

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETFLIX, INC.,
Petitioner,

v.

AVAGO TECHNOLOGIES INTERNATIONAL SALES PTE. LIMITED,
Patent Owner.

IPR2021-01293
Patent 9,402,098 B2

Before KRISTEN L. DROESCH, NATHAN A. ENGELS, and
JULIET MITCHELL DIRBA, *Administrative Patent Judges*.

DROESCH, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

We have authority to hear this *inter partes* review under 35 U.S.C. § 6, and this Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, Petitioner has established by a preponderance of the evidence that claims 1–5 and 7 (“challenged claims”) of U.S. Patent No. 9,402,098 B2 (Ex. 1001, “’098 Patent”) are unpatentable.

A. Procedural History

Netflix, Inc. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–5 and 7 of the ’098 Patent. Paper 2 (“Pet”). Avago Technologies International Sales Pte. Limited (“Patent Owner”) filed a Preliminary Response. Paper 7.

Pursuant to 35 U.S.C. § 314, we instituted trial on February 16, 2022. Paper 11.

After institution of trial, Patent Owner filed a Response (Paper 16, “PO Resp.”), to which Petitioner filed a Reply (Paper 20, “Pet. Reply”), to which Patent Owner filed a Sur-reply (Paper 24, “PO Sur-reply”).

Petitioner relies on a Declaration of Arthur T. Brody Ph.D., (Ex. 1003) to support its Petition. Patent Owner relies on a Declaration of Monson Hayes Sc.D., (Ex. 2014) to support its Response. Petitioner relies on a second Declaration of Dr. Brody (Ex. 1033) to support its Reply.

Dr. Brody and Dr. Hayes were cross-examined during trial, and transcripts of Dr. Brody’s deposition (Ex. 2015) and Dr. Monson’s deposition (Ex. 1032) are included in the record.

Oral argument was held on November 18, 2022. A transcript of the oral argument is included in the record. Paper 29.

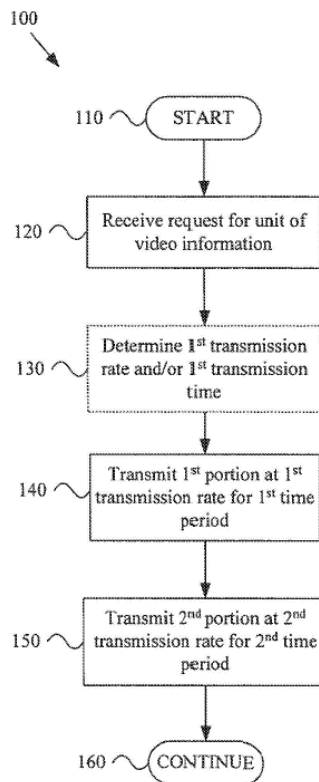
B. Related Matters

The parties indicate the '098 Patent is the subject of litigation in *CA, Inc., v. Netflix, Inc.*, 2:21-cv-00080 (E.D. Tex.)¹ and *Netflix, Inc. v. CA, Inc.*, 3:21-cv-03649 (N.D. Cal.). Pet. 76; Paper 5, 1.

C. The '098 Patent (Ex. 1001)

The '098 Patent relates to a system and method to provide reduced latency in a video signal processing system. See Ex. 1001, 1:42–44.

Figure 1 of the '098 Patent is reproduced below.



¹ The Court of Appeals for the Federal Circuit granted Petitioner's petition for writ of mandamus and directed the court of the Eastern District of Texas to transfer *CA, Inc., v. Netflix, Inc.*, 2:21-cv-00080 to the Northern District of California. See Ex. 3001. Neither party filed an updated mandatory notice identifying the new case number for the transferred proceeding.

Figure 1 depicts a flow diagram for providing reduced latency in a video transmission system. *See* Ex. 1001, 2:39–40, 2:54–56. Method 100 begins at step 110 in response to any variety of causes and conditions, for example, when a television receiver is turned on, or in response to an explicit user command or request for particular video information. *See id.* at 2:57–64. At step 120, a request is received from a user or other source for a unit of video information; the request may include, for example, a video program identification, a video channel identification, a menu indication, a channel change indication, a request to view a program on a next, previous, or last channel, and a request to view a program on a sequential list of channels. *See id.* at 3:1–17, 3:31–36.

Step 130 comprises determining a first transmission rate and/or the first time period using a variety of criteria. *See* Ex. 1001, 3:43–45, 3:67–4:4. A first transmission rate may be determined, for example, based on available communication bandwidth between the source of the unit of video information and a receiver of the unit of video information, and based on criteria other than, or in addition to, available communication bandwidth, for example, based on video data availability, desired quality of service, receiver priority, user priority, program priority, communication link conditions, time of day, day of week, and energy supply. *See id.* at 3:45–48, 3:60–67. The first transmission rate may be pre-determined or may be determined in real-time. *See id.* at 4:5–14. The first time period for which at least a portion of the requested unit of video information may be transmitted at the first transmission rate may be determined using a variety of criteria. *See id.* at 4:15–19. The first time period may be determined, for example, based on the first transmission rate and on receiver buffer characteristics, based on the

time it will take to provide the receiver with the determined amount of video data at the first transmission rate, or based a predetermined latency goal. *See id.* at 4:15–45. The first time period may be pre-determined or may be determined in real-time. *See id.* at 4:46–55.

At step 140, a first portion of the unit of video information is transmitted at a first transmission rate greater than a typical steady-state transmission rate for a first time period. *See Ex. 1001*, 3:37–40, 4:66–5:4, 5:23–25, 6:3–13. At step 150, a second portion of the unit of video information is transmitted at the typical steady-state transmission rate for the unit of video information for a second time period. *See id.* at 6:14–21. At step 160, processing of video information is continued. *See id.* at 6:37–41.

D. Illustrative Claim

Claim 1 is independent, and claims 2–5 and 7 depend from claim 1. *See Ex. 1001*, 19:6–48, 19:57–62. Claim 1 is illustrative and reproduced below:

- 1[p] A method, comprising:
 - 1[a] receiving, by a video transmission system having one or more processors, a request for a unit of video information from a remote video receiver;
 - 1[b] determining an initial transmission rate for the unit of video information using a real-time determination of available communication bandwidth between the video transmission system and the remote video receiver and a first steady-state transmission rate for the unit of video information, the initial transmission rate being higher than the first steady-state transmission rate;
 - 1[c] for a first time period after receiving the request, transmitting, by the video transmission system, a first portion of the unit of video information to the remote video receiver at the initial transmission rate, 1[d] wherein in response to a change in the available communication

bandwidth between the video transmission system and the remote video receiver during the first time period, transmitting a remainder of the first portion of the unit of video information to the remote video receiver at a second transmission rate for a remainder of the first time period, the second transmission rate being determined using the change in the available communication bandwidth and being different from the initial transmission rate and the first steady-state transmission rate; and
1[e] for a second time period after the first time period, transmitting, by the video transmission system, a second portion of the unit of video information to the remote video receiver at the first steady-state transmission rate.

Ex. 1001, 19:6–34 (Petitioner’s references added).

E. Asserted Challenges to Patentability and Asserted Prior Art

Petitioner asserts that claims 1–5 and 7 are unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–2	103 ²	Patrick ³
2	103	Patrick, Barrett ⁴
3–5	103	Patrick, Gringeri ⁵
7	103	Patrick, Mahdavi ⁶

² The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103 effective March 16, 2013. Because the ’098 Patent claims an effective filing date prior to the effective date of the applicable AIA amendment, we refer to the pre-AIA version of § 103.

³ Ex. 1004, US2004/0128396 A1, published Jul. 1, 2004 (“Patrick”).

⁴ Ex. 1005, US2004/0034864 A1, published Feb. 19, 2004 (“Barrett”).

⁵ Ex. 1006, US 6,233,226 B1, issued May 15, 2001 (“Gringeri”).

⁶ Ex. 1007, US 6,801,964 B1, issued Oct. 5, 2004 (“Mahdavi”).

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, the Board applies the same claim construction standard as applied in federal courts in a civil action under 35 U.S.C. § 282(b), which is generally referred to as the *Phillips* standard. *See* 37 C.F.R. § 42.100(b) (2021); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Under the *Phillips* standard, “words of a claim ‘are generally given their ordinary and customary meaning.’” *Phillips*, 415 F.3d at 1312 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (1996)).

Petitioner proposes claim constructions for “transmission rate” and “steady-state transmission rate.” *See* Pet. 19–21. Patent Owner does not agree with Petitioner’s proposed claim constructions. *See* PO Resp. 16 (citing Ex. 2014 ¶ 20). Patent Owner, however, does not offer alternative proposed claim constructions, but instead asserts these terms should be construed in accordance with their plain and ordinary meanings. *See id.* As demonstrated in the analysis below, we need not expressly construe “transmission rate” and “steady-state transmission rate.” *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

B. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The

question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) if in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).⁷

C. Level of Ordinary Skill in the Art

Petitioner asserts:

[a] person of ordinary skill in the field of art (“POSITA”) of the ’098 patent would have been a person with a bachelor’s degree in computer science, computer engineering, electrical engineering, or a similar field with at least two years of experience in video transmission systems, or a person with a master’s degree in computer science, computer engineering, electrical engineering, or a similar field with a specialization in video transmission systems.

Pet. 18 (citing Ex. 1003 ¶¶ 55–56). Petitioner further contends that “[a] person with less education but more relevant practical experience may also meet this standard.” *Id.* (citing Ex. 1003 ¶¶ 55–56). Petitioner further asserts that a person of ordinary skill in the art in 2004 would have known and had the skills necessary to: (1) “Design or implement video transmission systems and applications in compliance with standards such as TCP/IP, UDP, RTP, ATM, DVB, and ATSC;” (2) “Understand video coding and processing in compliance with standards such as MPEG-1, MPEG-2, MPEG-4, and H.26x;” (3) “Implement known techniques for determining available bandwidths between transmitting and receiving systems of media content; and” (4) “Understand common techniques for organizing and

⁷ The parties do not present evidence or arguments regarding secondary considerations.

selecting video content, such as by channels.” *Id.* (citing Ex. 1003 ¶ 57). Patent Owner does not dispute Petitioner’s assertions addressing the skill level of a person of ordinary skill in the art. *See* PO Resp.

We adopt Petitioner’s definition of a person of ordinary skill in the art because it is consistent with the level of skill reflected by the ’098 Patent Specification and in the asserted prior art.

D. Challenge to Claims 1 and 2 over Patrick

1. Overview of Patrick (Ex. 1004)

Patrick is directed to adaptable accelerated streaming of audio, video and/or text media content. *See* Ex. 1004, code (57), ¶¶ 1, 5, 12. A server device initially streams media content to a client device at an accelerated rate so that the buffer on the client device can be filled quickly. *See id.* ¶ 12. When the initial buffer fill is finished, the rate of streaming is reduced to a steady state. *See id.* The actual accelerated rate is determined based at least in part on the available bandwidth. *See id.*

Patrick discloses an exemplary network environment including exemplary client and server devices. *See* Ex. 1004 ¶¶ 8, 9, 13, 17, Figs. 1, 2. The client includes a buffer that is used to buffer streaming media content received from a server device. *See id.* ¶ 18. The server “includes an accelerated streaming control module . . . that determines an appropriate rate for accelerated streaming (also referred to as fast streaming) of media content to [the] client device.” *Id.* ¶ 19. The server includes a streaming module that streams the media content to the client’s media player at an accelerated rate that is greater than the steady state rate of the streaming media content. *See id.*

Figure 3 of Patrick is reproduced below.

200

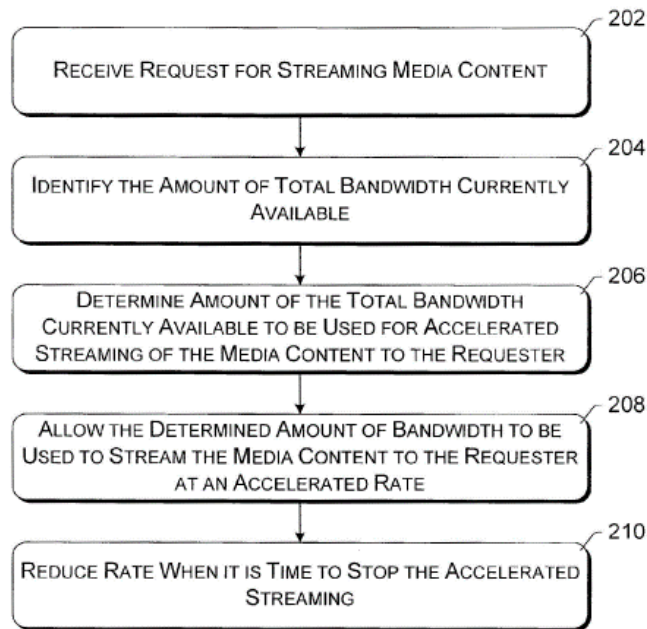


Figure 3 depicts a flowchart of exemplary process 200 for accelerated streaming of media content from a server device to a client device. *See* Ex. 1004 ¶¶ 10, 26. Process 200 is implemented by a server device and may be performed by software, firmware, hardware, and combinations thereof. *See id.* ¶ 26. In act 202, a request is received at the server device for streaming media content to be streamed to a client device. *See id.* ¶ 27. When a request for streaming media content is received, accelerated streaming control module at the server device identifies the amount of currently available bandwidth based on the total amount of bandwidth of the server device in act 204. *See id.* ¶ 28. The total amount of bandwidth may be a user configurable value or automatically calculated by the server. *See id.* ¶ 29. In other alternatives, the total amount of bandwidth may be calculated by other devices, such as a router or other network device coupled to the server device, to account for the network topology and changes in

both the network topology (e.g., due to malfunctioning devices) and the load on various devices in the network. *See id.*

Patrick discloses that, given the total amount of available bandwidth, an amount of the total bandwidth currently available to be used for accelerated streaming of media content to the requester is determined in act 206. *See* Ex. 1004 ¶ 31. In one implementation, a particular percentage of total bandwidth currently available can be used for the accelerated streaming, which can be a fixed percentage or configured. *See id.* ¶¶ 31–32. The percentages used in act 206 can be the same or different for all requests, and the percentages may vary based on different factors such as, for example, depending on the time of day, depending on how many other media content streams are currently streamed, and depending on the requester. *See id.* ¶ 33. “The rate determined in act 206 may also be based in part on a rate requested by the requester.” *Id.* ¶ 34.

