's the basis of that opinion?
A Because there's no other disclosure in

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Spivey for any other architecture other than that.
Q Isn't Figure 22 alternative architecture?
A 22 -- I'm sorry. 21 is an alternative to 22 but not to Figure 1, and in discussing the client device, the live data access server, the message queue server and the live data sources, the only architecture described is Figure 1.
Q Does paragraph 58 of Spivey discuss a live data access server?
A That particular paragraph does not.
Q Are you aware of any technical reason why RabbitMQ would not function in the architecture illustrated in Figure 22 of Spivey?
MR. SOLOMON: Objection to form.
A Yes. Figure 22 does not talk about the message queue server device. It's showing the client device and a server device. So that figure's not relevant to this paragraph.
Q Doesn't paragraph 160 of Spivey indicate that the server device 2250 in Figure 22 may implement some or all of the components of the message queue server device 310 or 410?

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A Which paragraph?
Q 160.
A So it says that the server device may implement that functionality, but that's not being shown in Figure 22.
Q Do you see the last sentence in paragraph 160 of Spivey?
A Client device 2210?
Q The sentence that begins "the server device 2250 may implement"?
A Second-to-last sentence?
Q Yes. I'm sorry.
A Okay.
Q Yes, second-to-last sentence.
A So the functionality of the message queue server can be implemented in the server device 2250.
Q Meaning it's optional?
A It says it may implement it.
Q And the same is true for LDAS 130? It's optional?
A It says it may implement the live data access server also.
Q Does may mean in this context that the live data server is not part of that configuration shown in Figure 22?
A I haven't formed opinions on what may means in this paragraph.
Q I thought you had opinions what may means for Spivey throughout.
MR. SOLOMON: Objection to form.
A I don't think that's what I said.
Q Looking at Figure 22 and paragraph 160 do you have an opinion today whether or not the live data access server is an optional device for the architecture illustrated in Figure 22?
MR. SOLOMON: Objection to form.
A I think it's saying that it's describing one embodiment where it is there. So it's there in that embodiment.
Q Is it also describing an embodiment where it's not there?
A No. At least not in that paragraph.
Q What does the language and/or mean to you?

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A It means that you can have both of the things that are before and after the and or you can have just one of them.
Q So if you have a list of four items, A, B, C and/or D, what does that mean to you?
A I think that can be ambiguous. I think it would depend on the context whether the and/or applies to C and D or whether it applies to the entire list. I haven't looked at that.
Q If it applies just to C or D, what does that mean? That C or D are optional components of the, I don't know, list, if you will, for A, B, C and/or D?
A If the and/or is related only to the C and D parts of that, then I would say that you have to have -- if you say something has A, B, C and/or D, that you have to have A and you have to have B, again assuming the and/or only relates to C and D, and then you have to have C or you have to have D or you can have C and D.
Q And the same is applicable for a list of three if it's A, B and/or C?

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A Again, if we're assuming that the and/or only modifies the B and C, then you have to have the A and then you have to have the B or you have to have the A and you have to have the C or you can have A, B and C. It's basically a truth table.

Q Wouldn't a POSA reading paragraph 160 understand the second-to-last sentence of that paragraph to mean that the structure listed is optional?

MR. SOLOMON: Objection to form.

A I don't know.

Q Going back to your statement in paragraph 24 of your supplemental declaration.

A Okay.

Q What do you mean according to the principles set forth in relation to Spivey Figures 1 and 4?

A The principle that the client devices connect to the live data access server and do not connect or include a message queue server.

Q So that statement finds its basis in

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Spivey, is not based on your understanding of RabbitMQ?

A Yes.

Q Quick word search. One second.

Looking at paragraph 58 of Spivey.

A Okay. Well, I'm sorry. I'm in my report 58.

Q Yeah, Spivey 58.

A Okay.

Q So you see the passage that reads: "RabbitMQ facilitates topic queues that receive published messages and push the messages to clients that have subscribed to topic queues."

Do you see that?

A Yes.

Q Doesn't that suggest that in Spivey, if you're using RabbitMQ, there's no need for an LDAS?

A No.

Q Why not?

A Because the architecture in Spivey is that you have the L -- the LDAS, the LDAS between the

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message queue and the client, and so the message queue is -- its job is to provide low latency access to topics, but the LDAS is needed to provide the overhead of the connections to the clients and the subscription management.

Q What do you mean by provide the overhead of the connections?

