

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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NETFLIX INC. AND HULU, LLC,  
Petitioners,

v.

DIVX, LLC,  
Patent Owner.

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Case IPR2020-00558  
Patent 10,225,588

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**PATENT OWNER DIVX LLC'S SUR-REPLY  
TO PETITION FOR INTER PARTES REVIEW  
OF UNITED STATES PATENT NO. 10,225,588**

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| 2001         | Reserved                                                                                  |
| 2002         | U.S. Patent No. 8,909,922                                                                 |
| 2003         | Excerpts from U.S. Patent Application No. 14/564,003 File History [003 CON FH]            |
| 2004         | U.S. Patent No. 9,247,311 [Patent from 12/8/14 Continuation]                              |
| 2005         | Excerpts from U.S. Patent Application No. 14/970,412 File History [412 CON FH]            |
| 2006         | U.S. Patent No. 9,621,522 [Patent from 12/15/15 Continuation]                             |
| 2007         | Excerpts from U.S. Patent Application No. 15/481,340 File history [340 CON FH]            |
| 2008         | U.S. Patent No. 10,244,272                                                                |
| 2009         | U.S. Patent No. 8,806,188 [Bransess]                                                      |
| 2010         | Manning <i>et al.</i> , INTRODUCTION TO INFORMATION RETRIEVAL (2008) (excerpts) [Manning] |
| 2011         | US Pat. App. US2009/0290706A1 [Amini]                                                     |
| 2012         | Declaration of Seth Nielson, Ph.D. [Nielson-Decl.]                                        |
| 2013         | Deposition of Patrick McDaniel, Nov. 16, 2020, [McDaniel-Depo.]                           |
| 2014         | Struck <i>et al.</i> , The Elements Of Style, 2005 [Struck & White]                       |
| 2015         | Garner, The Redbook Manual On Legal Style, 2003 [Garner]                                  |

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| 2016      | Andy Patrizio, Why the DVD Hack Was a Cinch, WIRED, November, 2, 1999, available at <a href="https://www.wired.com/1999/11/why-the-dvd-hack-was-a-cinch/">https://www.wired.com/1999/11/why-the-dvd-hack-was-a-cinch/</a> [Patrizio]                           |
| 2017      | About Bruce Schneier, Schneier on Security, available at <a href="https://www.schneier.com/blog/about/">https://www.schneier.com/blog/about/</a> [Schneier Blog]                                                                                               |
| 2018      | Bruce Schneier, Why Cryptography Is Harder Than It Looks, Counterpane Systems, 1997, available at <a href="http://www.firstnetsecurity.com/library/counterpane/whycrypto.pdf">http://www.firstnetsecurity.com/library/counterpane/whycrypto.pdf</a> [Schneier] |
| 2019      | Kevin Henry et. al., An Overview of the Advanced Access Content System (AACs), available at <a href="http://cacr.uwaterloo.ca/techreports/2007/cacr2007-25.pdf">http://cacr.uwaterloo.ca/techreports/2007/cacr2007-25.pdf</a> [Henry]                          |
| 2020      | Free-to-view, Wikipedia, available at <a href="https://en.wikipedia.org/wiki/Free-to-view">https://en.wikipedia.org/wiki/Free-to-view</a> [Free-to-view]                                                                                                       |
| 2021      | Declaration of Parham Hendifar (served only)                                                                                                                                                                                                                   |
| 2022-2023 | Reserved                                                                                                                                                                                                                                                       |
| 2024      | Declaration of Nathan Lowenstein in Support of Motion for <i>Pro Hac Vice</i> Admission                                                                                                                                                                        |
| 2025      | Exhibit 2025 to the Second Deposition of Patrick McDaniel ( <i>An RTP Payload Format for Generic Forward Error Correction</i> )                                                                                                                                |
| 2026      | Second Deposition of Patrick McDaniel, Apr. 5, 2021, [McDaniel-2 <sup>nd</sup> -Depo.]                                                                                                                                                                         |
| 2027      | Exhibit 2005 from IPR2020-00646 [Declaration of Professor Bajaj]                                                                                                                                                                                               |

Petitioner's Reply—rooted in attorney argument and untimely evidence—fails to rebut the POR's arguments and confirms Petitioner's failure of proof.

**I. PATENT OWNER'S EVIDENCE IN SUPPORT OF ITS CLAIM CONSTRUCTION IS UNREBUTTED AND PETITIONER DOES NOT DISPUTE ITS GROUND FAILS UNDER THAT CONSTRUCTION.**

Claim construction is dispositive in Patent Owner's favor. The POR demonstrated that the plain meaning and *every* embodiment of the '588 demonstrates that the claims require "locating encryption information ... within the requested portions of the selected stream of protected video." POR, 26-34; Ex. 2012 [Nielson-Decl.] ¶¶84, 87, 88-89, 93. Petitioner does not dispute that its grounds fail to disclose this limitation under DivX's construction. POR, 35-37; Ex. 2012 [Nielson-Decl.] ¶¶94-98; Reply, 20-22. Instead, the Reply only challenges that construction. That challenge fails.