In one implementation, the determined amount of bandwidth to be used for accelerated streaming of the media content to the requester is capped by the particular rate requested by the requester. Thus, the rate requested by the requester can serve to reduce the rate determined by control module [], but not increase the rate that would otherwise be determined by control module [] in act 206.

Ex. 1004 ¶ 34. “The rate determined in act 206 may also be based on a maximum rate configured in the server device.” *Id.* ¶ 35. “[I]n this implementation, even if additional bandwidth is available[, the] control module will determine in act 206 that the rate is no greater than this maximum rate.” *Id.*

The amount of the available bandwidth available for accelerated streaming of the media content determined in act 206 is allowed to be used to stream the media content to the

requester at an accelerated rate (act 208). This amount of available bandwidth operates as an upper threshold or limit, and [the] control module . . . forwards an indication of this upper threshold amount to [the] streaming module []. [The s]treaming module [] will allow the requested content to be fast streamed to [the] client device [] at a rate up to this upper threshold amount, but prohibits fast streaming the content at a rate that exceeds this upper threshold amount.

Ex. 1004 ¶ 36. Patrick further discloses that hardware limitations, such as the network connection, and network congestion or other restrictions between server device and client device may reduce the rate at which accelerated streaming can be performed. *See id.* ¶ 37.

Thus, it can be seen that the accelerated streaming is adaptable—the rate of accelerated streaming (and the amount of bandwidth available for accelerated streaming of particular media content) is adaptable and can vary based on the current conditions of the server device streaming the data and/or the current conditions of the network coupling the server and client devices. The amount of bandwidth that is made available for accelerated streaming of particular media content to a particular client device can thus vary over time, depending on the server load and/or network load when the request for the content is made. Thus, amount of bandwidth made available for different client devices can vary, and the amount of bandwidth made available for the same content requested by the same client device at different times can also vary.

Ex. 1004 ¶ 38.

The actual bandwidth used during operation can be established in different manners and is dependent on the streaming protocol employed in streaming the media content to the client device. *See Ex. 1001* ¶ 39.

By way of . . . example, the server device may send a particular amount of data and wait for an acknowledgement from the client device that it has received that amount before sending additional data. In this example, the server device will not

know exactly what the transfer rate is until it begins fast streaming the media content to the client device.

Ex. 1004 ¶ 39.

In act 210, the streaming rate is reduced when it is time to stop the accelerated streaming of media content. *See* Ex. 1004 ¶ 40. Accordingly, an initial portion of the content is fast streamed to the client device so that the buffer at the client device can be filled to the desired level, after which the streaming rate is reduced to a steady state rate. *See id.* The determination of when to reduce the streaming rate can be made in a variety of manners, and in one implementation, the client can send a temporal duration or data amount indication to the server. *See id.* ¶ 41.

Process 200 of Figure 3 is performed when the requester first requests the content to be streamed to the client, and may be performed at other times, for example, when there is a break in the connection or other network connection problems causing the client device to use all the data in its buffer. *See* Ex. 1004 ¶ 43. “Once a problem with the streaming is detected, the accelerated streaming may be stopped (e.g., and streaming reduced to the steady state rate) or the accelerated rate may be reduced.” *Id.* ¶ 48. The server device may also re-evaluate, at regular or irregular intervals, what is the amount of bandwidth available to be used for accelerated streaming of media content to the client device. *See id.* ¶ 45. “Thus, steps 204–208 could be repeated multiple times while fast streaming a media content stream to the client device.” *Id.*

2. Analysis of Claim 1

a. Preamble

Petitioner contends that, to the extent the preamble is limiting, Patrick discloses “[a] method” that comprises the elements recited in claim 1. *See* Pet. 22 (quoting Ex. 1004 ¶ 26; citing Ex. 1003 ¶¶ 66–69). Patent Owner does not address or rebut Petitioner’s showing for the preamble. *See* PO Resp. 41–70. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). We need not resolve whether the preamble is limiting because, based on the entire record, we find that Petitioner shows that the preamble recitation is satisfied by Patrick. *See* Pet. 22.

b. Limitation [1a] “receiving, by a video transmission system having one or more processors, a request for a unit of video information from a remote video receiver;”

Petitioner contends that Patrick teaches “a video transmission system” based on Patrick’s teachings of a server that stores video media content and streams the content to a client. *See* Pet. 22–23 (reproducing Ex. 1004, Fig. 2 (with annotations); quoting Ex. 1004 ¶¶ 16, 19, 24; citing Ex. 1004 ¶ 23; Ex. 1003 ¶ 71). Petitioner further asserts that a person of ordinary skill in the art would have found it obvious for Patrick’s video transmission system to have one or more processors because Patrick teaches implementing the server as a computer that includes one or more processors. *See id.* at 23–24 (quoting Ex. 1004 ¶ 50; citing Ex. 1004, Fig. 4; Ex. 1003 ¶ 72). Petitioner also contends that Patrick renders obvious “a remote video receiver” based on Patrick’s disclosure of its client device that receives video data from the

server device remotely through a network. *See id.* at 24–25 (reproducing Ex. 1004, Fig. 1; quoting Ex. 1004, code (57), ¶ 13; citing Ex. 1004 ¶ 18; Ex. 1003 ¶ 73). Petitioner further asserts that Patrick teaches the video transmission system receives a request for a unit of video information from a remote video receiver based on the disclosure of step 202 of Figure 3. *See id.* at 25–27 (reproducing Ex. 1004, Fig. 3 (with color annotations); quoting Ex. 1004 ¶¶ 24, 27; Ex. 1001, 3:1–9; citing Ex. 1004 ¶ 23; Ex. 1003 ¶ 74).

Patent Owner does not address or rebut Petitioner’s showing for limitation [1a]. *See* PO Resp. 41–70. In any event, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Based on the entire record, we find that Patrick teaches limitation [1a]. *See* Pet. 22–27.

c. Limitation [1b] “determining an initial transmission rate for the unit of video information using a real-time determination of available communication bandwidth between the video transmission system and the remote video receiver and a first steady-state transmission rate for the unit of video information, the initial transmission rate being higher than the first steady-state transmission rate;”

Petitioner asserts that Patrick teaches transmitting the requested content at an initial accelerated rate and subsequently reducing the transmission rate to a steady state rate. *See* Pet. 27–28 (reproducing Ex. 1004, Fig. 3 (with color annotations); citing Ex. 1004 ¶¶ 12, 20, 40; Ex. 1003 ¶¶ 76–77). Petitioner asserts that Patrick teaches determining an initial accelerated transmission rate based on Patrick’s disclosure of source server device including an accelerated streaming control module that determines an appropriate rate for accelerated streaming of media content to a client device. *See id.* at 28 (quoting Ex. 1004 ¶ 19; citing Ex. 1004 ¶¶ 12,

20, 40; Ex. 1003 ¶ 78; Pet. 19–20). According to Petitioner, “Patrick teaches that the initial transmission rate is determined using an available communication bandwidth between the video transmission system (e.g., the server) and the remote video receiver (e.g., the client).” *Id.* at 28–29 (quoting Ex. 1004 ¶ 12; citing Ex. 1004 ¶ 19). Petitioner contends that “Patrick’s available communications bandwidth between a server and a client is used as an upper limit for determining the initial transmission rate.” *Id.* at 29 (quoting Ex. 1004 ¶ 36; citing Ex. 1003 ¶ 79).

Petitioner asserts that Patrick’s server first determines the total amount of its available bandwidth, and then determines the available communication bandwidth as a percentage of the total bandwidth currently available to the server. *See* Pet. 29–30 (reproducing Ex. 1004, Fig. 3 (with color annotations); quoting Ex. 1004 ¶¶ 28, 30–32; citing Ex. 1003 ¶ 80). According to Petitioner, “Patrick further teaches that determining the available communication bandwidth includes measuring the current network conditions between the server and the client.” *Id.* at 30 (citing Ex. 1003 ¶ 81). Petitioner notes that Patrick discloses: (1) the available bandwidth is adaptable and can vary based on the current conditions of the server device streaming the data and/or the current conditions of the network coupling the server and client devices; and (2) network congestion or other restrictions between the server device and client device may prevent data from being streamed at greater than some rate, so that the accelerated streaming rate would not be able to exceed that rate. *See id.* at 30–31 (quoting Ex. 1004 ¶¶ 37–38); Pet. Reply 12 (citing Pet. 30–31), 15 (citing Pet. 30–31).

Petitioner asserts that a person of ordinary skill in the art “would have found it obvious to measure [available communications bandwidth] between

the server and client because there were many well-known techniques available for doing so by 2004.” Pet. 31 (citing Ex. 1003 ¶ 81); *see* Pet. Reply 12 (citing Pet. 31), 15 (citing Pet. 31). Petitioner points out, as an example, that Patrick discloses one well-known technique of sending a particular amount of data and waiting for an acknowledgement from the client device that it has received that amount before sending additional data. *See* Pet. 31 (quoting Ex. 1004 ¶ 39); Pet. Reply 12 (citing Pet. 31). According to Petitioner, “[t]he ’098 [P]atent does not describe specific methods for determining the available communication bandwidth, leaving this to the knowledge of a [person of ordinary skill in the art].” Pet. 31 (citing Pet. 9–10). Petitioner further contends that a person of ordinary skill in the art would have understood that Patrick’s method of determining the available bandwidth between the server and client satisfies the determining limitation. *See id.* (citing Ex. 1003 ¶ 82).

Petitioner also asserts that Patrick teaches the determination is made in real-time based on Patrick’s teaching of determining the available bandwidth at the time that the request for streaming media content is received, which is consistent with the use of “real-time” in the ’098 Patent. *See* Pet. 31–32 (quoting Ex. 1004 ¶ 44; Ex. 1001, 1:63–65; citing Ex. 1001, 12:24–29; Ex. 1003 ¶ 83); Pet. Reply 12 (citing Pet. 31–32). Petitioner also asserts that, “while using the determined available communication bandwidth as the upper limit for the transmission rate, Patrick teaches determining the initial transmission rate further using the steady state transmission rate” based on Patrick’s teaching of “using the steady state transmission rate as a lower limit for determining the initial or accelerated

transmission rate.” Pet. 32–33 (quoting Ex. 1004 ¶¶ 19, 48; citing Ex. 1003 ¶¶ 84–85); *see* Pet. Reply 12–13 (citing Pet. 28–29, 32–33).

Patent Owner challenges the sufficiency of Petitioner’s showing regarding limitation [1b]. *See* PO Resp. 42–65. We summarize and address each of Patent Owner’s arguments in the four subsections below.

Having considered both parties’ arguments and the evidence, we are persuaded that the subject matter of limitation [1b] is taught, suggested, and/or rendered obvious by Patrick. Patrick teaches that media content is streamed at an accelerated rate (which teaches the claimed “initial transmission rate”) and then at a slower steady state rate (which teaches the claimed “first steady-state transmission rate”). *E.g.*, Ex. 1004 ¶¶ 12, 20, 26–48, Fig. 3, acts 206–210. Patrick discloses that “the amount of bandwidth for accelerated streaming of particular media content . . . can vary based on . . . the current conditions of the network coupling the server and client devices.” Ex. 1004 ¶ 38. As a result, we agree with Petitioner that it would have been obvious, in view of Patrick’s disclosure, to measure the available communications bandwidth between the server and the client as part of determining the amount of bandwidth available for accelerated streaming of the media content in act 206 of Fig. 3. *See* Pet. 30–31; Ex. 1004 ¶¶ 31–39; Ex. 1003 ¶ 81. Patrick teaches that the amount of available bandwidth operates as an upper limit or threshold for determining the initial transmission rate and the steady-state transmission rate operates as a lower limit. *See* Pet. 29, 32–33; Ex. 1004 ¶¶ 19, 36, 48. Thus, we are persuaded that an ordinary artisan would have understood Patrick to teach, suggest, or render obvious determining the initial transmission rate using a real-time determination of the available communications bandwidth between

the server and the client and the steady-state transmission rate. *See id.* ¶¶ 12, 19, 36–39, 48, Fig. 3, step 206; Pet. 28–33.

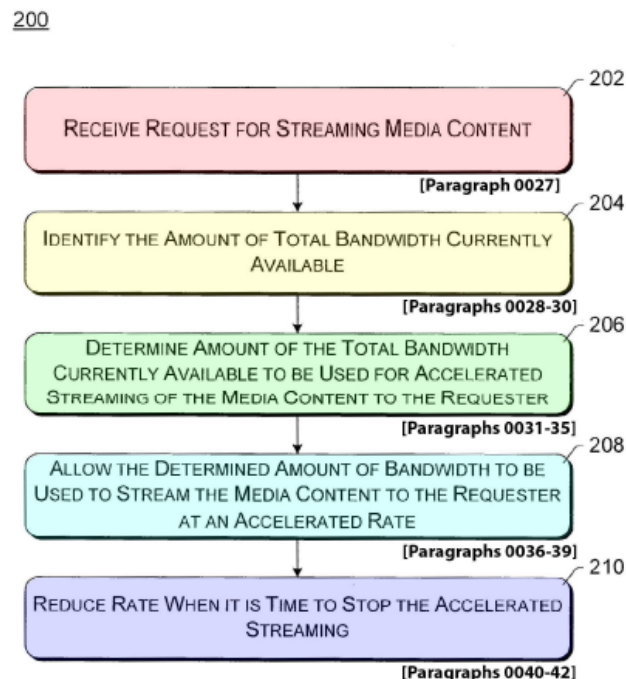
i. “Structure” of Patrick’s Disclosure and Reading of Patrick’s Paragraph 38

Patent Owner’s contends that Petitioner misreads and ignores the context of Patrick’s teachings. *See* PO Resp. 42. According to Patent Owner, “Patrick employs a structure in its disclosure that indicates which teachings are part of each step in the process 200 of Figure 3,” and “provides important context around Patrick’s teachings.” *Id.* at 42 (citing Ex. 2014 ¶¶ 54, 55; PO Resp. 17–41); *see id.* at 19 (similar argument, citing Ex. 2014 ¶ 29).