A The LDAS is described as managing the network connections to the -- to the clients, and that takes a certain amount of overhead, and since the goal of the system was real-time low latency access, the architecture of having a separate server that manages a message queue is to separate out the process of running a message queue from all of that network, all that network work, network setup work.

Q Do you know if in the relevant time frame whether or not RabbitMQ used a socket server?

A I don't know anything about how RabbitMQ worked.

Q Do you know if RabbitMQ used event sockets?

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A I don't know anything about how it worked.

Q If you're unaware how RabbitMQ works, what was the basis of your opinion in 24 regarding the use of RabbitMQ in Spivey?

A My opinion is not dependent on the actual functionality of the RabbitMQ product. It has to do with the functionality of a message queue server and how Spivey describes a message queue server interacts with clients through the data access server.

Q In 24 of your supplemental dec you say Spivey discusses a certain RabbitMQ as one implementation of the MQSD. What do you mean by certain?

A This is a form of speech of saying this is a particular RabbitMQ or particular server implementation.

Q Please return briefly to the claims of Spivey.

A Okay.

Q Do you see claim 8?

A Yes.

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Q And that's a dependent claim; correct?
A Yes.
Q Depends from claim 7?
A Yes.
Q That claim requires that the connection be a websocket connection; is that correct?
A Yes.
Q And can you turn to claim 12?
A Okay.
Q That depends from claim 7; correct?
A Yes.
Q And does claim 12 require pushing a data payload to the client device?
A Yes.
Q And that push is done substantially simultaneously with the message queue server receiving the topic entry?
A Yes.
Q So there's no LDAS required by claim 12; correct?
A So I've not provided any opinion in my report about whether or not the claims are, how

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they relate to the embodiments. The embodiments in the patent do require an LDAS, but I can't comment and offer any opinions on what embodiment claim 12 has within its scope.
Q Can we go to paragraph 55 of Spivey?
A Okay.
Q In 55 the LDS communication component 418 receives live data; is that correct?
A What line are you in?
Q So the last sentence, LDS communication component 418?
A Yes.
Q And if you look at paragraph 37 of Spivey still, that paragraph describes various live data sources; is that correct?
A Yes.
Q And what are those sources?
A Data feeds generated by computing devices associated with a live event monitored by a message queue server. Live data sources may also include data gathered by human observers of a live event and entered into an interface that

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communicates the gathered data to the message queue server as live data.
Q All right. Now in reference to paragraph 35 of Spivey. Relatively long paragraph. Feel free to read it. Does that paragraph disclose that an electronic device can be a webserver?
A Yes.
Q Can we turn our attention to paragraph 161 of Spivey?
A Okay.
Q And doesn't that paragraph explain that Figure 23 illustrates an electronic device including those described in conjunction with Figures 1 through 5?
Strike that. I'm not sure that was clearly articulated. One second, please.
Does paragraph 161 explain that in one embodiment the computing architecture 23 may comprise or be implemented as part of an electronic device?
A Yes.
Q And does it further explain that examples

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of an electronic device may include those described in reference to Figures 1 through 5?
A Yes.
Q So isn't it clear that in Spivey electronic device examples are not limited to the MQSD?
A Spivey discloses different types of electronic devices that are not limited just to the MQSD.
Q Let's take a five- or ten-minute break, please.
A Yeah.
(A recess was taken.)
BY MR. BAKER:
Q All right. Dr. Rubin, I'm going to hand you what's been previously marked as Exhibit 1016. Are you familiar with this reference?
A I am.
Q Would you identify it for the record, please?
A This is the Ellis patent application that I cite in my report.

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Q All right. Let's take a look at Figure 1.
A Okay.
Q So is element 152, is that a dedicated channel for transmitting event information?
A I have to look at the text. And if there's particular place in the spec but.
Q I think 152 is discussed.
A I see it mentioned in paragraph 45, but I don't see the specific words you used.
Q Well, how would you characterize communication path 152?
A One of the descriptions I see of it is paragraph 42 of Ellis, and it says, "Some or all of this sports-related information may be stored in database 122 and provided to content source 130 or directly to user equipment 120 over communications paths 154 and 152 respectively." So that's describing 152 as being a communication path that can take information and send it to user equipment, which is what's shown in the figure. It's the line connecting the database to the user equipment.