**A. The Plain Meaning And Every Embodiment Supports Patent Owner's Construction While Petitioner Provides No Specification Support Or Expert Testimony In Support Of Its Construction.**

Petitioner, notably, does not dispute Dr. Nielson's testimony that the plain meaning supports DivX's construction. The term "plain meaning" does not even appear in Petitioner's Reply. Petitioner does not parse the claim language and, incredibly, *does not identify anything in the specification in support of its position*. What is more, though Dr. McDaniel submitted a reply declaration, Dr. McDaniel *did not* testify in support of Petitioner's claim construction position,

which is consistent with his and Petitioner’s prior conspicuous silence on the topic. Ex. 1003 [McDaniel-Decl.] ¶¶100-101, 182-187; Pet., 16, 52-55. Rather, Dr. McDaniel admitted at his deposition, embodiment-by-embodiment, that the “encryption information” is “located” “within the requested portion of the selected stream of video” (Ex. 2013 [McDaniel-Depo.] 47:2-49:20) and further conceded that “there is not an explicit embodiment” wherein “encryption information of a given cluster is not located within that cluster” (*id.*, 55:15); Ex. 1001 [’588-Pat.] 10:14-17. Dr. McDaniel, thus, does not dispute Dr. Nielsen’s testimony that *every single embodiment* supports DivX’s construction.

Dr. Nielsen’s testimony concerning the correct construction is, thus, “unrebutted.” *3Shape A/S v. Align Tech.*, IPR2019-00163, Paper 37, 16-24 (PTAB Jun. 9, 2020) (“Dr. Sonka’s testimony is unrebutted by Petitioner’s expert ... His reply declaration does not address the meaning of the In Focus limitation ... nor whether that limitation is taught or suggested by the prior art.”); *Limelight Networks v. Akamai Techs.*, IPR2016-01894, Paper 30, 16 (PTAB Mar. 1, 2018) (“Petitioner’s expert, Dr. Freedman, does not construe the ‘upload’ limitation and did not provide a declaration responsive to Dr. Burger’s testimony. Accordingly, Dr. Burger’s testimony is unrebutted.”); *Volkswagen Grp. of Am., Inc. v. Michigan Motor Techs.*, IPR2019-01274, Paper 47, 64-65 (PTAB Dec. 21, 2020) (“...Patent

Owner does not direct us to any evidence, such as expert testimony, negating Petitioner’s three other alternative meanings.”).

Indeed, as the Board recently explained:

For each point addressed by Patent Owner, *rather than to explain with reasons, references to embodiments in the Specification, and supporting testimony from a technical witness*, Patent Owner simply concludes that it is clear the language at issue carries a certain meaning. Such conclusory disagreement, without analysis and factual underpinning, is not sufficient to persuade. Petitioner correctly notes that Patent Owner’s arguments are *merely ‘raw attorney argument, citing no evidence or expert testimony.’* Reply 30. Argument of counsel cannot take the place of evidence lacking in the record.

*Marvell Semiconductor, Inc. v. Uniloc 2017 LLC*, IPR2019-01350, Paper 24, 75-76 (PTAB Feb. 1, 2021) (citation omitted).

**B. Patent Owner’s Construction Is Consistent With The Parent’s Claim Limitation.**

Petitioner’s principal argument concerns a supposed inconsistency between DivX’s claim construction position and a limitation in claim 1 of a parent (the ’522). No such inconsistency exists.

Petitioner contends that “DivX obtained claims where the encryption (DRM) information is located in a top-level index file,” further noting that “[t]he top-level index file is separate from the requested portions of the selected stream ...” Reply, 20-21. Petitioner, however, fails to explain how claim 1 of the parent is

inconsistent with DivX’s construction. In fact, the two claims concern *different* types of information. As can be seen below, claim 1 of the ’588 concerns “*encryption information* that identifies *encrypted portions of frames of video*” whereas claim 1 of the parent concerns “*DRM information* that identifies *protected portions of the alternative streams* of protected video.”

| '588 Patent, Claim 1                                                                                                                                                       | '522 Patent, Claim 1                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| “locating <i>encryption information that identifies encrypted portions of frames of video</i> within the requested portions of the selected stream of protected video ...” | “... wherein the top-level index file comprises ... a set of <i>DRM information</i> that identifies protected <i>portions of the alternative streams</i> of protected video ....” |