In support of its arguments Patent Owner provides a lengthy overview of Patrick’s teachings starting with how the terms “available” and “bandwidth” are used throughout Patrick’s disclosure, and a color-coded graph that reflects the acts of Figure 3 to support its assertions. *See* PO Resp. 19–20 (reproducing Ex. 2014 ¶ 30 (graph)). Patent Owner contends that “total bandwidth currently available” refers to the amount of the server’s overall bandwidth capacity that is not being used for other applications. *See id.* at 20–21 (citing Ex. 1004 ¶ 28, Fig. 3; Ex. 2014 ¶ 31). Patent Owner also asserts that “amount of the total bandwidth currently available to be used for accelerated streaming” describes “a calculated fraction of the total bandwidth currently available . . . that represents an upper threshold” and “is the maximum bandwidth that Patrick’s system will be allowed to use to stream content at an accelerated rate.” *See id.* at 21 (citing Ex. 1004 ¶ 36, Fig. 3; Ex. 2014 ¶ 32). Patent Owner also contends that the “amount of the total bandwidth currently available to be used for accelerated streaming,” and the steady state transmission rate define the range of accelerated rates

the server can provide. *See id.* at 21–22 (citing Ex. 1004 ¶¶ 12, 20, 39, 48; Ex. 2014 ¶ 33; Ex. 2015. 85:6–12); *see also* PO Sur-reply (similar argument, citing Ex. 1004 ¶¶ 36, 39; PO Resp. 20–22). According to Patent Owner, “while the accelerated rate is constrained by these boundaries, the actual accelerated rate is determined by network-specific conditions that occur during streaming of the content and not by the server load (upper threshold) or the steady state rate (lower threshold).” *Id.* at 22 (citing Ex. 2014 ¶ 33).

Also in support of its arguments, Patent Owner presents a colorized and annotated version of Patrick’s Figure 3, which is reproduced below.



Patent Owner’s colorized and annotated version of Patrick’s Figure 3 depicts a flowchart of process 200 for accelerated streaming of media content from a server device to a client device. *See* Ex. 1004 ¶¶ 10, 26. Patent Owner asserts, referring to its colorized and annotated version of Patrick’s Figure 3, that the structure of paragraphs 27–42 correspond directly to the acts of Figure 3. *See* PO Resp. 23–26 (reproducing Ex. 1004 ¶¶ 27–42 (with color

annotations); citing Ex. 2014 ¶ 34). Patent Owner contends that Patrick’s paragraphs 28 through 30 describe acts 202 and 204, paragraphs 31 through 35 describe act 206, paragraphs 36 through 39 describe act 208, and paragraphs 40 through 42 describe act 210. *See id.* at 26–41 (citing Ex. 2014 ¶¶ 35–52) (citations to Ex. 1004 omitted).

According to Patent Owner, a person of ordinary skill in the art “would recognize this structure as teaching that acts of 204–206, and corresponding paragraphs 0028–0035 . . . describe Patrick’s technique for determining available bandwidth.” PO Resp. 26 (citing Ex. 2014 ¶ 35); *see id.* at 22–26 (citing Ex. 2014 ¶ 34). Patent Owner asserts that paragraph 36 begins the discussion of act 208 before describing the details of streaming, and discloses that the available bandwidth (calculated in act 206) is an upper threshold on the transmission rate of video streaming. *Id.* at 34 n.5 (citing Ex. 2014 ¶ 46 n.3). According to Patent Owner, “paragraph 0036 serves as a transition from the discussion of act 206 to the discussion of act 208.” *Id.*; *see* PO Sur-reply 12 (citing PO Resp. 34 n.5). Patent Owner contends that a person of ordinary skill in the art “would . . . understand that everything Patrick discloses after the discussion of this upper threshold [in paragraph 36] pertains to factors that affect the actual streaming rate, not the upper threshold (i.e., the ‘available bandwidth’ Patrick teaches).” PO Resp. 51 (citing Ex. 2014 ¶ 67; PO Resp. 17–41); *see id.* at 50–51 (quoting Ex. 1004 ¶ 36; citing Ex. 2014 ¶ 67; PO Resp. 17–41). According to Patent Owner, “Patrick concludes its discussion of ‘available bandwidth’ in paragraph 0036 with the teaching, ‘[t]he amount of the available bandwidth available for accelerated streaming of the media content determined in act 206 is **allowed to be used** to stream the media content to the requester at

an accelerated rate (act 208).” *Id.* at 50–51 (quoting Ex. 1004 ¶ 36; citing Ex. 2014 ¶ 67).

Patent Owner contends, “[t]he disclosure in . . . paragraphs [37 through 39] of Patrick relates to the actual streaming rate, not to Patrick’s disclosure of the upper threshold for the actual streaming rate.” PO Resp. 52 (citing Ex. 2014 ¶ 68). According to Patent Owner, “the structure of Patrick clearly indicates which disclosure is part of the determination of ‘available bandwidth,’ and which disclosure relates to the actual streaming rate.” *Id.* (citing Ex. 2014 ¶ 68; PO Resp. 17–41). Patent Owner asserts that a person of ordinary skill in the art: (1) “reading paragraphs 0037-0039 in the context of Patrick’s entire disclosure, would not understand the phrase ‘amount of bandwidth available for accelerated streaming of particular media content . . . is adaptable’ to mean that the upper threshold depends on any factors discussed after paragraph 0036 of Patrick”; (2) “would understand that the discussion in paragraph 0038 about the accelerated streaming rate and ‘amount of bandwidth available’ refer to conditions occurring during streaming, rather than any adaptability of the upper threshold (i.e., the ‘available bandwidth’ taught in paragraphs 0030-0035) in response to the factors discussed in paragraphs 0037-0039;” and (3) “would understand that the ‘upper threshold,’ is determined based only on the factors in paragraphs 0030-0035, which . . . have nothing to do with ‘available bandwidth between the video transmission system and the remote video receiver.’” *Id.* at 52–53 (citing Ex. 2014 ¶¶ 38 n.7, 63–64, 70); *see also id.* at 26 (similar argument, citing Ex. 2014 ¶ 35).

Building on its arguments regarding the “structure” of Patrick, Patent Owner asserts that Dr. Hayes testifies that a person of ordinary skill in the

art “would understand . . . paragraph [38] to teach only that (1) the ‘available bandwidth’ is adaptable based on server conditions, (2) the rate of accelerated streaming is adaptable based on network conditions. . . . That is the only way to read paragraph 0038 in a way that is consistent with the remainder of Patrick’s disclosure.” PO Resp. 38 n.7 (citing Ex. 2014 ¶ 50); *see* PO Sur-reply 14 (arguing Dr. Hayes explains why a person of ordinary skill in the art would read the first sentence of paragraph 38 as explained in the Response, citing Ex. 2014 ¶ 50), 16 (arguing the Response and Dr. Hayes address the entirety of paragraph 38 in detail, citing PO Resp. 38–39, 38 n.7; Ex. 2014 ¶ 50). Similarly, Patent Owner asserts that Patrick teaches that the rate of streaming rather than the available bandwidth can vary based on network limitations and the upper threshold does not change. *See* PO Resp. 39–40 (quoting Ex. 1004 ¶¶ 35, 37; citing Ex. 2014 ¶ 51); *see also* PO Sur-reply 1 (similar argument, citing PO Resp. 20–22, 39–40).

In its Reply, Petitioner contends that the Response “seeks to re-write Patrick’s teachings and argues that Patrick’s teachings do not mean what they say.” Pet. Reply 4 (citing Ex. 2014 ¶ 50). Petitioner characterizes the Response as dedicating 24 pages to color-coding Patrick and arguing that each color-coded portion should be read narrowly. *See id.* According to Petitioner, Patent Owner’s “incorrect narrowing of Patrick’s teachings should be rejected, and Patrick’s teachings should be accorded their full scope.” *Id.* More specifically, Petitioner contends that Patent Owner’s arguments “ignore[] the logical progression of Patrick.” *Id.* at 6–7 (citing Ex. 1033 ¶ 7).

Petitioner asserts that a person of ordinary skill in the art “reading Patrick’s disclosure would have understood that [the] later disclosure

provides additional details and teachings relevant to the invention as a whole.” Pet. Reply 7 (citing Ex. 1033 ¶¶ 5, 6, 8–11); *see id.* at 5–7 (Petitioner’s arguments addressing the disclosures in Patrick’s paragraphs 31 through 35, citing Ex. 1004 ¶¶ 33–35, 39; Ex. 1032, 114:19–115:20; Ex. 1033 ¶ 9; Pet. 56–57; PO Resp. 24–35). According to Petitioner, “[c]ontinuing the discussion of factors *other than* server capacity in paragraphs 33–35, Patrick further explains how bandwidth can be affected by other well-known constraints.” *Id.* at 7 (citing Ex. 1033 ¶ 10). Petitioner explains that paragraph 37 discloses that hardware limitations may affect the rate at which accelerated streaming can be performed, and expressly identifies the bandwidth of the client’s connection to the network, and teaches how network congestion or other restrictions between the server and client may prevent data from being streamed at greater than some rate. *See id.* at 7–8 (quoting Ex. 1004 ¶ 37; Ex. 1033 ¶ 10; citing Pet. 30–31). According to Petitioner, Patrick’s paragraph 38 “teaches available bandwidth and the resulting transmission rate can vary based on ‘the current conditions of the network coupling the server and client devices,’ and ‘network load’ among other things.” *Id.* at 8 (citing Ex. 1004 ¶ 38; Pet. 30–31). Petitioner asserts that paragraph 39 of Patrick recaps the prior teachings and provides specific examples, including details for the client’s request of paragraph 34, by negotiating a transfer rate between the client and server, and a method for measuring the available bandwidth under current network conditions to determine the transfer rate. *See id.* at 8–9 (citing Ex. 1004 ¶ 39; Ex. 1033 ¶ 11; Pet. 31–32).

Petitioner further contends that “[s]ince [Patent Owner] is unable to dispute paragraph 38 teaches limitations [1b] and [1d], [Patent Owner]

instead contends that [Petitioner] and the Board misunderstand its meaning.” Pet. Reply 9 (citing PO Resp. 38 n.7). According to Petitioner, Patent Owner ignores the plain meaning of paragraph 38 and “deconstructs [the first] sentence of [paragraph 38] into two disconnected sections by mixing and matching the clauses while ignoring the connectors in the sentence.” *Id.* at 9–10 (quoting PO Resp. 38 n.7; Ex. 1004 ¶ 38; citing Ex. 1003 ¶ 93; Pet. 37). Petitioner asserts that Patent Owner’s “arguments run afoul of plain English grammar,” and person of ordinary skill in the art “reading the [first sentence of paragraph 38] would have understood it to mean what it says.” *Id.* at 10 (citing Ex. 1033 ¶ 14). Petitioner also notes that Patent Owner’s distortion of the first sentence of paragraph 38 is rebutted by subsequent sentences of paragraph 38 that disclose “[t]he amount of bandwidth that is made available for accelerated streaming of particular media content to a particular client device can *thus* vary over time, depending on the server load and/or network load when the request for the content is made.” *Id.* at 10–11 (quoting Ex. 1004 ¶ 38; citing Ex. 1033 ¶ 15). Petitioner contends that Dr. Hayes admitted the second sentence of paragraph 38 teaches that the amount of bandwidth that is made available depends upon the server load and/or the network load, and also noted that both the amount of bandwidth that is made available and the rate of streaming can vary with time. *Id.* at 11 (quoting Ex. 1032, 130:10–131:13, 137:3–5). Petitioner asserts that Dr. Hayes’s testimony supports Petitioner’s position that Patrick’s bandwidth varies with network load. *See id.* (citing Ex. 1004 ¶ 38; Pet. 37). Petitioner further asserts that the last sentence of paragraph 38 also rebuts Patent Owner’s arguments because “Patrick teaches that the changes in available bandwidth that occur over time due to network

load are accounted for by varying the allocation of bandwidth and subsequent rate of streaming.” *Id.* (quoting Ex. 1004 ¶ 38, last sentence; citing Ex. 1003 ¶ 93; Ex. 1033 ¶ 16; Pet. 38).

In response to the Reply, Patent Owner contends that the Reply continues to misinterpret the structure of Patrick and also misreads it by completely disregarding paragraph 36. *See* PO Sur-reply 11–12. Patent Owner reiterates that paragraph 36 serves as a transition from the discussion of Patrick’s Figure 3 act 206 (determining available bandwidth) to the discussion of act 208 (streaming at the accelerated transmission rate). *See id.* at 12 (citing PO Resp. 34 n.5). According to Patent Owner, “paragraph 0036 concludes the discussion of paragraphs 0031-35 by teaching ‘[t]his amount of available bandwidth operates as an upper threshold or limit, and control module 150 of FIG. 2 forwards an indication of this upper threshold amount to streaming module 144,’ before beginning a detailed discussion of step 208.” *Id.* (quoting Ex. 1004 ¶ 36). Patent Owner further asserts that “Petitioner’s argument that paragraphs 0037-39 modifies or aids in the interpretation of Patrick’s clear teaching on calculation of the available threshold demonstrates Petitioner’s disregard of Patrick’s ‘logical progression.’” *Id.* (citing Pet. Reply 8).

Patent Owner also argues that Petitioner’s Reply argument that Patent Owner is unable to dispute that paragraph 38 teaches limitations [1b] and [1d] is an impermissible new argument. *See* PO Resp. at 12–13 (citing Reply 9), 17–19 (citing Reply 9). Patent Owner further contends that the Petition mentions paragraph 38 only twice and fails to identify with particularity that Petitioner believed paragraph 38 teaches limitations [1b] and [1d]. *See id.* at 13 (citing Pet. 30, 37; PO Resp. 38–39 n.7; Pet.

Reply 9). Patent Owner contends that the Reply's arguments addressing the second sentence of paragraph 38 attempts to buttress the lack of discussion in the Petition, and argues this is a new argument that cannot remedy the Petition's failure to explain with particularity why paragraph 38 is relevant. *See id.* at 16 (citing Pet. Reply 11; *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016)).