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Q And how about communication path 150?
A That's between the content source and the user equipment.
Q Can you also consider paragraph 39 and tell me if that changes your opinion regarding communication paths 152 and 150?
A So the 150 is used for the content source, and the 152 is used for supplemental content source.
Q And those are separate communication paths to the user equipment 102; correct?
A That's what it looks like.
Q Let's go to paragraph 42 of Ellis.
A Okay.
Q Exhibit 1016. I don't know if you can read that.
A Well, I don't know what the question is, so I don't know.
Q Actually, I'll ask you. Do you prefer to have the question and then read or read and then receive the question?
A If reading is going to help answer the question, then I'll read. If you know that, that I don't need to read and you want to try to ask a question, but I'm probably going to read it, so I'll go ahead and read it.

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Q Okay.
A Okay.
Q Do you see where it says the supplemental content source may be an intermediate content provider? It's about seven lines down.
A Yes.
Q If it functions as an intermediate content provider, does that mean that the supplemental content source doesn't originate the content?
A I think that could be read to mean that the supplemental content source received the content from somewhere else.
Q If it receives it from somewhere else does that mean that the content didn't originate with the supplemental content source?
A That's how I would understand that.
Q Looking at paragraph 41 of Ellis, does that passage indicate that the path 152 can be implemented as a plurality of real-time feeds?
A It says, "In some embodiments the sports-related information is provided to user equipment 102 as a plurality of real-time data feeds."
Q And what path does that come across? How does a user get that information?
A I --
Q You can refer to Figure 1 as well.
A Yeah. I would say from Figure 1 that it looks like that would come across 152.
Q All right. So looking again at Figure 1, but also you can refer to paragraphs 39 and 40 of Ellis, isn't it accurate that content source 130 provides a video feed path using path 150?
A I'm sorry. Could -- I wanted to see what I said about Ellis in my report. Could you please repeat your question?
Q Does content source 130 initiate a video path 150 to the user device?
A That's what I think it shows.
Q And with reference to Figure 1 and paragraph 49, does the user equipment have an

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interactive sports watcher application?
A Yes.
Q And in paragraph 51 of Ellis do you understand that Ellis renders video and data feed as overlays on the user device?
A Yes.
Q Okay. So in light of those passages is it accurate to summarize that Ellis's client device receives a video stream, receives event information as a feed, and renders those feeds to show content to a user?
A I don't know where you're getting the event information part of that.
Q What do you think the purpose of the interactive sports watcher application is?
A To allow the user to decide what they're watching.
Q But doesn't that render video and data as overlays? Didn't we agree with that with citation to paragraph 51?
A I don't see where it says video and data.
Q So what do you understand -- what do you

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understand media content being displayed? What would you understand that to mean?
A Media can include -- in general it would include videos, audio files, pictures.
Q And what's your understanding of what interactive application display displays? Does that display data?
A I think it would display media.
Q Look at Figure 3.
A Yes.
Q What is element 302?
A It looks like it's a box in a corner.
Q And what's inside the box?
A Those look like scores.
Q And is it your understanding that those scores are provided as a data feed?
A I don't see -- in paragraph 68 that describes what's in that box on Figure 3. I don't see it mention a data feed but it does say that it's showing live scores.
Q Would you consider live scores to be event information?

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A If the event is the game that is being scored, then I would say yes.
Q Let me do a fast word search. One second. All right.
Look at paragraph 89 of Ellis, please.
A Okay.
Q And we're going to look at Figure 5 as well together. Doesn't Figure 5 illustrate a game status icon 502 in the right corner of the screen?
A Yes.
Q And that game status icon, among other icons, is overlaid in video stream as illustrated in Figure 5; correct?
A I don't see that this paragraph says that it's done as an overlay, but it is what's displayed in the corner.
Q And so doesn't paragraph 69 convey that box as being an overlay?
A Yes.
Q Okay. So is it accurate to summarize that Ellis's client -- we can use Figure 5 as an example -- receives a video stream, game status

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information as a feed, and renders those feeds together to show content to a user?
A I don't see that -- you haven't shown me a disclosure of game status coming in as a feed, but it does show the game status information as an overlay in the corner.
Q So would a POSA have understood that path 152 would provide a feed of supplemental content to user equipment?
A I haven't looked at that. I do not offer an opinion on that in my report.
Q Didn't we agree earlier that path 152 can provide a plurality of real-time feeds with reference to paragraph 41?
A Yes.
Q According to paragraph 41 of Ellis, can wagering information be provided through the supplemental content source?
A Yes.
Q With reference to Figure 6 of Ellis, in paragraph 98, if you will, does Ellis in his disclosure enable a user to gamble or wager?