Petitioner provides no explanation for why it is inconsistent for the ’588 to “locate” “*encryption information that identifies encrypted portions of frames*” “within the requested portions of the selected stream” while claim 1 of the parent requires “*DRM information* that *identifies protected portions of the alternative streams*” to be in the “top-level index file.” Notably, the parent’s claim does not even require “partial frame encryption” much less specify where “encryption information that identifies encrypted portions of frames of video” is to be “located.” As the table below illustrates, the two claims concern two different things found in two different places:

|              | What?                                                                                           | Where is it located?                                                      |
|--------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| '588 claim 1 | " <i>encryption information</i> that identifies <i>encrypted portions of frames of video</i> "  | "within the requested portions of the selected stream of protected video" |
| '522 claim 1 | " <i>DRM information</i> that identifies <i>protected portions of the alternative streams</i> " | "the top-level index file"                                                |

Petitioner is comparing apples and oranges. There is no inconsistency between “locating” “encryption information” that “identifies encrypted portions of frames of video” “within the requested portions of the selected stream,” on the one hand, and storing “DRM information that identifies protected portions of the alternative streams” in a “top-level index file” on the other. Indeed, no reason is given why a system could not do both.

Where, as here, the language of two claims are different, “the [parent] patent’s prosecution history is irrelevant to the meaning of this limitation because the two patents do not share the same claim language.” *Resqnet.com, Inc. v. Lansa, Inc.*, 346 F.3d 1374, 1383 (Fed. Cir. 2003) ; *Bd. of Regents v. BENQ Am. Corp.*, 533 F.3d 1362, 1371 (Fed. Cir. 2008) (“Different claim terms are presumed to have different meanings.”); *CAE Screenplates Inc. v. Heinrich Fiedler GmbH*, 224 F.3d 1308, 1317 (Fed. Cir. 2000) (“*In the absence of any evidence to the contrary, we must presume* that the use of these different terms in the claims connotes different meanings.”). Moreover, even if—counterfactually—Petitioner

had established some inconsistency, it would not matter. At bottom, Petitioner asks the Board to infer the existence of some phantom, unspecified, embodiment in the '588—without Petitioner identifying any support in the specification—based only upon an alleged but unsubstantiated inconsistency between claim 1 of the '588 and claim 1 of the parent. But, even if the parent *had* claimed some unspecified, different, phantom embodiment, that would only *reinforce* DivX's construction:

“The mere fact that there is an alternative embodiment disclosed in the [asserted patent] that is not encompassed by [our] claim construction does not outweigh the language of the claim, *especially when the court's construction is supported by the intrinsic evidence.*” *TIP Sys., LLC v. Phillips & Brooks/Gladwin, Inc.*, 529 F.3d 1364, 1373 (Fed. Cir. 2008). *This is especially true where, as here, other unasserted claims in the parent patent cover the excluded embodiments. See PSN Ill., LLC v. Ivoclar Vivadent, Inc.*, 525 F.3d 1159, 1166 (Fed. Cir. 2008) (“[C]ourts must recognize that disclosed embodiments may be within the scope of other allowed but unasserted claims.”).

*August Tech. Corp. v. Camtek, Ltd.*, 655 F.3d 1278, 1285 (Fed. Cir. 2011).

Thus, claim 1 of the parent does not support Petitioner's position.

**C. Petitioner's Argument That The Claims Could Be Drafted More Clearly Misapprehends The Purpose Of Claim Construction.**

Petitioner's Reply next argues that the claims could have been drafted more “clear[ly]” to convey their proper construction. Reply, 21-22. Petitioner, however,

cites no authority for its proposition that the mere fact that claims could have been drafted more clearly means that DivX's construction is incorrect. Petitioner's criticism is nonsense. **Every** claim construction dispute could have been addressed through "clear[er]" drafting, *e.g.*, by reciting the construction verbatim. Any ambiguity in the claim language is best resolved by reference to the specification. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315-16 (Fed. Cir. 2005) (en banc). Ignoring the law, Petitioner avoids the specification altogether and asks that any alleged ambiguity be arbitrarily resolved in its favor.

Petitioner also claims that DivX "inserts the verb 'is'" into the claim to support its construction. Reply, 22. Wrong. The POR explains that the limitation, "properly construed, dictated that the 'encryption information' must be 'located,' 'within the requested portions of the selected stream of protected video.'" POR, 26; Ex. 2012 [Nielsen-Decl.] ¶85.

Finally, the Reply argues that in other patents in the "family" of the '588, certain claims require DRM information to be located within the "video container file." Reply, 22-23. The Reply then continues that "[i]n other patents, DivX drafted claims with the limitation it now seeks to insert," and that it "would be improper to import [the limitations] under the guise of claim construction." Reply, 23. This premise is incorrect. The claims **do** include the express limitation that the encryption information be located "within the requested portions of the selected

stream of video.” *See* POR, 26-27; Ex. 2012 [Nielson-Decl.] ¶87. Those words actually appear in the claims; DivX is not “importing” anything. Moreover, to the extent that related patents have a similar limitation, that only underscores the fact that the ’588’s embodiments support DivX’s construction.