Patent Owner further disputes Petitioner's reading of paragraph 38 and reiterates arguments presented in the Response. *See* PO Sur-reply 13–14 (citing PO Resp. 37–40, 50–54). According to Patent Owner, “[t]he Reply . . . fails to address the [Response] argument . . . that Dr. Hayes’ interpretation of paragraph 0038 ‘is the only way to read paragraph 0038 in a way that is consistent with the remainder of Patrick’s disclosure.’” *See id.* at 16 (citing PO Resp. 38 n.7 (citing Ex. 2014 ¶ 50)). Patent Owner also contends that the Reply identifies nothing in Patrick outside of paragraph 38 to support its arguments. *See id.* at 15 (citing Reply 10); *see id.* at 17 (similar argument). Patent Owner also contends that the Reply does not have “any rebuttal, other than Petitioner’s own ‘distortion’ of the first sentence of paragraph 0038.” *Id.* at 14. Patent Owner complains that Petitioner’s distortion “omits the phrase ‘the rate of accelerated streaming,’ which is critical to the transition between the discussion of available bandwidth and transmission rate, as explained in [the Response].” *Id.* at 14–15 (citing Reply 10; PO Resp. 37–40); *see* PO Resp. 38 n.7 (“Petitioner’s selective quotation of paragraph 0038 is misleading, because paragraph 0038 actually refers to the accelerated rate and the available bandwidth, not just the available bandwidth (as the Petition implies).”). Patent Owner also asserts that Petitioner’s reliance on Dr. Hayes deposition

testimony provides no support for Petitioner’s position. *See* PO Sur-reply 5 (citing Reply 10, 11; Ex. 1032, 130:10–131:13, 136:17–139:22).

As an initial matter, we do not agree with Patent Owner’s contention that the following Reply argument constitutes an impermissible new argument: “[s]ince [Patent Owner] is unable to dispute paragraph 38 teaches limitations [1b] and [1d]” Pet. Reply 9; *see* PO Sur-reply 12–13. Contrary to Patent Owner’s suggestion, we do not understand Petitioner to argue for the first time on Reply that Patrick’s paragraph 38 by itself teaches limitations [1b] and [1d]. Rather, we understand the Reply argument to address the dispute raised by Patent Owner regarding the disclosure of Patrick’s paragraph 38 as applied to limitations [1b] and [1d] in the Petition. *See* Pet. Reply 9; PO Resp. 38–40, 38 n.7, 52–53 (citing Ex. 2014 ¶¶ 50–51, 63–64, 70); Pet. 30–31, 37. Likewise, we do not agree that the portion of the Reply addressing the second sentence of Patrick’s paragraph 38 is a new argument that attempts to buttress the lack of discussion of paragraph 38 in the Petition. *See* PO Sur-reply 16; Pet. Reply 11. Instead, we find that these Reply arguments constitute a permissible response to Patent Owner’s arguments addressing how a person of ordinary skill in the art would understand the disclosure of Patrick’s paragraph 38. *See* PO Resp. 38 n.7 (citing Ex. 2014 ¶ 50), 52–53 (citing Ex. 2014 ¶¶ 63–64, 70; PO Resp. 38 n.7); *see also* 37 C.F.R. § 42.23(b); Consolidated Trial Practice Guide (Nov. 2019) (“CTPG”)⁸ 73–74.

Turning to the foundational dispute regarding Patrick’s disclosures, we do not agree with Patent Owner’s arguments alleging a certain

⁸ *Available at* <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

“structure” to Patrick’s disclosure that bifurcates the disclosure of Patrick’s paragraphs 37 through 39 from the disclosure of paragraphs 31 through 36. *See* PO Resp. 19, 22–26, 30–36, 34 n.5, 42, 51–53; PO Sur-reply 2, 11–12. Patent Owner’s arguments are inconsistent with Patrick’s disclosure itself. The first sentence of Patrick’s paragraph 38 discloses:

Thus, it can be seen that the accelerated streaming is adaptable—the rate of accelerated streaming (and ***the amount of bandwidth available for accelerated streaming of particular media content***) is adaptable and can vary based on the current conditions of the server device streaming the data and/or the current conditions of the network coupling the server and client devices.

Ex. 1004 ¶ 38 (emphasis added). The term “the amount of bandwidth available for accelerated streaming of particular media content” used in the first sentence of paragraph 38 is consistent with the terms “an amount of the total available bandwidth currently available to be used for accelerated streaming of the media content to the requester” and “[t]he amount of the available bandwidth available for accelerated streaming of the media content” used in Patrick’s paragraphs 31 and 36 to address act 206 of Figure 3 (“Determine Amount of the Total Bandwidth Currently Available to be Used for Accelerated Streaming of the Media Content to the Requester”). *See* Ex. 1004 ¶¶ 31, 36, Fig. 3. As pointed out by Petitioner (*see* Pet. Reply 10–11), the second sentence of paragraph 38 confirms the meaning of the first sentence of paragraph 38 by disclosing that “[t]he amount of bandwidth that is made available for accelerated streaming of particular media content to a particular client device can thus vary over time, depending on the server load and/or network load when the request for the content is made.” Ex. 1004 ¶ 38. The second sentence of Patrick’s

paragraph 38 uses terms consistent with the terms used in the first sentence of paragraph 38 and terms used in paragraphs 31 and 36 to address act 206 of Figure 3. *See id.* ¶¶ 31, 36, 38. Moreover, the first sentence of paragraph 38 is consistent with Patrick’s paragraph 37 disclosure that network congestion or other restrictions between the server and client (i.e., a reduction of bandwidth between the server and client) may limit the rate of accelerated streaming. *See* Ex. 1004 ¶ 37 (*quoted in* Pet. 30–31). We give weight to Dr. Brody’s testimony that a person of ordinary skill in the art “reading Patrick’s disclosure would have understood that [Patrick’s] later disclosure [in paragraphs 33 through 39] provides additional details and teachings relevant to the invention as a whole,” (Pet. Reply 7 (citing Ex. 1033 ¶ 8)) because it is supported by the aforementioned interrelated teachings of at least Patrick’s paragraphs 31 and 36 through 38. We give minimal weight to Dr. Hayes’s cited supporting testimony regarding the “structure” of Patrick because it is not supported by a sufficient factual basis, and like Patent Owner’s arguments, is inconsistent with Patrick’s disclosure. Accordingly, contrary to Patent Owner’s arguments, we find: (1) Patrick’s paragraph 38 provides additional detail regarding the disclosures of paragraphs 31 through 36 with respect to act 206 of Figure 3; (2) the disclosures of paragraphs 37 through 39 are not limited to describing the period of accelerated streaming of act 208 of Figure 3; and (3) the corresponding disclosure related to act 206 of Figure 3 is not limited to the description of Patrick’s paragraphs 31 through 36.

Turning to the disputed reading of Patrick’s paragraph 38, we do not agree with Patent Owner’s arguments that a person of ordinary skill in the art “would understand . . . paragraph [38] to teach only that (1) the

‘available bandwidth’ is adaptable based on server conditions, (2) the rate of accelerated streaming is adaptable based on network conditions.” PO Resp. 38 n.7; Ex. 2014 ¶ 50. Nor can we agree that “[t]his is the only way to read paragraph 0038 in a way that is consistent with the remainder of Patrick’s disclosure.” PO Resp. 38 n.7; Ex. 2014 ¶ 50. Patent Owner’s arguments are inconsistent with Patrick’s disclosures. The first sentence of Patrick’s paragraph 38 discloses:

Thus, it can be seen that the accelerated streaming is adaptable—the rate of accelerated streaming (***and the amount of bandwidth available for accelerated streaming of particular media content***) is adaptable and can vary based on the current conditions of the server device streaming the data ***and/or the current conditions of the network coupling the server and client devices***.

Ex. 1004 ¶ 38 (emphasis added). We agree with Petitioner’s characterization of Patent Owner’s arguments as running afoul of plain English grammar by deconstructing the first sentence of paragraph 38 into two disconnected sections by mixing and matching the clauses while ignoring the connectors in the sentence. *See* Pet. Reply 10 (citing PO Resp. 38 n.7). We find that the first sentence of Patrick’s paragraph 38 discloses that both the rate of accelerated streaming *and* the amount of bandwidth available for accelerated streaming of particular media content are adaptable and can vary based on: (1) the current conditions of the server device streaming the data *and* the current conditions of the network coupling the server and the client devices; (2) the current conditions of the server device streaming the data; *or* (3) the current conditions of the network coupling the server and client devices. *See* Ex. 1004 ¶ 38. The first sentence of paragraph 38 is also consistent with Patrick’s disclosure in

paragraph 37 that network congestion or other restrictions between the server and client (i.e., a reduction of bandwidth between the server and client) may limit the rate of accelerated streaming. *See* Ex. 1004 ¶ 37 (*quoted in* Pet. 30–31). We give minimal weight to Dr. Hayes’s cited supporting testimony (*see* PO Resp. 38 & n.7, 52–53; Ex. 1014 ¶¶ 50, 63–64, 70) addressing how a person of ordinary skill in the art would understand paragraph 38 because it is not supported by a sufficient factual basis and is contrary to Patrick’s disclosure. Moreover, we agree with Petitioner’s argument that the second sentence of paragraph 38 confirms the meaning of the first sentence. Like the first sentence of paragraph 38, the second sentence discloses that the amount of bandwidth that is made available for accelerated streaming of particular media content to a particular client can vary over time depending on: (1) server load *and* network load when the request for the content is made; (2) server load; *or* (3) network load when the request for the content is made. *See* Ex. 1004 ¶ 38.

In sum, consistent with the positions advanced in the Petition (*see* Pet. 30–31), we find that Patrick teaches the amount of bandwidth available for accelerated streaming of particular media content can vary based on the current conditions of the network coupling the server and the client devices. *See* Ex. 1004 ¶ 38.

ii. *“a real-time determination of available communication bandwidth between the video transmission system and the remote video receiver”*

Patent Owner argues that Patrick does not teach or suggest: “a real-time determination of available communication bandwidth between the video transmission system and the remote video receiver” because “Patrick’s ‘available bandwidth’ (i.e., the upper threshold calculated in act 206 . . .) is

based only on server load and has nothing to do with bandwidth between a video transmission system and a client.” PO Resp. 43 (citing Ex. 2014 ¶ 56); *see id.* at 50 (arguing that Patrick teaches its disclosed “available bandwidth” is an upper threshold, and asserting that Petitioner equates Patrick’s “available bandwidth” with the upper threshold (quoting Pet. 29; citing Ex. 1004 ¶ 36; Ex. 2014 ¶ 66; PO Resp. 17–41)); PO Sur-reply 2–3 (quoting Pet. 29; citing Pet. 32–33, 56).

We do not agree with Patent Owner’s arguments because they are premised on Patent Owner’s arguments advocating a particular “structure” of Patrick’s disclosure and a particular reading of paragraph 38, addressed immediately above in Section II.D.2.c.i. *See* PO Resp. 26 (citing Ex. 2014 ¶ 35), 50 (quoting Ex. 1004 ¶ 36; citing Ex. 2014 ¶ 67; PO Resp. 17–41), 51–52 (quoting Pet. 30; citing Ex. 2014 ¶ 68; PO Resp. 17–41), 52 (citing Ex. 1003 ¶¶ 80–81; Ex. 2014 ¶¶ 63–64 68; Pet. 30–31; PO Resp. 17–41, 38 n.7), 52–53 (citing Ex. 2014 ¶ 70); Pet. Sur-reply 20 (citing Ex. 1004 ¶ 39). Based on our findings regarding the disclosure of Patrick’s paragraph 38 and that this disclosure is related to the disclosure of paragraphs 31 through 36 related to act 206 of Fig. 3, as explained immediately above in Section II.D.2.c.i., we cannot agree that Patrick’s “available bandwidth” is based only on server load and has nothing to do with bandwidth between a video transmission system and a client.

Patent Owner also argues that the Petition does not demonstrate that Patrick teaches or suggests “a real-time determination of available communication bandwidth between the video transmission system and the remote video receiver” based on the disclosures of Patrick’s paragraphs 12, 19, 28 and 30–32. *See* PO Resp. 44–49 (quoting Ex. 1003

¶ 80; Ex. 1004 ¶ 19; Pet. 28–29; citing Ex. 1004 ¶¶ 12, 19, 28, 30–32; Ex. 2014 ¶¶ 47, 50, 59–61, 63–65; Pet. 29–30; PO Resp. 17–41). According to Patent Owner, “Patrick teaches only considerations intrinsic to the server when determining this upper threshold” and never mentions any considerations outside the server’s own capacity and configuration until its discussion of the actual accelerated streaming process.” PO Resp. 44 (citing Ex. 2014 ¶¶ 58; PO Resp. 17–30).

We do not agree with Patent Owner’s arguments because they focus on certain Petition arguments relying on the disclosures of Patrick’s paragraphs 12, 19, 28, and 30–32 (*see* Pet. 28–29), while overlooking Petitioner’s arguments (*see* Pet. 30–31) relying on the disclosures of paragraphs 37 through 39 and assertions regarding what a person of ordinary skill in the art would have found obvious in view of Patrick’s teachings. More specifically, Patent Owner overlooks Petitioner’s reliance on Patrick’s following teachings: (1) available bandwidth “is adaptable and can vary based on the current conditions of the server device streaming the data *and*/or the current conditions of the network coupling the server and client devices,” Ex. 1004 ¶ 38 (emphasis added); and (2) “network congestion or other restrictions between the server device and client device may prevent data from being streamed at greater than some rate, so the accelerated streaming rate would not be able to exceed that rate,” (Ex. 1004 ¶ 37); *see* Pet. 30–31. In addition, Patent Owner’s arguments overlook Petitioner’s contention that a person of ordinary skill in the art “would have found it obvious to measure [available communications bandwidth] between the server and client because there were many well-known techniques available

for doing so by 2004,” and Petitioner’s example that “Patrick mentions one well known technique.” Pet. 31 (citing Ex. 1003 ¶ 81; Ex. 1004 ¶ 39).