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A That's what it says.
Q Where does it say it, or are you just looking at the figure?
A Oh no. In paragraph the sports watcher application may also provide comprehensive wagering support.
Q That's paragraph 98; correct?
A Right.
Q And excuse me if we discussed this. I apologize if we have. Does Ellis's supplemental content source push event data to clients? And I'm looking at 44.
A The database that has the -- you said paragraph 44?
Q I believe so. Does that address pushing?
A That's -- no. That's about receiving the application itself, unless it's later in that paragraph.
Oh yes. I found it. May push application updates to user equipment.
Q So let's make sure the record's clear. Ellis discloses that supplemental content source

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may push event data to clients; correct?
A That's not what we were talking about. We were talking about pushing application updates to user equipment.
Q And application updates, does that mean like updating the software or updating the user? How do you understand that?
A I understood that to mean updating the software.
Q Okay. Take a look. Yeah. I agree it's in here. All right.
Let's return to your supplemental declaration, page 31 for the record. And we're going to revisit the orchestrator type versus relay type for discussion.
A Okay.
Q All right. So in paragraph 47 you state that --
A Sorry. Let me --
Q Take your time. Go ahead and read 47 if you want to take a look at that.
A Okay.

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Q Okay. So in that paragraph, paragraph 47, you state that the combination of an orchestrator-type webserver with a relay-type webserver architecture increases latency in certain scenarios and adds further complexity and cost to the system while providing no tangible benefit; is that correct?
A Yes, a typo. You read it the way I intended.
Q All right. Now let's turn -- you still have Exhibit 2001, your original declaration?
A Yes.
Q And let's stick with page or 47.
A Okay.
Q Let's go to paragraph 182, Exhibit 2001, and why don't you go ahead and read that one.
A Paragraph 182?
Q 182 on page 100.
A Okay. Okay.
Q All right. So in paragraph 182 of Exhibit 2001 you assert that removing the LDAS from Spivey's message flow would increase latency

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because the message queue server would have to take on additional responsibilities; correct?
A Yes.
Q Okay. So how do you reconcile your opinion in your supplemental declaration paragraph 47 with your opinion in paragraph 182 of your first declaration, Exhibit 2001, given that in the first instance you argue that adding a server increases latency while in the second instance you argue that removing a server also increases latency? How do you reconcile those two positions?
A I don't think there's any contradiction at all in those because you're talking about different systems and different pieces that are being removed. So if you remove the part of the system that handles subscriptions and handles connections which is specific to the Spivey system, you're going to increase latency, and in this case if you add an additional webserver such that you have to go to an orchestrator-type web server before you can go to a relay-type web

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server, you're also increasing latency. So the mere act in a vacuum of adding or removing a server doesn't tell you whether you're increasing latency. Everything's specific to the system in which you're making the change.

Q So let's deal with the orchestrator combined with the relay type. That description was in response to what you call our hypothetical -- what you call Petitioner's hypothetical embodiment; is that correct?

A Yeah.

Q And which hypothetical embodiment? What paragraph do you discuss that embodiment?

A In 47.

Q I'm sorry. It's illustrated in 45?

A Right.

Q And in 45 which one would be the orchestrator server and which one would be the relay?

A Do you have Wicker's declaration?

Q I actually do.

A Yeah, 500 pages.

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Q I'm now handing you what was previously marked as Exhibit 1001. Is this the declaration that you're requesting from Dr. Wicker?

A Yes. Oh, you know what, this -- I'm sorry. This is from the petition. I asked for Wicker but the citation I have is to the petition.

Q Oh. You're looking for the petition for the 182?

A Yes.

Q I might have that. I might. Let's see. So yes. So we're talking about the '218 --

A Yes.

Q -- petition?

A Exhibit 1001.

Q What did I give you?

A Oh.

Q But it might be for a different patent.

A Oh. So my citation is to petition page 35 to 36, paragraph 132, 133 and petition 36 is what this comes from.

Q And the declaration, looking at the cover page, which patent is this declaration for?

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A Oh, the'218.

Q '218 the whole day; right?

A Yes.

Q And you want the whole petition?

A Yeah.

Q This should do it. Let's see.

A Okay. So the top right corner of the webserver would be acting as an orchestrator server, and the message queue server would be acting as a -- the message queue server will be behaving as a relay-type server, and what's listed as the webserver would be acting as an orchestrator-type webserver, and my position and my opinion that I state is that that would add unnecessary latency to the system.

Q What would be the role of the webserver in this figure?