Therefore, Petitioner’s single ground fails when the “locating” limitation is properly construed.

## **II. PATENT OWNER’S SHOWING THAT A POSITA WOULD NOT BE MOTIVATED OR ABLE TO MODIFY CHEN TO IMPLEMENT PARTIAL FRAME ENCRYPTION IS UNREBUTTED.**

The Reply confirms Petitioner’s failure to prove a POSITA would be motivated or able to implement partial frame encryption in Chen’s system “to address piracy and improve efficiency.” POR, 9-23.

### **A. Petitioner Fails To Rebut PO’s Showing That Scalability And FEC Are Integral To Chen’s System.**

The Reply argues—without expert support—that Chen’s scalability and FEC are “optional” and not integral to Chen’s system. Reply, 5, 7. This is demonstrably false.<sup>1</sup>

Chen, titled “Enhanced Block-Request Streaming *Using Scalable Encoding*” declares the “*need* to provide a robust *and scalable* streaming delivery

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<sup>1</sup> The presence of scalability *or* FEC in Chen defeats Petitioner’s ground, as both are incompatible with partial frame encryption. POR, 13-17.

solution ...” Ex. 1006 [Chen] ¶97. Chen’s “system is configured to provide and consume *scalable blocks*,” explaining that “scalable blocks” are “necessary.” *Id.*, ¶¶27, 375, 379; Ex. 2012 [Nielson-Decl.] ¶¶55-62.

Dr. Nielsen’s testimony is un rebutted. Bereft of expert support, Petitioner’s attorney arguments rely on partial, misleading quotes from Chen. The Reply relies on Chen, ¶27 to argue “independent scalable layers” are disclosed only “in some embodiments” (Reply, 9), but Petitioner omits Chen’s immediately preceding sentence: “[Chen’s] system is configured to provide and consume scalable blocks.” Thus, every embodiment of Chen utilizes scalable blocks (which have layers), but in some embodiments those layers might be “independent.” Chen, ¶377 (“[t]he scalable segment map [of the scalable block] contains the locations of the different layers ...”); ¶380 (“system ... might be configured to handle multiple scalability layers independently ...”). The problem in connection with scalability and partial encryption, namely that partial encryption could allow encrypted portions of data in one layer to be determined from unencrypted portions in another layer, is at the heart of scalability and layers—and applies to the entirety of Chen’s system, not just where the scalable layers may be “independent.” Ex. 2012 [Nielson-Decl.] ¶¶58-60. Here too, Dr. McDaniel offers no rebuttal.

The Reply claims Chen’s “simplest case” includes alternative bitrate streams with no scalability. Reply, 9 (*citing* Chen, ¶70). In fact, Chen explains that in its

“simplest case, each Alternative Representation may be stored in a single 3GP file ....” Chen, ¶70. This is irrelevant to whether the Alternative Representations or Chen’s system utilize scalability.

Finally, the Reply relies on Chen’s statement that “a viable system need not include all of the features described herein.” Reply, 11 (*citing* Chen, ¶¶62, 139). Again, nothing here suggests that the *scalability features*, as opposed to other, more tangential aspects of Chen, need not be included. *See, e.g.*, Chen, ¶¶360-369 (examples of Chen’s other features). Petitioner fails to point to a *single* embodiment in Chen that does not utilize scalability. For example, in a section titled “Combinations,” Chen describes four distinct embodiments, each of which utilize scalable layers. *Id.*, ¶¶385-389.

The Reply also presents attorney arguments that FEC is not integral to Chen, citing an example where five simultaneous connections were used to send data and FEC packets. Reply, 9-10. Petitioner presents no evidence or analysis as to why multiple connections means FEC was not integral to Chen, or that multiple connections were not typical at the time of invention. *Compare* Ex. 2025 [Standard] 45 (“As the FEC packets do consist of a separate stream ...”). To the contrary, Chen discloses the non-FEC method only to show why Chen believes his FEC method is superior. Chen, ¶530 (“Using the FEC method has the same advantages as the No-FEC method, and has the additional advantage that not all of

the requested data needs to arrive ... thus further reducing the channel zapping time and the variability ...”).

Petitioner, thus, fails to rebut DivX’s showing that scalability and FEC are integral to Chen’s system.

**B. Petitioner Fails To Rebut Patent Owner’s Showing That Implementing Scalability And FEC With Partial Frame Encryption Were Beyond A POSITA’s Ability.**

As Dr. Nielson testified, it was beyond a POSITA’s skills to implement either Chen’s scalability or FEC together with partial frame encryption. Ex. 2012 [Nielson-Decl.] ¶63. Petitioner has failed to show a reasonable expectation of success with either, much less both. The Reply’s arguments and evidence of alleged reasonable expectation of success are both untimely and incorrect.