Consistent with the positions advanced by Petitioner (*see* Pet. 30–31), we find that Patrick teaches determining the amount of bandwidth available for accelerated streaming of the media content, and that the amount of bandwidth available for accelerated streaming of the media content can vary based on the current conditions of the network coupling the server and the client devices. *See* Ex. 1004 ¶¶ 36, 38; *see also* Ex. 1004 ¶ 37 (network congestion or other restrictions between the server and client (i.e., a reduction of bandwidth between the server and client) may limit the rate of accelerated streaming).

iii. Obviousness

Patent Owner takes issue with Petitioner’s argument that a person of ordinary skill in the art “would have found it obvious to measure between the server and client because there were many well-known techniques available for doing so by 2004.” Pet. 31; *see* PO Resp. 69 (citing Ex. 2014 ¶ 89). Patent Owner asserts that a person of ordinary skill in the art would not find any reason to modify Patrick as proposed, because Patrick and the ’098 Patent are directed to two different problems. *See* PO Resp. 68 (citing Ex. 2014 ¶ 86). Patent Owner asserts that Patrick’s primary focus is preventing server overload and the bandwidth load on the server is the primary concern in determining the available bandwidth. *See id.* (citing Ex. 2014 ¶ 87). Patent Owner contends that the ’098 Patent is concerned only with addressing a need for minimized latency. *See id.* (quoting Ex. 1001, 1:31–33; citing Ex. 2014 ¶ 88). Patent Owner contends the ’098 Patent does not teach limiting the accelerated transmission rate based on

concerns about server load, and claim 1 recites determination of available communication bandwidth between the video transmission system and the remote video receiver. *See id.* at 68–69 (quoting Ex. 1001, 19:11–15; citing Ex. 2014 ¶ 88). According to Patent Owner, “Petitioner identifies nothing in the record that would lead a person of ordinary skill in the art to abandon Patrick’s concerns of server load to pursue the technique of the ’098 Patent which expresses no such concerns.” *Id.* at 69 (citing Ex. 2014 ¶ 88). Patent Owner concludes that “the record is absent of any motivation to modify Patrick to function as recited by Claim 1.” *Id.*

We do not agree with Patent Owner that Patrick’s primary focus is preventing server overload because, like its arguments asserting that Patrick’s available bandwidth is based only on server load addressed previously in Section II.D.2.C.ii., this argument is premised on Patent Owner’s arguments advocating a particular “structure” of Patrick’s disclosure and a particular reading of paragraph 38. Based on our findings regarding the disclosure of Patrick’s paragraph 38 and that this disclosure is related to the disclosure of paragraphs 31 through 36 related to act 206 of Fig. 3, as explained above in Sections II.D.2.c.i. and II.D.2.c.ii., we cannot agree that Patrick is focused on preventing server overload. We give little weight to Dr. Hayes cited supporting testimony that Patrick is focused on preventing server overload (*see* Ex. 2014 ¶¶ 86–87) because, like Patent Owner’s underlying arguments advocating a particular “structure” of Patrick’s disclosure and a particular reading of paragraph 38, Dr. Hayes’s the testimony is inconsistent with Patrick’s disclosures and not supported by a sufficient factual basis. Moreover, we do not agree with Patent Owner’s suggestion that, in order to support obviousness, the prior art cannot address

a different problem or serve a different purpose than that of the patent. *See KSR*, 550 U.S. at 420 (“In determining whether the subject matter of a patent claim is obvious, neither the particular motivation nor the avowed purpose of the patentee controls.”).

Patent Owner also contends that Petitioner’s argument that a person of ordinary skill in the art “would have found it obvious to measure between the server and client because there were many well-known techniques available for doing so by 2004” “falls far short of establishing that a [person of ordinary skill in the art] would have found reason to modify Patrick, which provides no suggestion of any need for modification.” PO Resp. 69 (citing Ex. 2014 ¶ 89). According to Patent Owner, “[t]he mere existence of well-known techniques for channel measurement, which is uncontroversial, does not explain why or how a [person of ordinary skill in the art] would modify Patrick to employ such techniques before the beginning of transmission, especially when Patrick teaches the opposite.” *Id.* (citing Ex. 2014 ¶ 89). Patent Owner points to Petitioner’s example of a well-known technique found in Patrick, and the corresponding disclosure that “the server device will not know exactly what the transfer rate is until it begins fast streaming the media content to the client device.” PO Resp. 70 (quoting Ex. 1004 ¶ 39; citing Ex. 2014 ¶ 90; Pet. 31); *see* PO Sur-reply 20 (citing Ex. 1004 ¶ 39; PO Resp. 50–54). According to Patent Owner, “[t]his [paragraph 39 disclosure] cannot support an argument (which Petitioner fails to make) that a [person of ordinary skill in the art] would have reason to perform such measurement before the beginning of transmission.” PO Resp. 70 (citing Ex. 2014 ¶ 90).

We do not agree with Patent Owner's arguments because they overlook the disclosures of Patrick's paragraphs 37 and 38, relied upon by Petitioner to support its contention that a person of ordinary skill in art would have found it obvious to measure current network conditions between the server and the client. *See* Pet. 30–31. As explained above in Sections II.D.2.c.i., and II.D.2.c.ii., we find that Patrick teaches determining the amount of bandwidth available for accelerated streaming of the media content, and that the amount of bandwidth available for accelerated streaming of the media content can vary based on the current conditions of the network coupling the server and the client devices. *See* Ex. 1004 ¶¶ 36–38. We find that the overlooked disclosures of Patrick's paragraphs 37 and 38 provide additional support for Petitioner's contention that a person of ordinary skill in the art would have found it obvious to measure between the server and the client because there were many well-known techniques available for doing so by 2004. *See* Pet. 30–31.

We also find misplaced Patent Owner's argument that the Petition does not explain why a person of ordinary skill in the art would modify Patrick to employ such techniques before the beginning of transmission, when Patrick teaches the opposite. Contrary to Patent Owner's suggestion, the Petition does not propose using Patrick's specific disclosed example in paragraph 39 of measuring between the server and client including the timing of that example measurement. *See* Pet. 30–31. Instead, we understand the Petition to propose including measuring between server and client in the determination of the amount of bandwidth available for accelerated streaming of the media content in act 206 of Fig. 3 (*see* Ex. 1004 ¶¶ 31–36) on account that: (1) Patrick teaches that network congestion or

other restrictions between the server and client (i.e., a reduction of bandwidth between the server and client) may limit the rate of accelerated streaming (*see* Ex. 1004 ¶ 37); (2) Patrick teaches that the amount of bandwidth available for accelerated streaming of particular media content can vary based on the current conditions of the network coupling the server and clients (*see* Ex. 1004 ¶ 38); and (3) there were many well-known techniques available for measuring between the doing so in 2004, including Petitioner’s example of measuring between the server and client. *See* Pet. 30–31.

In sum, we find that the preponderance of the evidence supports Petitioner’s assertion that a person of ordinary skill in the art “would have found it obvious to measure between the server and client.” *See* Pet. 30–31 (citing Ex. 1003 ¶ 81); Ex. 1004 ¶¶ 31–39, Fig. 3.

iv. “determining an initial transmission rate . . . using a real-time determination of available communication bandwidth between the video transmission system and the remote video receiver”

Patent Owner argues that Patrick does not teach or suggest determining an initial transmission rate using Patrick’s “available bandwidth.” *See* PO Resp. 43, 54–65. According to Patent Owner, “Patrick’s ‘available bandwidth’ . . . operates solely as an upper threshold on bandwidth used [(i.e., transmission rate)], and the Petition does not establish that Patrick’s initial transmission rate is based on this available bandwidth.” *Id.* at 43 (citing Ex. 2014 ¶ 57); *see id.* at 54 (citing Ex. 2014 ¶¶ 71–72). Patent Owner contends that, “[i]f anything, Patrick teaches that the initial transmission rate is determined using the steady state rate.” *Id.* at 54–55 (quoting Ex. 1004 ¶¶ 19, 48). According to Patent Owner, “[a]t most, the

initial transmission rate is subject to the upper threshold, just as it is subject to the lower threshold (the steady state rate).” *Id.* at 55 (citing Ex. 2014 ¶ 72). Patent Owner summarizes Petitioner’s arguments (*see* PO Resp. 55 (quoting Pet. 32–33; citing Ex. 2014 ¶ 73)) and contends that

the Petition effectively argues that (1) both the available bandwidth (upper threshold) and the steady-state rate serve as limits on the initial transmission rate, and (2) the steady-state rate is more determinative of the initial transmission rate than the upper threshold, since it informs the selection of the initial transmission rate.

Id. at 56 (citing Ex. 2014 ¶ 74).

As an initial matter, some of Patent Owner’s arguments are not commensurate in scope with the claim limitations. Contrary to Patent Owner’s arguments, claim 1 does not require that the initial transmission rate be *based on* the available communication bandwidth. Claim 1 merely requires determining the initial transmission rate *using* the available communication bandwidth. We do not agree with Patent Owner’s arguments that Patrick does not teach or suggest determining an initial transmission rate *using* the available bandwidth, when Patent Owner acknowledges that “Patrick’s ‘available bandwidth’ . . . operates . . . as an upper threshold,” (PO Resp. 43) and “[a]t most, the initial transmission rate is *subject to* the upper threshold,” (PO Resp. 55 (emphasis added)). We find that an initial transmission rate that is subject to the available bandwidth as an upper threshold meets the limitation of determining an initial transmission rate using the available bandwidth. In addition, we do not agree with Patent Owner’s arguments addressing the steady-state rate. Claim 1 merely recites “determining an initial transmission rate . . . *using* a real-time determination of available communication bandwidth between the

video transmission system and the remote video receiver *and* a first steady-state transmission rate” Ex. 1001, 19:10–16 (emphasis added). These limitations do not preclude the steady-state rate from taking a larger role in the determination of the initial transmission rate, nor do the limitations quantify the role of the available communication bandwidth in determining the initial transmission rate.

We also do not agree with Patent Owner’s arguments because they focus on certain arguments in the Petition that rely on the disclosure of Patrick’s paragraph 48 (*see* Pet. 32–33) addressing the use of a first steady-state transmission rate, while overlooking the argument that “Patrick’s available communication bandwidth between a server and a client is used as an upper limit for determining the initial transmission rate,” which includes citations to the disclosures of Patrick’s paragraphs 12, 19, 20, 36, and 40 for support. Pet. 29 (quoting Ex. 1004 ¶ 36; citing Ex. 1003 ¶ 79); *see id.* at 28–29 (quoting Ex. 1004 ¶¶ 12, 19; citing Ex. 1004 ¶¶ 20, 40). In particular, Patrick’s paragraph 19, quoted by Petitioner (*see* Pet. 28), discloses the “accelerated streaming control module [] determines an appropriate rate for accelerated streaming . . . of media content to client device.” Ex. 1004 ¶ 19. Patrick’s paragraph 36, quoted by Petitioner (*see* Pet. 29), discloses:

This amount of available of available bandwidth [for accelerated streaming of the media content determined in act 206] operates as an upper threshold or limit and control module 150 of Fig. 2 forwards an indication of this upper threshold to streaming module 144. Streaming module 144 will allow the requested content to be fast streamed to client device 102 at a rate up to this upper threshold amount, but prohibits fast streaming the content at a rate that exceeds this upper threshold amount.

Ex. 1004 ¶ 36. Based on our findings regarding the disclosure of Patrick’s paragraph 38 and how this disclosure of paragraph 38 is related to the remainder of Patrick’s disclosure, as explained above in Sections II.D.2.c.i. and II.D.2.c.ii., and considered together with the disclosures of Patrick’s paragraphs 19 and 36, we cannot agree that Patrick fails to teach determining an initial accelerated transmission rate using the available communication bandwidth between the video transmission system and the remote video receiver. Consistent with the positions advanced by Petitioner (*see* Pet. 28–31), we find that: (1) Patrick teaches determining an initial accelerated transmission rate using as an upper limit the determination of the amount of bandwidth available for accelerated streaming of particular media (*see* Ex. 1004 ¶ 36); (2) Patrick teaches network congestion or other restrictions between the server and client (i.e., a reduction of bandwidth between the server and client) may limit the rate of accelerated streaming (*see* Ex. 1004 ¶ 37), (3) Patrick teaches the amount of bandwidth available for accelerated streaming of particular media can vary based on the current conditions of the network coupling the server and the client devices (*see* Ex. 1004 ¶ 38); and (4) as explained above in Section II.D.2.c.iii, the preponderance of the evidence supports Petitioner’s assertion that a person of ordinary skill in the art “would have found it obvious to measure between the server and client.” *See* Pet. 30–31; Ex. 1004 ¶¶ 19, 36–38.

In addition, we do not agree with Patent Owner’s arguments addressing Dr. Brody’s alleged unpersuasive testimony regarding the disclosure of Patrick’s paragraph 48. *See* PO Resp. 56–59; PO Sur-reply 3–4. We fail to appreciate any relevance of Dr. Brody’s alleged inconsistent statements related to determining the initial transmission rate

using a steady-state rate to Patent Owner’s assertion that Patrick fails to teach or suggest determining the initial transmission rate using a determination of the available bandwidth. Patent Owner does not dispute that Patrick teaches or suggests “determining the initial transmission rate . . . using . . . a first steady-state transmission rate,” as recited in limitation [1b]. *See* PO Resp. 42–65.

v. Summary

Based on the entire record, we find that Patrick teaches, suggests, and renders obvious the subject matter of limitation [1b]. *See* Pet. 27–33.

d. Limitation [1c] “for a first time period after receiving the request, transmitting, by the video transmission system, a first portion of the unit of video information to the remote video receiver at the initial transmission rate,

Petitioner asserts that Patrick teaches “transmitting by the video transmission system, a first portion of the unit of video information to the remote video receiver at the initial transmission rate,” as recited in claim 1, based on Patrick’s disclosure of streaming media content to the requester in step 208 at an accelerated rate that is determined at step 206. *See* Pet. 33–34 (reproducing Ex. 1004, Fig. 3 (with color annotations); quoting Ex. 1004 ¶¶ 12, 34–35; citing Ex. 1004 ¶¶ 19, 36, 48; Ex. 1003 ¶ 87; Pet. 27–33). Petitioner parenthetically notes that Patrick’s paragraphs 34 and 35 disclose “[t]he rate determined in act 206.” *Id.* at 33. Petitioner also asserts that Patrick teaches a number of obvious ways to determine the first portion of the unit of video information, including the client device sending a temporal duration or data amount indication of how much fast streamed data is wanted to fill the buffer. *See* Pet. 34–35 (quoting Ex. 1004 ¶¶ 40–42; citing Ex. 1004 ¶¶ 19, 36, 48; Ex. 1003 ¶¶ 87–88; Pet. 27–33). Petitioner contends

that Patrick teaches transmitting the first portion of the unit of video information for a first time period, based on Patrick's disclosure of the period from when the server starts to transmit the video to when the buffer is filled to a desired level and playback begins. *See id.* at 35–36 (reproducing Ex. 1004, Fig. 3 (with color annotations); quoting Ex. 1004 ¶¶ 6, 20; citing Ex. 1004 ¶¶ 27, 36; Ex. 1003 ¶¶ 89–90).