A And again, this was Petitioner's diagram, and I think that what they're thinking is that it would act as an orchestrating webserver.

Q So what page of the petition are you on?

A 36.

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Q And in your supplemental declaration what page are you on?

A 31.

Q Are those images identical?

A They're not. The application server is what it says in the petition, and webserver is what it says in my report.

Q Okay. And your discussion was most recently to the petition; correct?

A I was looking at both of them and was offering my opinions from my report.

Q So your opinions relate to both these figures?

A Oh, I see what you're saying. Yes.

Q Okay. Just for the record. I mean honestly I wasn't judging you. I just want to know which figure we're speaking to.

A Yes.

Q So your most recent testimony is equally applicable to the figure in the petition as well as your declaration or is it one or the other?

A The comments in my report relate to

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commenting on the figure in the petition.
Q I want to stick with that one because that has my question so it's consistent. And I apologize. What page in the petition?
A 36.
Q Why do you characterize the MQS in the figure on page 36 of the '218 petition as a relay-type webserver? Doesn't it interface both with the application server and the user equipment?
A So if you look at the green arrows.
Q Yes?
A Information is coming from the control server through the MQS and to the user equipment in this diagram that Petitioner created, and so the MQS is acting as a relay server for that information.
Q What's the role of the MQS as it relates to the application server? How would a POSA have understood that from this figure?
A So according to the Petitioner there is a request from the user equipment to the application server for metadata that has been sent. I don't

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agree with this figure, but that is my understanding of what they are saying.
Q Can we open up US Patent '218?
A Yes.
Q Exhibit 1009? In Figure 2 doesn't the data flow from the control server directly into the socket server?
A There's a direct link shown from the control server to the socket server in Figure 2.
Q So in Figure 2 is a socket server a relay-type server?
A Well, the opinions I have in my report are about whether relay or orchestrating server have to do with the webserver or not, the control server.
Q Do you have an opinion whether or not the socket server shown in Figure 2 constitutes a relay-type server or an orchestrator-type server?
A It's a socket server. I don't think it's either of those.
(The reporter requested clarification.)
A Sorry. It's a socket server.

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Q So you're saying a socket, and please, I'm asking because I do not understand this point. A socket server is neither a relay or an orchestrator-type server; it's its own special type of server? Is that what you're saying?
A The socket server manages the socket connections, and I don't have an opinion -- at least if I do, I don't remember that I have, and my report speaks for itself, but I don't believe that it is orchestrator or a relay-type server. It's a socket server.
Q But the MQSD is a socket server as well; right?
A You're talking about Spivey now?
Q Spivey, whatever, yeah.
A No. The MQSD is a data structure that holds topics in it.
Q So it's your opinion that Spivey or Spivey doesn't disclose a socket server?
A Correct.
Q And what's your definition of a socket server?

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A It's -- it -- I don't believe I offer a specific definition, but it's a server that manages the sockets for the events.
Q Are there certain characteristics that all socket servers have?
A I -- I don't recall I offer any opinion on that.
Q Do you have any understanding of what characteristics a socket server has?
A It manages the sockets.
Q On behalf of?
A The system.
Q All right. Let's go back to the '218 disclosure.
A I didn't hear you. Which?
Q '218 disclosure, the patent.
A I'm sorry.
Q Apologies. Let's go to column 42, line 18. Do you see the discussion of a load balancer 386?
A Yes.
Q It's your opinion that a load balancer is

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an example of an orchestrator-type web server; is that correct?
A I would need to word search my report, but I don't recall rendering any opinion.
Q Paragraph 36.
A Of the main?
Q Supplemental.
A Oh, this is the petition. Too many documents. Okay. So I say that a load balancer is a common example of an orchestrator-type webserver.
Q So what is a load balancer?
A Load balancer will keep the load on various servers even so that not one server, for example, gets too many requests and another server sits idle.
Q And will load balancer help with scalability of a system?
A Yes.
Q Can a load balancer spread new incoming clients over a number of servers?
A To be more precise I would say incoming

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client requests can be spread across multiple servers by load balancer.
Q What makes a load balancer an orchestrator type of webserver?
A The fact that it's redirecting requests to webservers as opposed to downloading the content itself and then uploading the content.
Q I know there's a lot of paper. Can we go back to Ellis, please?
A I've got it.
Q Does paragraph 40 of Ellis disclose a content source 130 may be any suitable source of media content such as a media webserver?
A That network media/webserver is listed as one of the types of media -- of sources of media content.
Q And do you still have your first declaration in front of you?
A Yes.
Q Let's go to paragraph 190.
A Okay.
Q On page 104 you opine that Ellis's