**1. Petitioner’s Attempt To Show A Reasonable Expectation Of Success For The First Time In The Reply Is Untimely.**

Petitioner presents no expert testimony—and only cites to new Exhibit 1030—to assert a reasonable expectation of success in implementing scalable blocks with partial frame encryption. Petitioner also relies on new expert testimony and new exhibit 1023 to assert that a POSITA could have implemented FEC with partial frame encryption. The new evidence is untimely.

The Petition must demonstrate “the skilled artisan would have had a reasonable expectation of success” in combining the references as proposed.

*Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367-68 (Fed.

Cir. 2016); *id.*, 1369 (“the expedited nature of IPRs bring with it an obligation for petitioner to make their case in their petition to institute.”). Indeed, the Board routinely rejects as untimely evidence and arguments of reasonable expectation of success first raised in reply. *3Shape A/S*, IPR2019-00152, Paper 106, 46-48; *Trydel Res. Pty. v. ITW Global Tire Repair, Inc.*, IPR2019-01202, Paper 26, 40-42 (PTAB Dec. 14, 2020); *QIAGEN N. Am. Holdings, Inc. et al v. HandyLab, Inc.*, IPR2019-00488, Paper 9, 36-37 (PTAB July 14, 2020).

Petitioner presents no reason why it could not have presented its evidence in the Petition. The Board should disregard Reply’s untimely evidence.

2. The Reply Fails To Prove That A POSITA Could Have Implemented Scalability With Partial Frame Encryption.

Dr. Nielson’s testimony that implementing partial frame encryption with Scalable Video Coding (SVC) would have been beyond a POSITA’s skills (Ex. 2012 [Nielson-Decl.] ¶¶63-67) is un rebutted. Petitioner chose to not have Dr. McDaniel present any testimony on this issue. Petitioner’s attorney arguments fail.

The Reply cites Exhibit 1030 [Demos] for the proposition that Chen’s scalable blocks can be implemented with partial frame encryption. Reply, 14-15. Petitioner is incorrect for three independently sufficient reasons. **First**, Petitioner does not even attempt to show that Demos’s discussion of layers and partial frame encryption are implemented in the same embodiment. *Id.* Instead, Petitioner merely cites disparate portions of Demos—again, without expert support. Notably,

Demos states that its base layers are encrypted in their entirety, leaving unanswered how it could be implemented with partial frame encryption. Ex. 1030 [Demos] 21:24-27.

*Second*, even if in Demos’s patented system, particular aspects of SVC may be partially encrypted, it neither means that the same process can be implemented in Chen’s different system, nor contradicts Dr. Nielson’s unrebutted testimony that SVC “generally needs full encryption.” Ex. 2012 [Nielson-Decl.] ¶67. For example, Demos states that its partial encryption may not work in every situation, but only when “GOPs are used as a unit of encryption” in the context of Demos’s system. Ex. 1030 [Demos], 23:9-10; 23:37-38.

*Third*, nothing in the record demonstrates that *a POSITA* would have had a reasonable expectation of success. Notably, Demos does not explain, even if it did suggest possibility of partial frame encryption in the context of a scalable video coding, how the security challenges described by Dr. Nielson can be overcome.

Instead of proffering its own expert opinion, Petitioner resorts to baseless attacks on Dr. Nielson. First, Petitioner absurdly claims Dr. Nielson is not qualified to testify on scalable layers because in a deposition, in a *different* matter that concerned a *different* patent that did *not* involve scalable layers, Dr. Nielson did not list scalable layers as one of his areas of expertise. Reply 13 (citing Ex. 1024). Petitioner next argues Dr. Nielson “does not know” what information is

needed to perform motion compensation. Reply, 13-14. In reality, Dr. Nielson testified that to answer the question based on MPEG-4, which is what he was asked, he would need to refer to the standard. Ex. 1029, 91:15-16. Grasping at straws, Petitioner even cites an objection by counsel to the word “slice” as testimony by Dr. Nielson. Reply, 14. Dr. Nielson’s decades of expertise and experience in encryption and security as an industry consultant and UT Austin professor is beyond reproach. Ex. 2012 [Nielson-Decl.] ¶¶7-30; Ex. 1029, 24:4-27:22; 30:19-33:22.

3. The Reply Fails To Prove That A POSITA Could Have Implemented FEC With Partial Frame Encryption.

Dr. Nielson further explained why it was beyond a POSITA’s skills to implement Chen’s Forward Error Correction (FEC) with partial frame encryption. Ex. 2012 [Nielson-Decl.] ¶¶68-71. Petitioner submits a Reply declaration by Dr. McDaniel and new Exhibit 1023. Petitioner’s new submissions only confirm Dr. Nielson’s testimony.