Patent Owner reproduces limitations [1b] and [1c] and asserts that claim 1 requires determining an initial transmission rate and then transmitting the unit of video information at this initial rate. *See* PO Resp. 59–60 (quoting Ex. 1001, 19:10–20; citing Ex. 2014 ¶ 77). Patent Owner further contends that “the logic of the claim language requires that the initial transmission rate is determined before a first period of transmission starts.” *Id.* at 60 (citing Ex. 2014 ¶ 77), *see id.* at 65 (similar argument, citing Ex. 2014 ¶ 81). Patent Owner further contends that a person of ordinary skill in the art would understand from the '098 Patent disclosure that the initial transmission rate must be determined prior to beginning transmission. *See id.* at 60–62 (reproducing Ex. 1001, Fig. 1 (with color annotations); quoting Ex. 1001, 4:66–5:5; citing Ex. 2014 ¶ 77).

Patent Owner asserts that Patrick does not disclose determining any initial transmission rate prior to the beginning of transmission. *See id.* at 62 (citing Ex. 2014 ¶ 78). Patent Owner contends that Patrick instead teaches determining the upper and lower thresholds before transmission begins, but this disclosure falls short of even suggesting that the initial transmission rate is determined before transmission. *See id.* at 62 (citing Ex. 2014 ¶ 78).

Patent Owner also contends that Dr. Brody testified that, in Patrick, the transmission rate cannot be determined until transmission has

commenced. *See id.* at 62–63 (quoting Ex. 2015, 16:12–17:10, 22:15–23:5; citing Ex. 2014 ¶ 78). Patent Owner asserts that Dr. Brody’s testimony is inconsistent with the Petition, but is consistent with Patrick’s disclosure. *See id.* at 63 (citing Pet. 32–33; Ex. 2014 ¶ 79). According to Patent Owner, “[a]s Dr. Brody testifies, and once again referring to the structure of Patrick discussed above, [Patrick] teaches the initial transmission rate is determined *ad hoc* once streaming has begun (in act 208).” PO Resp. 63 (citing Ex. 2014 ¶ 79; PO Resp. 30–37). Patent Owner points to Patrick’s disclosure in paragraph 37 as disclosing that network limitations might affect the actual streaming rate, but a person of ordinary skill in the art would recognize that these limitations have nothing to do with the upper and lower bounds that Patrick teaches and cannot be measured until streaming has commenced. *See* PO Resp. 63–64 (citing Ex. 1004 ¶ 37; Ex. 2014 ¶ 79). Patent Owner also points out that Patrick discloses in the context of a particular example that the server device will not know exactly what the transfer rate is until it begins fast streaming the media content to the client device. *See id.* at 64–65 (quoting Ex. 1004 ¶ 39; citing Ex. 2014 ¶ 79). Patent Owner points out that Patrick also teaches that the client and server might negotiate a transfer rate. *See id.* at 64–65 (quoting Ex. 1004 ¶ 39; citing Ex. 2014 ¶ 79). According to Patent Owner, “[i]n none of these cases does Patrick teach that the initial transmission rate is determined before streaming begins, let alone that the initial transmission rate is based on the upper or lower thresholds, as the Petition claims.” *Id.* at 65 (quoting Ex. 1004 ¶ 39; citing Ex. 2014 ¶ 79).

In its Reply, Petitioner contends that Patent Owner’s argument lacks merit because Patrick’s Figure 3 depicts determining the rate separately from

the transmitting step 208. *See* Pet. Reply 18–19 (reproducing Ex. 1001, Fig. 1 (with color annotations); Ex. 1004, Fig. 4 (with color annotations); citing PO Resp. 60–62). Petitioner further asserts that “[f]or related limitation [1c], the Petition explained that ‘at the step 208 of Figure 3, Patrick teaches streaming the media content to the requester at an accelerated rate that is determined at step 206.’” *Id.* at 19 (quoting Pet. 33; citing Pet. 29–30). Petitioner also points out that Patent Owner “admits that ‘Patrick clearly teaches determining the upper and lower thresholds before transmission begins.’” *Id.* at 19–20 (quoting PO Resp. 62).

In response, Patent Owner contends that Petitioner’s comparison of Figure 1 of the ’098 Patent with Figure 3 of Patrick is unpersuasive because the determination in step 206 is the determination of the available bandwidth, not the actual transmission rate. *See* PO Sur-reply 21. Patent Owner contends that the Response “established that Patrick does not disclose determining any initial transmission rate at all, and this argument is supported by Dr. Brody’s testimony.” *Id.* (citing PO Resp. 59–65).

We do not agree with Patent Owner’s arguments because they focus on certain disclosures of Patrick and testimony by Dr. Brody, but overlook Petitioner’s argument that Patrick teaches the initial transmission rate is determined in step 206 of Figure 3. *See* Pet. 33–34 (reproducing Ex. 1004, Fig. 3 (with color annotations); quoting Ex. 1004 ¶¶ 12, 34–35; citing Ex. 1004 ¶¶ 19, 36, 48; Ex. 1003 ¶ 87; Pet. 27–33); *see also id.* at 28–29 (addressing determining an initial transmission rate (quoting Ex. 1004 ¶¶ 12, 19, 36; citing Ex. 1004 ¶¶ 12, 20, 40; Ex. 1003 ¶ 78)), 32–33 (addressing determining an initial transmission rate (quoting Ex. 1004 ¶¶ 19, 48; citing Ex. 1003 ¶¶ 84–85)). Patent Owner’s unsupported argument that step 206 is

the determination of available bandwidth, not the determination of transmission rate (PO Sur-reply 21) is inconsistent with the disclosures of Patrick cited by Petitioner. The following cited disclosures of Patrick support Petitioner's position: (1) the accelerated streaming control module 150 determines an appropriate rate for accelerated streaming of media content to client device 102 (Ex. 1004 ¶ 19); (2) "The rate determined in act 206," (Ex. 1004 ¶ 34) (3) "The rate determined in act 206," (Ex. 1004 ¶ 35). *See also* PO Resp. 33–34 (Patent Owner's arguments quoting Ex. 1004 ¶¶ 34–35), 39–40 (Patent Owner's arguments quoting Ex. 1004 ¶ 34). Based on these passages, we agree with Petitioner's understanding of Patrick.

Moreover, Patrick's paragraph 34, provides the following additional details regarding determining the accelerated transmission rate in step 206 of Figure 3:

In one implementation, the determined amount of bandwidth to be used for accelerated streaming of the media content to the requester is capped by the particular rate requested by the requester. Thus, the rate requested by the requester can serve to reduce the rate determined by control module, but not increase ***the rate that would otherwise be determined by control module 150 in act 206.***

Ex. 1004 ¶ 34 (emphasis added). Consistent with the positions advanced in the Petition (Pet. 33–36), we find that Patrick teaches that an initial transmission rate is determined in act 206 of Figure 3 and that the media content is transmitted to the receiver at the determined initial accelerated transmission rate for a first time period in act 208 of Figure 3. *See* Ex. 1004 ¶¶ 6, 20, 34–36, 40–42, Fig. 3 (acts 206, 208).

Based on the entire record, we find that Patrick teaches limitation [1c]. *See* Pet. 33–36.

e. Limitation [1d] “wherein in response to a change in the available communication bandwidth between the video transmission system and the remote video receiver during the first time period, transmitting a remainder of the first portion of the unit of video information to the remote video receiver at a second transmission rate for a remainder of the first time period, the second transmission rate being determined using the change in the available communication bandwidth and being different from the initial transmission rate and the first steady-state transmission rate; and”

Petitioner asserts that Patrick teaches or suggests limitation [1d] based on Patrick’s teachings that the initial accelerated transmission rate is adaptable, a transmission environment with a constantly changing bandwidth, and re-evaluating the amount of bandwidth available. *See* Pet. 36–37 (quoting Ex. 1004 ¶¶ 6, 38, 45; citing Ex. 1004, code (57), ¶ 29; Ex. 1003 ¶¶ 93–94); Pet. Reply 23 (citing Pet. 36–38). According to Petitioner, a person of ordinary skill in the art “would have understood that when Patrick’s server re-evaluates the amount of available bandwidth while streaming media content at an accelerated rate and there is a change in the amount of available bandwidth, performing steps 204-208 will produce a new determination of the accelerated rate.” Pet. 38 (quoting Ex. 1004 ¶¶ 12, 36; citing Ex. 1003 ¶ 95). Petitioner asserts that a person of ordinary skill in the art

would have understood that the re-evaluation produces a new accelerated streaming rate that is “different” from “the first steady-state transmission rate” because . . . steps 204-208 produce an accelerated rate that is higher than the first steady-state rate because if it is not different (and higher) from the first steady-state rate, the accelerated rate would not be an “accelerated” rate.

Pet. 39 (citing Ex. 1003 ¶ 96); *see* Pet. Reply 23 (citing Pet. 39). Petitioner further contends that a person of ordinary skill in the art

would have found it obvious to transmit “a remainder of the first portion of the unit of video information to the remote video receiver at a second transmission rate for a remainder of the first time period” because, if Patrick has re-evaluated the available bandwidth and determined that a new accelerated rate should be used, then it naturally follows that Patrick’s server would use the newly determined accelerated rate to transmit the rest of the first portion of the unit of video information during the accelerated streaming phase of transmission.

Pet. 39 (citing Ex. 1003 ¶ 97). According to Petitioner, “Patrick’s re-evaluation teachings operate in a manner similar to the process described by the ’098 patent.” *Id.*; *see id.* at 39–40 (quoting Ex. 1001, 6:41–44; citing Ex. 1001, 12:28–29, 14:40–43; Ex. 1003 ¶ 98); *see* Pet. Reply 23 (citing Pet. 39–40).

Petitioner further points out that Patrick teaches a re-evaluation process where the server waits until it detects a problem with the accelerated streaming, such as an unacceptable packet loss, and then the accelerated streaming may be stopped or the accelerated rate may be reduced. *See* Pet. 40 (quoting Ex. 1004 ¶ 48); *see* Pet. Reply 23 (citing Pet. 40–41). According to Petitioner, a person of ordinary skill in the art “would have understood that a packet loss problem during video streaming is commonly caused by a reduction in the available bandwidth. By addressing the streaming problem of packet loss, Patrick contemplates the reduction of available bandwidth during transmission of video at the accelerated rate.” Pet. 40 (citing Ex. 1003 ¶ 99); *see* Pet. Reply 23 (citing Pet. 40–41). Petitioner further contends that Patrick teaches reducing the accelerated transmission rate while continuing accelerated streaming is one of two

alternative measures taken in response to packet loss caused by a reduction in available bandwidth, which, according to Petitioner “teaches transmitting a remainder of the first portion of the unit of video information to the remote video receiver at a second transmission rate for a remainder of the first time period.” Pet. 41 (citing Ex. 1003 ¶ 99); *see* Pet. Reply 23 (citing Pet. 40–41).

Patent Owner challenges the sufficiency of Petitioner’s showing. *See* PO Resp. 65–67. Patent Owner asserts that “there is no dispute that Patrick teaches the ‘available bandwidth’ is the ‘upper threshold’ disclosed in paragraph 0036.” *Id.* at 66 (citing Ex. 1004 ¶ 36; Ex. 2014 ¶ 82). Patent Owner contends that “Patrick nowhere suggests that if this ‘upper threshold’ changes, the server will stream the content at a second transmission rate as required by limitation [1d].” *Id.* at 66 (citing Ex. 2014 ¶¶ 82–83). According to Patent Owner, Patrick’s paragraph 45 disclosure “establishes that (1) Patrick might re-evaluate the upper threshold (*i.e.*, based on changes in the server’s bandwidth load), and (2) Patrick might re-evaluate the actual transmission rate (*e.g.*, based on changing network conditions).” *Id.* (quoting Ex. 1004 ¶ 45; citing Ex. 2014 ¶ 83).

Referencing paragraph 45 and unspecified Response arguments, Patent Owner asserts that “one has nothing to do with the other, except that the upper threshold is a limit on transmission rate.” PO Resp. 67. Patent Owner presents several arguments to support its assertion. *See id.* According to Patent Owner,

[f]or example, a [person of ordinary skill in the art] would understand that a change in Patrick’s upper limit during streaming would not necessarily affect the transmission rate if the transmission were constrained by network conditions (*i.e.*,

Patrick's upper limit based on server bandwidth load would not impact the ongoing transmission rate if that transmission rate were still limited by network conditions).

PO Resp. 67 (citing Ex. 2014 ¶ 84). Patent Owner further asserts that "if network conditions improved, the transmission rate might be increased, but this would have nothing to do with any change in the upper limit." *Id.* (citing Ex. 2014 ¶ 84). Finally, Patent Owner contends that, "[o]nly if the server bandwidth load decreased and the network conditions simultaneously improved would a change in the upper threshold even occur in correlation with a change in the transmission rate, and Patrick does not even suggest this coincidence." *Id.* (citing Ex. 2014 ¶ 84).