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supplemental content source and the content source 130 enable load balancing?
A Mm-hmm. Yes.
Q And you said load, the orchestrator type webserver -- strike that.
You testified that a load balancer is an orchestrator-type webserver; correct?
A Can be.
Q When is it not?
A Load balancer is a much more general concept, so you can balance loads that aren't web loads, for example.
Q In the context of Ellis, what type of load balancer are you referring to when you say supplemental content source 120 and 130 enable load balancing? What does that mean?
A It means that if one of those sources were -- there's a typo in my report. I think it should say Ellis's supplemental content. It says Spivey's.
Q I think you mean Ellis; right?
A Yeah. Yeah. Load balancing would mean

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that let's say that one of the content sources is overwhelmed with requests. With the supplemental content source some of those requests could be taken off and be served from the supplemental content source or vice versa.
Q And does that allow scalability?
A Yes.
Q Paragraph 190 of your first declaration are you not indicating that supplemental content source 120 and content source 130 in Ellis are load balancers?
A No. They're the -- they're the thing that's getting balanced. So the load balancer is the one that makes the determination of where to make the request from. So the content source is in itself a load balancer.
Q Don't you say that communications between content source 120 and content source 130 enables centralized data control and management on content source 130 and allows for load balancing and scalability?
A Yes. The communication does. I was just

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saying that content source itself isn't doing the load balancing. It's the thing being balanced.

Q So how does the communication itself constitute a load balancer?

A There are different ways that this could happen. So one example would be if the sources share with each other how many requests they have, and if they both have the content, let the one who's less busy process the request.

Q So collectively they're load balancing each other; correct?

A That doesn't sound like a typical way of describing it, but I suppose.

Q If one is overworked, the other will take on more of the load and vice versa?

A That would be a definition of load balancing.

Q Under that definition what structure constitutes the load balancer?

A Wherever the logic resides that leads to that.

Q Couldn't that logic reside on the content

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source webserver?

A I don't recall seeing that disclosed in there, but I suppose that would be one place it could reside.

Q And if it did reside on content source 130, wouldn't Ellis's content source 130 constitute an orchestrator-type web server?

MR. SOLOMON: Objection to form.

A That's not how I would describe it.

Q Did you just say it depends on where the, where the logic resides kind of dictates?

A Right. But if the logic resided on content source 130, then I would say that it's not an orchestrator webserver. So an orchestrator webserver can be a type of load balancer. There are other types of load balancers, so this would be a different type of load balancing.

Q What would make this type of load balancing different than what is discussed in the '218 patent, for example?

A So if you had another box in between the -- instead of 152 and 150 you had a box in between

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with the link to the user equipment and then from that box the supplemental content source and another line to the content source and that box in the middle redirected requests to run to the supplemental content source to the content source and vice versa based on load, then I would say that's an orchestrate -- orchestrator-type webserver that's a load balancer, but that's not what's in this patent.

Q So you distinguish that configuration from the logic residing on the content source device itself?

A From the hypothetical that I posted about putting logic on one of the sources that's different.

Q And is the difference just where the logic resides?

A No. The difference is that when you put an intermediary webserver there, then you have a webserver there, but the logic doesn't necessarily have to be a webserver.

Q The terminology orchestrator type and

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relay type, are those widely adopted ways of characterizing web servers?

A I think most -- outside of this case most webservers would be considered the relay type, but -- but there are orchestrator-type webservers so those are terms of art.

Q And I think we might have discussed this earlier. Could you give me an example of a real world orchestrator-type web server?

A The machine that you actually first contact when you go to Amazon.com is probably an orchestrator one.

Q And what's its functionality?

A To get the request to the server that's most able to process it.

Q And why is that not just a relay?

A Because the content isn't actually traversing through that server.

Q The 218 spec of the patent doesn't distinguish between orchestrator and relay-type webservers, does it?

A I don't have a searchable capability right

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now, but I don't recall those words being used in the specification of this patent.

Q Do you recall any of the prior art or references identified in your declaration whether any of those discuss an orchestrator type and relay type of webserver?

A I don't recall those specific words being used. Those concepts exist throughout, but I believe I introduced those words in my report.

Q And looking at Figure 2 of the '218 patent, that doesn't illustrate a relay-type server, webserver and an orchestrator-type webserver, does it?