First, Petitioner’s expert opines that if FEC is applied after the media is already encrypted, the problem identified by Dr. Nielson would be easily solved. Ex. 1031 [McDaniel-Reply-Decl.] ¶¶10-11. Not so. Applying FEC after the media is already encrypted would result in an encrypted media stream, and an unencrypted FEC stream. *Id.*, ¶12; Ex. 2026 [McDaniel-2<sup>nd</sup>-Depo.] 12:1-6. Yet, according to the “guiding organization which defines standards for the internet

protocols” (Ex. 2026 [McDaniel-2<sup>nd</sup>-Depo.] 22:24-23:9), an FEC protocol where “[t]he media stream may be encrypted, while the FEC stream is not,” “present[s] a layering violation, as FEC packets should really be treated no differently than other RTP packets” (Ex. 2025 [Standard] 45). Thus, Dr. McDaniel’s “simple” solution would result in a “layering violation.”

Second, Dr. McDaniel cites Exhibit 1023, 217, for the proposition that “[a]pplying FEC to data which already has been partially encrypted does no harm with respect to the data security.” Ex. 1031 [McDaniel-Reply-Decl.] ¶12. But the same exhibit explains that partial frame encryption cannot be applied to systems where FEC is created at the application level, for some of the same reasons identified by Dr. Nielson:

*Generally, forward error correction (FEC) mechanisms **should not be applied to the application layer data of streams which are transmitted via partial encryption** or a distinct-route approach. The reason is that an FEC coder increases the redundancy of the transmitted data so that an attacker gets access to more information, and hence the security of the stream is reduced.*

Ex. 1023, 217; Ex. 2026 [McDaniel-2<sup>nd</sup>-Depo.] 14:14-16; 17:3-6. Chen is precisely the type of system that applies FEC to the application layer. In particular, Chen applies FEC not to network level packets, but to media segments themselves. Ex. 1006 [Chen] ¶36 (“an erasure code is applied to each fragment to

generate redundant versions of the data.”). Dr. McDaniel did not consider any of these issues, including whether Chen creates the FEC packets at the application layer. Ex. 2026 [McDaniel-2<sup>nd</sup>-Depo.] 20:6-21:8, 24:1-4.

Dr. McDaniel also opines that applying FEC prior to encryption “would not work” because if a packet is lost, then its FEC is also lost and therefore the lost packet cannot be recovered. Ex. 1031 [McDaniel-Reply-Decl.] ¶11; Ex. 2026 [McDaniel-2<sup>nd</sup>-Depo.] 7:2-8:1. Dr. McDaniel errantly assumes that the FEC data and media are in the same packet and, therefore, would be lost together. Wrong. In Chen, however, the FEC and media packets are independently sent through different connections. Ex. 1006 [Chen] ¶530 (“With the FEC method, portions of the same fragment and FEC repair data generated from that fragment *are requested over different connections.*”).

Finally, Dr. McDaniel does not even attempt to address other challenges of utilizing FEC with partial frame encryption, such as timing. Ex. 2012 [Nielson-Decl.] ¶70.

**C. Petitioner Fails To Show A POSITA Would Have Been Motivated To Eliminate Both Of Chen’s Scalability And FEC Just To Implement Partial Frame Encryption.**

Thus, Petitioner fails to prove a POSITA would have had a reasonable expectation of success in implementing Chen’s scalable system with partial frame encryption. Therefore, to implement partial frame encryption in Chen, a POSITA

would have had to modify Chen to strip both its integral scalability and its FEC. POR, 13-17. A POSITA would not be motivated to eliminate Chen's scalability and FEC just to implement partial frame encryption, as doing so would substantially reduce efficiency and performance. POR, 18-23. Without Chen's scalable layers, "media quality is necessarily much lower," and there would be "a poor user experience." Ex. 1006 [Chen] ¶¶379. Similarly, FEC improves Chen's performance by up to 70%. *Id.*, ¶¶528-533. Partial frame encryption additionally would not improve Chen's security. POR, 19. Petitioner chose not to address any of this in Dr. McDaniel's reply declaration.

Petitioner's attorney arguments miss the point. Petitioner first claims that it does not matter that Petitioner's modification of Chen would make Chen less efficient because a non-precedential decision indicates that "it is irrelevant whether the prior art combination would be less effective than one reference alone." Reply, 7-8, citing *Slot Speaker Technologies, Inc. v. Apple Inc.*, 680 F. App'x 932, 940 (Fed. Cir. 2017). Petitioner is misleadingly quoting *Slot Speaker*, which related to reasonable expectation of success, not motivation. *Id.*, 940 ("The relevant inquiry is whether a [POSITA] would have had a reasonable expectation of success in modifying Tomonori ... It is irrelevant whether Tomonori and Sadaie together would be less effective ...").