In its Reply, Petitioner disputes Patent Owner's arguments that Patrick's paragraph 45 only establish that the upper threshold might be re-evaluated based on the server's bandwidth load or that the actual transmission rate might be re-evaluated based on changing network conditions and that one has nothing to do with the other. *See* Pet. Reply 23–24. Petitioner characterizes Patent Owner's argument addressing paragraph 45 as "unnaturally divided teachings." *See id.* Petitioner asserts that the plain language of Patrick teaches re-evaluating the amount of bandwidth available to be used for accelerated streaming of media content to the client device, and that this can be achieved by repeating steps 204–208 multiple times. *See id.* at 24. According to Petitioner, "[t]he Petition explained how performing those steps produces an accelerated transmission rate in connection with limitation [1b]," and "how performing those steps again produces a different accelerated transmission rate because the steps are repeated when there is a change in bandwidth." *Id.* (citing Pet. 38–39; Pet. Reply 5–12). Petitioner further argues that the hypothetical situations where

Patent Owner alleges that Patrick’s system may not change its adaptable accelerated transmission rate in response to changed network conditions are irrelevant because the challenged claims do not require changing the accelerated transmission rate in response to network condition changes. *See id.* at 24. Petitioner asserts that Dr. Hayes admitted that a system practicing claim 1 does not necessarily have to change the accelerated transmission rate when the bandwidth is reduced, and this understanding is consistent with the ’098 Patent disclosure. *See id.* at 24–25 (quoting Ex. 1001 4:5–14, 6:38–44; citing Ex. 1032, 102:8–17, 100:18–11:5).

We do not agree with Patent Owner’s arguments that Patrick does not teach or suggest that, if the available bandwidth changes, the server will stream the content at a second transmission rate. *See* PO Resp. 66 (citing Ex. 2014 ¶ 83). The underlying premise of Patent Owner’s contention addressing the disclosures of Patrick’s paragraph 45 is the same as the underlying premise Patent Owner relied upon to address Patrick’s teachings with respect to limitation [1b]—(1) available bandwidth is based only on server load and (2) the accelerated transmission rate is based on changing network conditions. *Compare* PO Resp. 66–67, *with* PO Resp. 21–22, 37–39, 38 n.7, 43–46, 50–53. In other words, Patent Owner’s arguments are again premised on Patent Owner’s arguments advocating a particular “structure” of Patrick’s disclosure and a particular reading of paragraph 38. Based on our findings regarding the disclosure of Patrick’s paragraph 38 and that this disclosure is related to the disclosure of paragraphs 31 through 36 related to act 206 of Fig. 3, explained above in Sections II.D.2.c.i. and II.D.2.c.ii., we cannot agree that Patrick’s paragraph 45 disclosure of “amount of bandwidth available to be used for accelerated streaming of the

media content to the client” is based only on server load. Moreover, Patrick’s paragraph 45, quoted by Petitioner (Pet. 37), uses the term “the amount of bandwidth available to be used for accelerated streaming of the media content to the client device.” Ex. 1004 ¶¶ 38, 45. As explained above in Sections II.D.2.c.i., Patrick’s use of this similar term in paragraph 38 is consistent with similar terms used in paragraphs 31 and 36 describing act 206 of Figure 3. *See* Ex. 1004 ¶¶ 31, 36, 38, 45, Fig. 3. Accordingly, Patrick’s use of the term “the amount of bandwidth available to be used for accelerated streaming of the media content to the client device” in paragraph 45 is consistent with similar terms used in paragraphs 31, 36, and 38 describing act 206 of Figure 3. For the same reasons as those explained above in Sections II.D.2.c.i. and II.D.2.c.ii., we find that Patrick teaches the amount of bandwidth available for accelerated streaming of particular media content can vary based on the current conditions of the network coupling the server and the client devices.

Patent Owner’s related argument that Patrick’s paragraph 45 establishes that the actual transmission rate might be re-evaluated based on changing network conditions overlooks Petitioner’s following arguments: (1) acts 204 through 208 of Figure 3 are repeated; (2) Patrick’s server determines an initial accelerated rate using a determination of the available communication bandwidth in acts 204 through 208, and (3) the understanding of Patrick’s teachings of repeating acts 204 through 208 of Figure 3 by a person of ordinary skill art. *See* Pet. 37–39 (quoting Ex. 1004 ¶¶ 36, 45; citing Ex. 1003 ¶¶ 95–97; Ex. 1004 ¶ 12). Patent Owner’s argument also overlooks Petitioner’s arguments that Patrick’s paragraph 48

discloses reducing the accelerated rate in response to a reduction in available bandwidth. *See* Pet. 40–41 (quoting Ex. 1004 ¶ 48; citing Ex. 1003 ¶ 99).

Having considered both parties’ arguments and the evidence, we are persuaded that the subject matter of limitation [1d] is taught, suggested, and/or rendered obvious by Patrick. Patrick discloses that “the amount of bandwidth for accelerated streaming of particular media content . . . can vary based on . . . the current conditions of the network coupling the server and client devices.” Ex. 1004 ¶ 38. Patrick teaches re-evaluating the amount of bandwidth available to be used for accelerated streaming while fast streaming media to a client and, thus, repeating steps 204–208 multiple times while fast streaming. *See* Ex. 1004 ¶ 45, Fig. 3. As a result, we agree with Petitioner that a person of ordinary skill in the art would have understood that that when Patrick’s server re-evaluates the amount of available bandwidth while streaming media content at an accelerated rate and there is a change in the amount of available bandwidth, performing steps 204-208 will produce a new determination of the accelerated rate that is higher than the first steady-state rate. *See* Ex. 1003 ¶¶ 95–96. As a result, we also agree that a person of ordinary skill in the art would have found it obvious to transmit the remainder of the first portion of the video information at the new accelerated rate for the remainder of the first time period (i.e., the accelerated streaming phase of transmission). *See id.* ¶ 97.

Based on the entire record, we determine Petitioner shows by a preponderance of the evidence that Patrick teaches or suggests limitation [1d]. *See* Pet. 36–41.

f. Limitation [1e] “for a second time period after the first time period, transmitting, by the video transmission system, a second portion of the unit of video information to the remote video receiver at the first steady-state transmission rate.”

Petitioner asserts that Patrick teaches this limitation of claim 1 based on Patrick’s teaching of reducing the accelerated transmission rate after the accelerated streaming period to a steady state rate in step 210. *See* Pet. 41–43 (reproducing Ex. 1004, Fig. 3 (with annotations); quoting Ex. 1004 ¶¶ 12, 20, 40; citing Ex. 1004 ¶ 6; Ex. 1003 ¶¶ 101–102; Pet. 20).

Patent Owner does not address or rebut Petitioner’s showing addressing this limitation of claim 1. *See* PO Resp. 41–70. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Based on the entire record, we find that Patrick teaches limitation [1e]. *See* Pet. 41–43.

g. Summary of Analysis of Claim 1

Based on the entire record, we determine that Petitioner establishes by a preponderance of the evidence that the subject matter of claim 1 would have been obvious over Patrick. *See* Pet. 21–43.

3. Claim 2

Petitioner also challenges the patentability under 35 U.S.C. § 103 of claim 2 over Patrick. *See* Pet. 43–52. We need not determine the merits of this challenge because, as explained below in Section II.E., Petitioner shows by a preponderance of the evidence that claim 2 is unpatentable under 35 U.S.C. § 103 over Patrick and Barrett. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding that a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) (finding an administrative

agency is at liberty to reach a decision based on a single dispositive issue because doing so “can not only save the parties, the [agency], and [the reviewing] court unnecessary cost and effort,” but can “greatly ease the burden on [an agency] faced with a . . . proceeding involving numerous complex issues and required by statute to reach its conclusion within rigid time limits”); *Bos. Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. 2020) (non-precedential) (recognizing that the “Board need not address issues that are not necessary to the resolution of the proceeding” and, thus, agreeing that the Board has “discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims”).

4. Summary

Based on the entire record, we determine Petitioner has established by a preponderance of the evidence that claim 1 is unpatentable under 35 U.S.C. § 103 over Patrick.

E. Challenge to Claim 2 over Patrick and Barrett

1. Overview of Barrett (Ex. 1005)

Barrett is directed to seamless channel changing in a digital-television-based entertainment network. *See* Ex. 1005, code (57), ¶ 6. Broadcast video data for a specific channel is streamed to a client device across a network. *See id.* ¶ 44. The client device includes a channel change input handler, a video decoder, and a network interface. *See id.* The video decoder includes a buffer for storing received broadcast video data prior to decoding. *See id.* The channel change input handler receives a channel change input from a user that orders a change to a requested channel, which

is then provided to network interface for transmission over the network. *See id.* ¶¶ 44–45.

2. Analysis of Claim 2

Claim 2 depends from claim 1 and further recites “wherein the request for the unit of video information comprises a channel change request; and wherein the first steady-state transmission rate is a typical steady-state transmission rate, and wherein the typical steady-state transmission rate comprises a variable rate.” Ex. 1001, 19:35–40. Petitioner asserts that Barrett teaches the request comprises a channel change request based on Barrett’s disclosure that each client device receives its own designated broadcast video data stream according to its corresponding requested channel. *See* Pet. 43 (citing Ex. 1005 ¶ 42; Pet. 47–51), 48–51 (reproducing Ex. 1005, Fig. 4 (with color annotations); quoting Ex. 1005 ¶¶ 42, 46; citing Ex. 1001, 3:3–5; Ex. 1003 ¶¶ 118–119; Ex. 1005 ¶¶ 42–44).

Dependent claim 2 further recites “the first steady-state transmission rate is a typical steady-state transmission rate, and . . . the typical steady-state transmission rate comprises a variable rate.” Ex. 1001, 19:37–40. Petitioner contends that Patrick teaches this limitation based on Patrick’s disclosure that the steady state rate is the rate at which the media content is encoded for playback and that this rate may be static or may vary. *See* Pet. 51–52 (quoting Ex. 1001, 5:6–14; Ex. 1004 ¶¶ 20, 25; citing Ex. 1003 ¶¶ 120–125; Ex. 1004 ¶ 12; Pet. 41–43).

Patent Owner does not substantively address or rebut Petitioner’s showing addressing the limitations of claim 2 apart from its arguments addressing claim 1. *See* PO Resp. 70. Nonetheless, the burden remains on

Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

We find that Barrett teaches streaming video to clients in response to a channel change request (*see* Pet. 43, 48–51) and Patrick teaches a typical steady-state transmission rate (*see id.* at 51–52). Based on Petitioner’s citations to Patrick, Barrett, and Dr. Brody’s testimony (Ex. 1003), we are persuaded that it would have been obvious to one of ordinary skill in the art to modify Patrick’s teachings to include Barrett’s teachings that a request for a unit of video information comprises a channel change request. *See* Pet. 43–47, 50–51; Ex. 1003 ¶¶ 105–111, 119; *KSR*, 550 U.S. at 418. On this record, we agree with Petitioner that “[c]ombining Patrick and Barrett would have been a simple application of a known technique to a known device ready for improvement, which would have yielded predictable results because using a channel change request to select content was commonly used.” Pet. 45 (citing Ex. 1003 ¶ 109). We also agree with Petitioner’s assertion that this would have been a combination of prior art elements according to known methods to yield predictable results. *See id.* at 46 (citing Ex. 1003 ¶ 109).

Based on the entire record, we determine that Petitioner establishes by a preponderance of the evidence that the subject matter of dependent claim 2 would have been obvious over the combined teachings of Patrick and Barrett. *See* Pet. 43–52.

3. Summary

Based on the entire record, Petitioner has established by a preponderance of the evidence that claim 2 is unpatentable under 35 U.S.C. § 103 over Patrick and Barrett.

F. Challenge to Claims 3–5 over Patrick and Gringeri

1. Overview of Gringeri (Ex. 1006)

Gringeri is directed to a system for facilitating scheduling and transmission of video streams over a switched network. *See* Ex. 1006, 1:21–26, 5:13–16. An analysis phase performing analysis of the video stream is provided before a transmission phase. *See id.* at 5:23–27. During the analysis phase, the video stream is analyzed in order to determine the needed traffic control parameters. *See id.* at 5:27–31. Gringeri discloses that “[t]he goal of the analysis phase is to select a transmission traffic contract for the encoded video stream with the criteria of minimizing network resources (including the required bandwidth) and maintaining video quality.” *Id.* at 5:31–35. The analysis phase is performed at the source and a model of the decoder buffer is provided at the source in order to perform analysis of the video stream. *See id.* at 5:35–38. During the transmission phase, the encoded video stream is transmitted in accordance with the optimal traffic contract determined during the analysis phase. *See id.* at 5:66–6:1. During transmission, a model of the decoder buffer is kept at the source. *See id.* at 6:1–3, 9:10–13. The transmission state at any moment in time depends on the predetermined traffic contract and the awareness of the fullness of the decoder buffer model assumed at the source. *See id.* at 22:11–15. During the transmission phase, the current capacity of the decoder buffer is monitored in order to detect underflow and overflow conditions. *See id.* at 22:33–35. The transmission phase is initialized, and the decoder buffer is pre-filled by transmitting video frames according to the traffic parameters. *See id.* at 22:20–21, 22:39–40, 22:45–46, Fig. 10 (steps 120, 124). To prevent overflow of the decoder buffer, a periodic check of the state or

capacity of the decoder buffer model is performed to determine when the decoder buffer is full. *See id.* at 22:46–49, Fig. 10 (step 124). If the decoder is not full, then pre-filling the decoder buffer may continue. *See id.* at 22:56–57.

2. Analysis of Claims 3–5

Claim 3 depends from claim 1, and claims 4 and 5 depend from claim 3. Claim 3 recites “determining the initial transmission rate using a decoder model.” Ex. 1001, 19:41–42. Claim 4 recites “the decoder model comprises a hypothetical reference decoder model.” Ex. 1001, 19:43–44. Claim 5 recites “at least one of the initial transmission rate or the first time period are determined so as not to overflow an input buffer that is based at least in part on the decoder model.” Ex. 1001, 19:45–48.