A In my report I identify the webserver block as orchestrator-type webserver, but I don't believe I identify anything as a relay webserver.

Q All right. Let's take our last break.

A Okay.

Q All right.

(A recess was taken.)

BY MR. BAKER:

Q Back on the record, please. Let's turn back briefly to Spivey, Exhibit 1017. So I'm going to state what I understand a load balancer to do, and you can either agree or correct me. So -- and I'm sorry. I'm talking about an orchestrator-type webserver. It would pull, load balance and otherwise increase communicative bandwidth required by clients and other servers. Is that fair?

A Are you talking about something within Spivey or within my report?

Q I want to tie it in to Spivey paragraph 179.

A So I think you're referring to the sentence that reads: "Should processing requirements dictate a greater amount speed and capacity, distributed network controller architectures may similarly be employed to pool, load balance, and otherwise increase the communicative bandwidth required by the clients and the servers"?

Q Yes. So with server device 2250, did Spivey constitute a load balancer?

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A I don't think that's what this paragraph was saying.

Q What do you believe it's saying?

A It's just saying that if their processing requirements were such that more, more was needed, there are known methods for pooling, load balancing and increasing available bandwidth. It's not saying what they are or referring to any particular embodiment in this patent in this paragraph.

Q What about Figure 24?

A So Figure 24 is showing the communication framework in which these known techniques for load balancing and increasing bandwidth could be applied.

Q Would a POSA know what structure provides that load balancing in Figure 24?

A I don't think that the structure to provide that load balancing is found in Figure 24. I think it would be in that cloud labeled Communication Framework. A POSITA would know various ways of doing that.

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Q Is that discussed in paragraph 179?

A It's just mentioned that that is something that could be done.

Q Doesn't it state that the communications framework 2406 may implement various network interfaces and give a laundry list of potential network interfaces?

A Sure. It's saying that you can use all of these different technologies for the communication in the communication framework. The load balancing comment comes later and that is just something saying like here are all the technologies you could use for the network communication and, by the way, if you need more processing, there are ways that are known to do load balancing.

Q Does Spivey disclose a webserver?

A I believe that Spivey discloses that the client devices could communicate with a live data access server over its GTP, so an access, yes.

Q What passage is that disclosed in?

A Paragraph 61 talks about a websocket

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connection.
Q Does Spivey illustrate a websocket connection?
A In paragraph 82, going back to the previous question to give you a full answer, it also says that the address may resemble a URL, for example, torq.cbssports.com/torq, which would be another indication of a web, although it's not definitive, so it may resemble it. I don't see any illustration of a websocket in the figure.
Q Okay. Herzog, and that's pretty much it. I'm going to hand you what's been previously marked as Exhibit 1015.
Can you identify this reference for the record, please?
A Yes. This is the Herzog patent application that is in this case.
Q Did you review this document in preparation for today's deposition?
A I did.
Q Figure 5 of Herzog illustrates the provision of event information separate from a

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video feed; correct?
A Could you please say that again? I didn't hear it right.
Q All right. So figure 5 Herzog, there are two feeds to the client; correct?
A Yes.
Q Is one feed related to video?
A Yes.
Q And the other feed through the HTTPS, is that event information?
A It's called metadata in this patent.
Q And how is the metadata used in this patent?
A The metadata provides additional information related to the HLS video.
Q So it's information related to the video?
A Yes.
Q And in Herzog the client device combines the HLS input and the HTTPS input; correct?
A Yes.
Q I'm looking at paragraph 58, if that helps.

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A Yes.
Q All right. So with reference to Figure 6, and we're going to start with paragraph 70.
A Okay.
Q So Figure 6 illustrates an operation of sequences between a client app and integrator 87; correct? I'm looking at paragraph 69.
A Yes.
Q And the first sequence or first step in the sequence is sending the video data; is that correct?
A It's requesting it.
Q After the request is there a response with the video being sent?
A Yes. Step 3, the origin server streams the HLS video.
Q And there's metadata which is buffered with a time stamp; is that correct?
A Yes.
Q And if the metadata with the time stamps match, is the metadata then forwarded to the client? I'm in paragraph 78.

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A 78?
Q I'm looking for the paragraph that discusses the time stamps matching.
A I think it's 77, but yeah.
Q Okay. So can you explain what paragraph 77 discloses?
A The client application receives the metadata and cart and matches up the time stamps with the video, and that relates to the video being watched on the video player and is synchronized to the video channel.
Q Herzog discusses a transmission delay of 2 seconds; is that correct, or less than 2 seconds? Paragraph 74.
A For the metadata, yes.
Q And in paragraph 154 of your first declaration --
A Okay.
Q -- do you indicate that the user device in Herzog retrieves the metadata with the corresponding time stamp?
A Yes.