Here, Petitioner relied on improved “efficiency” as the reason to modify Chen. Pet., 18. That the proposed modification would in fact reduce efficiency not only is relevant but goes to the heart of Petitioner’s proffered motivation. *Unified Patents Inc. v. DivX LLC*, IPR2019-01379, Paper 52, 35 (PTAB Feb. 8, 2021) (Ahmed, J.) (“Petitioner chose to argue that a [POSITA] implementing the teachings of Kim would have been motivated to consider Huang to obtain ‘better image quality’ (Pet. 39), and therefore retains the burden to prove the same. Had Petitioner not contended that combining Huang results in better image quality than Kim alone, we would not have needed to consider whether the combination results in ‘better image quality.’”). Here too, Petitioner bears the burden of substantiating its own proffered motivation. Reply, 8.

The Reply next accuses DivX of engaging in “textbook bodily incorporation.” Reply, 6. Wrong. The point is not whether it is possible to “bodily incorporate” Lindahl into Chen. The point is that it was beyond the skills of the POSITA to implement Chen utilizing partial frame encryption, “bodily” or otherwise. *See* Pet., 18 (claiming Chen “leav[es] particulars of [DRM] to the POSITA’s knowledge and preferences.”). This precise argument too has been rejected:

Petitioner, once again, misinterprets its burden. Although proof of physical or bodily incorporation is not required, a satisfactory explanation of “*how* the combination of the . . . references [is] supposed

to work” is necessary to support “a conclusion that a relevant skilled artisan would have been motivated to make the combination and reasonably expect success in doing so.”

...

Rather than requiring Petitioner to demonstrate “bodily incorporation,” Patent Owner’s arguments and evidence show that an ordinarily skilled artisan would not have expected to achieve Petitioner’s stated rationale in combining the references’ teachings in the way Petitioner proposes.

IPR2019-01379, Paper 52, 36-39; *Samsung Elecs. Co. Ltd. v. Kaist IP US LLC*, IPR2017-01046, Paper 14, 7 (PTAB Jan. 22, 2018).

The Reply also argues that Chen’s scalability and FEC have “benefits and drawbacks,” apparently insinuating a POSITA might have included them in some but not other systems. Reply, 9-10. Petitioner, however, chose not to submit any expert testimony on how a POSITA would have viewed any alleged “drawbacks” of Chen’s scalability or FEC against their benefits. Thus, Petitioner has failed to meet its burden. *See Arctic Cat Inc. v. Polaris Indus., Inc.*, 795 F. App’x. 827, 833 (Fed. Cir. 2019) (“The Board must weigh the benefits and drawbacks of the modification against each other, to determine whether there would be a motivation to combine.”).

Petitioner’s attorney arguments on the “drawbacks” of scalability and FEC are unsubstantiated and incorrect. The Reply does not cite *a single* teaching of a

drawback for scalable blocks or scalable layers in Chen. The Reply—without expert support—claims FEC “can increase bandwidth consumption by 25%” because in an FEC method, the client would request 250 kb as opposed to 200 kb without the FEC method. Reply, 10. Petitioner’s attorney argument misapprehends that even though the FEC method requests more data, it does not need to receive all of the data and can start playback after receiving only 80% of the requested data. Ex. 1006 [Chen] ¶533 (“One of the reasons for the advantage shown by the FEC ... is that ... reception of any 80% of the requested data allows recovery of the fragment, whereas for the No-FEC method, reception of 100% of the requested data is required.”).

Therefore, Petitioner fails to prove that a POSITA would have been motivated to eliminate *both* of Chen’s scalability and FEC to implement partial frame encryption.

**D. Petitioner Fails To Rebut POR’s Showing That It Was Beyond A POSITA’s Skill To Modify Standard File Formats In Chen.**

It is undisputed that the standard file formats utilized in Chen do not permit inclusion of partial encryption information within the file. Ex. 2012 [Nielson-Decl.] ¶80 (“it was beyond the skills of a POSITA to modify the standard file formats to implement partial frame encryption information within the file.”); Ex. 2013 [McDaniel-Depo.] 35:25-36:12; 25:7-18; 34:11-14. The Reply submits a five-page expert declaration, and new exhibits 1017-1018, 1020-1022, to argue for

the first time that a POSITA would have had a reasonable expectation of success in modifying Chen's file formats to implement partial frame encryption. For the same reasons discussed in Section III.B.1, Petitioner's new evidence in support of a reasonable expectation of success should be rejected as untimely.

The Reply is also incorrect. Petitioner and its expert misapprehend Dr. Nielson's opinion and attack a strawman. Dr. McDaniel testifies that Dr. Nielson opined that it was beyond the skills of a POSITA to modify the standard file formats "to implement partial frame encryption." Ex. 1031, [McDaniel-Reply-Decl.] ¶2. Dr. Nielson never proffered that opinion. Rather, he opined that a POSITA could not modify the standard file format "to implement partial frame encryption *information within the file*." Ex. 2012 [Nielson-Decl.] ¶80.