Petitioner asserts that Gringeri teaches the limitations of claim 3 based on Gringeri’s disclosure of using a decoder buffer model to select a traffic contract that includes traffic control parameters to specify transmission rates. *See* Pet. 53 (citing Ex. 1006, 5:27–31, 13:35–52, 22:11–15), 59–60 (quoting Ex. 1001, 4:26–38; Ex. 1006, code (57), 3:23–46, 5:28–51, 8:13–22, 12:47–67; Ex. 1009, 8; citing Ex. 1006, 3:10–22, 11:49–12:4, 13:22–52; Ex. 1003 ¶¶ 140–141). Petitioner contends that Gringeri further teaches the limitations of claim 4 based on Gringeri’s disclosure that the decoder model may be implemented as a Video Buffer Verifier, which a person of ordinary skill in the art would understand is a hypothetical reference decoder model. *See id.* at 61–62 (quoting Ex. 1006, 13:41–48; Ex. 1008 ¶ 3; Ex. 1009 ¶ 8; citing Ex. 1003 ¶¶ 143–146). Petitioner asserts that Gringeri teaches the limitations of claim 5 based on Gringeri’s disclosure of stopping the process of prefilling the buffer based on periodically checking the capacity of the

decoder buffer model in order to prevent buffer overflow, where the time to stop the initial transmission controls the length of the first time period. *See id.* at 53 (citing Ex. 1006, 22:45–56), 62–63 (quoting Ex. 1006, 22:45–65; citing Ex. 1003 ¶¶ 148–150; Ex. 1009 ¶¶ 23, 28, Pet. 33–36); *see also* Ex. 1006, Fig. 10 (flowchart depicting steps for transmitting an encoded video stream over a network).

Patent Owner does not substantively address or rebut Petitioner’s showing addressing the combined teachings of Patrick and Gringeri. *See* PO Resp. 71. In any event, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

We find that Gringeri teaches determining the initial transmission rate using a hypothetical reference decoder model (*see* Pet. 53, 59–62) and the first time period is determined so as to not overflow an input buffer based on the decoder model (*see* Pet. 53, 62–63). Based on Petitioner’s citations to Patrick, Gringeri, and Dr. Brody’s testimony (Ex. 1003), we are persuaded that it would have been obvious to one of ordinary skill in the art to modify Gringeri’s method of determining transmission rates based on Patrick’s decoder model to improve Patrick’s determination of the initial accelerated transmission rate by optimizing the initial transmission rate based on parameters of the decoder model, balance bandwidth consumption with the quality of user experience, and improve the determination of the initial time period for accelerated transmission. *See* Pet. 53 (citing Ex. 1003 ¶ 127), 56 (citing Ex. 1003 ¶ 132), 57 (citing Ex. 1003 ¶ 134), 61 (citing Ex. 1003 ¶ 142; Pet. 53–59); *KSR*, 550 U.S. at 418. We agree with Petitioner that “such modifications would have been the obvious use of a known technique

to improve similar devices in the same way.” Pet. 56 (citing Ex. 1003 ¶ 132); *see id.* at 58 (similar argument, citing Ex. 1003 ¶ 135).

Based on the entire record, we determine that Petitioner establishes by a preponderance of the evidence that the subject matter of dependent claims 3–5 would have been obvious over the combined teachings of Patrick and Gringeri. *See* Pet. 53–63.

3. Summary

Based on the entire record, Petitioner has established by a preponderance of the evidence that claims 3–5 are unpatentable under 35 U.S.C. § 103 over Patrick and Gringeri.

G. Challenge to Claim 7 over Patrick and Mahdavi

1. Overview of Mahdavi (Ex. 1007)

Mahdavi is directed to “methods and systems used to fast fill media buffers used by media players upon initial startup of the media player, thereby reducing latency associated with initial media player startup during a streaming data session.” Ex. 1007, 1:18–22; *see id.* at code (57). A latency associated with a startup of a media player stream and bandwidth associated with received media data into the buffer are identified. *See id.* at 6:9–13, Fig. 2 (steps 202, 204). The identified bandwidth is increased by a factor thereby eliminating or significantly decreasing the latency associated with the startup time of the media player. *See id.* at 6:37–42, Fig. 2 (step 220). The factor can be controlled or managed to avoid data congestion during initial media data transfer to the media player’s buffer. *See id.* at 6:59–62, Fig. 2 (step 224). This control can be achieved by determining the desired initial minimum latency required by the media player or communication protocol. *See id.* at 6:63–66, Fig. 2 (step 226).

2. Analysis of Claim 7

Claim 7 depends from claim 1 and recites “determining the first time period using a predetermined latency goal; and determining the initial transmission rate for the unit of video information further using the determined first time period and an amount of video data to transmit.” Ex. 1001, 19:57–62. Petitioner contends that Mahdavi discloses a first time period based on Mahdavi’s disclosure of a startup latency. *See* Pet. 69 (quoting Ex. 1007, 2:20–29; citing Ex. 1007, 6:35–48; Ex. 1003 ¶ 162). Petitioner asserts that Mahdavi discloses determining a default bandwidth associated with receiving media data into the media player’s buffer and a default startup latency when the bandwidth is not overloaded. *See id.* at 69–70 (reproducing Ex. 1007, Fig. 2 (annotations added); quoting Ex. 1007, 6:8–23; citing Ex. 1003 ¶ 163). Petitioner contends that Mahdavi further discloses that the identified default bandwidth is increased by a factor which is determined based on a desired startup latency. *See id.* at 70–71 (reproducing Ex. 1007, Fig. 2 (with color annotations); quoting Ex. 1007, 6:37–40, 6:59–7:2; citing Ex. 1007, Fig. 3, steps 220, 224, 226; Ex. 1003 ¶ 163); *see also id.* at 72 (quoting Ex. 1007, 6:59–7:2; citing Ex. 1003 ¶¶ 165–166). According to Petitioner, Mahdavi discloses that “[f]or a certain amount of data to fill the buffer, the factor by which the bandwidth is increased is resolved based on the ratio at which the startup latency needs to be decreased such that the desired initial minimum latency is achieved.” *Id.* at 72 (quoting Ex. 1007, 6:66–7:2; Ex. 1003 ¶ 164); *see id.* at 64 (similar argument, quoting Ex. 1007, 6:59–7:2; citing Ex. 1003 ¶ 153).

Petitioner asserts that Patrick further teaches the latency time depends on the initial transmission rate and the amount of video to transmit, and the

transmission rate equals the specified amount of data divided by latency time. *See* Pet. 73–74 (quoting Ex. 1004 ¶¶ 20–21; citing Ex. 1003 ¶ 168). Petitioner contends that Patrick teaches that the request for accelerated transmission specifies an amount of data to be transmitted at the accelerated rate, or alternatively the amount of data is defined by a streaming protocol. *See id.* at 74 (citing Ex. 1004 ¶¶ 41–42). Petitioner asserts that the combination of Patrick and Mahdavi renders this limitation obvious based on Mahdavi’s teaching of a desired minimum latency in combination with Patrick’s teaching of specifying an amount of data to be transferred and the relationship between the transmission rate, amount of data, and latency time, because the initial transmission rate equals the specified amount of data divided by the desired initial minimum latency that determines the first time period. *See id.* at 73 (citing Ex. 1003 ¶¶ 167–172).

Patent Owner complains that Petitioner’s assertion (which contends that Mahdavi’s teaching of a desired minimum latency is a latency goal and the latency goal is predetermined) “is based on an isolated, unexplained statement in Mahdavi, which is otherwise directed to the generic idea of accelerated streaming to fill a buffer using an increased ‘factor.’” PO Resp. 72 (quoting Ex. 1007, 6:59–66; citing Ex. 2014 ¶ 95; Pet. 69). According to Patent Owner, “[n]either Mahdavi nor Petitioner attempt to explain what the ‘desired initial minimum latency required by the media player or data communication protocol’ means.” *Id.* (quoting Ex. 1007, 6:59–66). Patent Owner further contends that Petitioner’s arguments that a person of ordinary skill in the art would have understood that Mahdavi’s desired initial minimum latency is a latency goal and would have found it obvious that it is predetermined because it is required by the media player,

which is fixed prior to the transmission of data, “is nothing more than a restatement of Mahdavi’s own opaque statements.” *Id.* at 72–73 (quoting Pet. 72).

Patent Owner also complains that a person of ordinary skill in the art would not understand what is meant by Mahdavi’s teaching that the factor is readily resolved by dividing the minimum initial latency time represented in seconds or milliseconds by the media player’s identified latency in like time units. *See* PO Resp. 73 (quoting Ex. 1007, 6:66–7:2; citing Ex. 2014 ¶¶ 95–96). According to Patent Owner,

[a]ny argument by Petitioner that a [person of ordinary skill in the art] would understand what this means or how it is applied is directly rebutted by Dr. Brody’s own [cross-examination] testimony, which spans over 12 pages of testimony and concludes with the statement that a [person of ordinary skill in the art] would understand that the factor is determined by ‘tak[ing] the inverse reciprocal’ of the ‘readily resolved’ value expressed by Mahdavi.”

Id. (quoting Ex. 2015, 151:9–11; citing Ex. 2015, 139:6–151:11; Ex. 2014 ¶ 96). Patent Owner contends that “given that Petitioner’s expert cannot explain how this factor might be used or what it means, no [person of ordinary skill in the art] would find it obvious to combine Mahdavi with Patrick in any way.” *Id.* (citing Ex. 2014 ¶ 96).

In the Reply, Petitioner asserts that Patent Owner’s witness Dr. Hayes admitted that Mahdavi’s latency goal is predetermined. *See* Pet. Reply 25 (citing Ex. 1032, 149:3). Petitioner also contends that Patent Owner’s arguments addressing the factor ignore the Petition’s explanation of how Mahdavi teaches determining a default bandwidth and default startup latency and then increasing the default bandwidth by a factor. *See* Pet. Reply 26

(citing Pet. 69–70). Petitioner asserts that “the Petition explained how the ‘factor is determined based on a desired startup latency,’” and “how a [person of ordinary skill in the art] would have understood how to calculate latency based on the transmission rate, and vice-versa, given a known buffer amount and how this applies to the teachings of Mahdavi and Patrick.” *Id.* (citing Pet. 67, 71–75).

We find that Mahdavi teaches identifying bandwidth and startup latency of a media device and increasing the identified bandwidth by a factor which is resolved by dividing the minimum initial latency time (e.g., the latency goal) by the media player’s identified latency time. *See* Pet. 63–72; Ex. 1007, 6:8–13, 6:35–47, 6:59–7:2, 7:12–18; Fig. 2 (steps 202, 204, 210, 220, 226)). Based on Petitioner’s citations to Patrick, Mahdavi, and Dr. Brody’s testimony (Ex. 1003), we are persuaded that it would have been obvious to one of ordinary skill in the art to modify Patrick’s adaptable accelerated content streaming method with Mahdavi’s teachings regarding the use of a desired latency to determine the initial period and transmission rate for accelerated transmission of media to avoid data congestion and to improve customizability of the user experience. *See* Pet. 65–67 (quoting Ex. 1004 ¶ 33; Ex. 1007, 6:59–7:2; citing Ex. 1003 ¶¶ 155–156; Ex. 1004 ¶ 36; Ex. 1007, 5:45–55; Pet. 27–33, 69–72); *KSR*, 550 U.S. at 418. We agree with Petitioner that “such a combination involves a simple substitution of one known element for another to obtain a predictable result.” Pet. 67 (citing Ex. 1003 ¶ 157; Ex. 1004 ¶¶ 20–21; Pet. 73–75). Mahdavi refers to using a “factor” in its calculations, and we find that an ordinarily skilled artisan would have understood this description. But, even if there were some ambiguity in Mahdavi’s explanation of its factor, we do not agree that

this ambiguity undercuts Mahdavi's salient teaching or the persuasive rationale to combine Patrick and Mahdavi identified by Petitioner.

We do not agree with Patent Owner's arguments regarding Petitioner's reliance on Mahdavi's teachings related to the factor, because, as pointed out by Petitioner (*see* Pet. Reply 26), the arguments overlook the Petition's explanation of how Mahdavi teaches determining a default bandwidth and default startup latency and increasing the default bandwidth by a factor. Pet. 69–70. Because we find that the Petition explains sufficiently how Mahdavi's factor is used, we cannot agree with Patent Owner's argument that a person of ordinary skill in the art would not have found it obvious to combine Mahdavi with Patrick. *See* PO Resp. 73 (citing Ex. 2014 ¶ 96).

Based on the entire record, we determine that Petitioner establishes by a preponderance of the evidence that the subject matter of dependent claim 7 would have been obvious over the combined teachings of Patrick and Mahdavi. *See* Pet. 63–75.

3. Summary

Based on the entire record, Petitioner has established by a preponderance of the evidence that claim 7 is unpatentable under 35 U.S.C. § 103 over Patrick and Mahdavi.

III. CONCLUSION⁹

For the foregoing reasons, and after having analyzed the entire record and assigning appropriate weight to the cited supporting evidence, Petitioner

⁹ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this

has established by a preponderance of the evidence that claims 1–5 and 7 of the '098 Patent are unpatentable.

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 2	103 ¹⁰	Patrick	1	
2	103	Patrick, Barrett	2	
3–5	103	Patrick, Gringeri	3–5	
7	103	Patrick, Mahdavi	7	
Overall Outcome			1–5, 7	

IV. ORDER

Accordingly, it is

ORDERED that, Petitioner has shown by a preponderance of the evidence that claims 1–5 and 7 of the '098 Patent are unpatentable;

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

¹⁰ As explained above in Section II.D.3., we do not reach this challenge with respect to claim 2 because Petitioner shows by a preponderance of the evidence that claim 2 is unpatentable under 35 U.S.C. § 103 over Patrick and Barrett.

IPR2021-01293
Patent 9,402,098 B2

PETITIONER:

Harper Batts
Chris Ponder
Jeffrey Liang
SHEPPARD, MULLIN, RICHTER & HAMPTON LLP
hbatts@sheppardmullin.com
cponder@sheppardmullin.com
jliang@sheppardmullin.com

PATENT OWNER:

Daniel S. Young
Chad E. King
ADSERO IP LLC d/b/a SWANSON & BRATSCHELL
dyoung@adseroip.com
dyoung@sbiplaw.com
chad@adseroip.com
cking@sbiplaw.com