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Q So Herzog uses its video latency period to provide synchronized metadata; is that correct?
A I don't see where you're referring to there.
Q Let's take a look at paragraph 58 of Herzog.
A I don't think it happens the way you said. I don't think it uses the latency time to retrieve the metadata. At least I don't see where it says that.
Q Is latency used at all by Herzog to provide synchronization between the video and the metadata?
A Latency is the reason you need synchronization. I don't think the latency is used to synchronize. It's latency is the problem and synchronization is the solution.
Q Can you ever take advantage of latency to prevent synchronization between multiple users?
A I suppose you could. I don't recall seeing that in here.
Q At the top of column 6, well, page 6, the

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top of the second column of Herzog it states that the metadata with the .JSON time stamp and the video audio data with the VITC time stamp are both decoded inside the mobile device. The metadata -- I'm sorry -- metadata is now synchronized to the video audio data. Do you have an understanding how that synchronization occurs?
A Yes.
Q Can you explain, please?
A They -- whenever -- wherever the time stamps match the metadata corresponds to that place in the video.
Q In Herzog, if multiple users were watching the same video stream, would they be watching a synchronized video stream?
A I don't see that I address that in my report. If that's somewhere in Herzog you want to point me to.
Q I'm trying to get an understanding from your opinion in paragraph 158 of the original declaration, Exhibit 2001.
A Okay. Which part of this isn't clear?

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Q Why doesn't the time stamp matching result in synchronization?
A The time stamp matching results in synchronization of the video content with the metadata, but that is different from synchronizing two people or more watching a live event as it's happening so that they can wager on it or so that they don't see something that happens before somebody else does because nothing in Herzog has to do with the problem of watching things at the same time and live, live video streaming.
Q What if there's a single stream? Wouldn't a time stamp solution result in an end user's watching that video simultaneously?
A No, because in Herzog you have to receive the video, then you have to receive the metadata, then you have to match it together. That could take different amounts of time for different users and there's no problem in Herzog with that because the goal of Herzog is to match that metadata to the video stream, not to match the combination of video data and video streaming across different

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users.
Q Can you turn to page 158 of your first dec? That's the page, not the paragraph.
A Okay.
Q Section 8 of your first declaration is directed to the second area, indicia of nonobviousness; correct?
A Yes.
Q In preparing your declaration or preparing for today's deposition have you seen any evidence of sales?
A I did not look at that.
Q Did you review or see any evidence of copying?
A Just what I mention in paragraph 312.
Q And that's just based on an understanding? You didn't review anything independently?
A Correct.
Q All right. Give me two minutes to talk to my colleague. I may be done.
A Should I leave the room then?
(A discussion was held off the record.)

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(A recess was taken.)
MR. BAKER: I have no further questions.
MR. SOLOMON: No redirect from me.
MR. BAKER: Thank you very much.
THE WITNESS: Thank you.
(Transcript orders discussed off the record. Off the record at 3:37 p.m.)

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CERTIFICATE OF SHORTHAND REPORTER-NOTARY PUBLIC

I, Janet A. Hamilton, Registered Diplomate Reporter and Notary Public within and for the State of Maryland do hereby certify:

That AVIEL D. RUBIN, Ph.D., the witness whose deposition is hereinbefore set forth, was duly sworn by me before the commencement of such deposition and that such deposition was taken before me and is a true record of the testimony given by such witness.

I further certify that the adverse party, Sportscastr, Inc., (d/b/a PANDA Interactive), was represented by counsel at the deposition.

I further certify that the deposition of AVIEL D. RUBIN, Ph.D., occurred at The Westin Annapolis, 100 Westgate Circle, Annapolis, Maryland, 21401, on Thursday, August 14, 2025, commencing at 9:10 a.m. to 3:37 p.m.

I further certify the inspection, reading and signing of said deposition was not discussed on the record.

I further certify that I am not related to any of the parties to this action by blood or marriage, I am not employed by or an attorney to any of the parties to this action, and that I am in no way interested, financially or otherwise, in the outcome of this matter.

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IN WITNESS WHEREOF, I have hereunto set my hand this 18th day of August, 2025.

My commission expires:

Janet A. Hamilton

February 4, 2028
STATE OF MARYLAND

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