Having misapprehended Dr. Nielson's declaration, Dr. McDaniel then proceeds to cite a series of patents and other documents that utilize partial encryption with standard file formats. Ex. 1031 [McDaniel-Reply-Decl.] ¶¶3-4, 6-9. Notably, Dr. McDaniel never opined that a POSITA would have been able to modify standard file formats "to implement partial frame encryption *information within the file*," including such that can be implemented in the context of Chen's system. *Id.* To the extent that any of the references cited by Dr. McDaniel, *e.g.*, Ex. 1018, *cited* by Ex. 1031, ¶6, disclose modifying a file format to include additional information within a file, the authors of those references were experts

who obtained patents to modify a file format in the context of their specific systems. There is no evidence that a POSITA could transfer these modifications to Chen and also include partial frame encryption information, especially since partial frame encryption information is unique in that there is potentially distinct information to be mapped to *each and every frame*.

Notably, Dr. McDaniel also appears to change his definition of a POSITA, from that who merely “uses” standard file formats to one who is also able to modify standard file formats. Ex. 1031 [McDaniel-Reply-Decl.] ¶5. Dr. McDaniel’s original declaration did not even recognize, let alone address, the need to modify standard file formats to implement the combination. POR, 23-24.

Petitioner misapprehends a second aspect of Dr. Nielson’s testimony. Even if a POSITA could, *arguendo*, modify the standard file formats as necessary, the need for modification of Chen’s standard file format, which in addition to challenges, would lose the highly desirable benefit of interoperability on other devices, would further counsel against a motivation to combine it with Lindahl. POR, 22-23.<sup>2</sup>

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<sup>2</sup> The Reply also claims that Patent Owner “misrepresents” that Chen utilizes “fragment-level encryption.” Reply, 11-12. Given Petitioner’s expert’s deposition admission that partial frame encryption in Chen requires modifying its standard file

### III. THE REPLY FAILS TO SHOW USING “A SET OF COMMON KEYS” IN A SYSTEM THAT MEETS OTHER CLAIM LIMITATIONS.

Each of the challenged claims requires that video frames of the alternative streams be “encrypted using a set of common keys comprising at least one key.”

Ex. 1001 [’588-Patent] cls. 1, 12. Petitioner argues it was obvious to use the same key, including a global key, for alternative streams of video because “[e]ven if using the same key reduced security, it still would have been sufficient for many partial encryption applications, which often had lower security requirements.”

Reply, 27.

Petitioner’s argument ignores the claim as a whole. *UCB, Inc. v. Accord Healthcare, Inc.*, 890 F.3d 1313, 1324 (Fed. Cir. 2018). The issue is not whether a POSITA would have known that it was possible to use the same key or a global key; rather, the issue is whether a POSITA would have been motivated to use a global/same key in the context of a system that satisfied the other claim requirements, including partial frame encryption *and* multiple alternative streams.

Ex. 2012 [Nielson-Decl.] ¶¶113-115. At the time of the invention, alternative bitrate streaming and partial frame encryption were in their infancy. The issue, therefore, is whether at that time, with the technology and networks of the time of

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formats, and his reply declaration attempting for the first time to explain how, Petitioner’s attorney argument is not credible.

invention, a POSITA would take media content, invest substantial resources to encode it with multiple streams in the context of a complex system that could implement adaptive bitrate streaming, use partial frame encryption that involved modifying standard file formats and likely custom-made decoders/encoders, but then turn around and use an insecure global key, or the same key for all streams which would have substantially reduced security, especially if combined with already lower security partial frame encryption. The answer is no. And the fact that using the same or global key was generically “known” is not sufficient to demonstrate a POSITA would be motivated to employ that counter-intuitive option in this context.<sup>3</sup> *Polaris Indus. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1068 (Fed. Cir. 2018) (“We have observed that the prejudice of hindsight bias often overlooks that the genius of invention is often a combination of known elements which in hindsight seems preordained. We have also recognized that, when the art in

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<sup>3</sup> Dr. McDaniel’s reply declaration uses the example of his classroom lectures as a video that could use a global key. Ex. 1031 [McDaniel-Reply-Decl.] ¶21. Dr. McDaniel does not explain, however, why a POSITA would create multiple bitrate streams for a classroom lecture, then modify the standard file formats and create custom encoders and decoders to use partial frame encryption for the classroom lectures, as the other aspects of the claims require.

question is relatively simple, as is the case here, the opportunity to judge by hindsight is particularly tempting.”) (internal quotations and citations omitted).

Failing on substance, the Reply relies on incorrect law. The Reply first appears to argue that the mere fact that there was only “two options,” namely using the same key or different keys, makes using the same key “obvious.” Reply, 24-26. But such a rationale is unavailing. *Hulu LLC v. Sound View Innovations LLC*, IPR2018-00582, Paper 34, 14 (PTAB Aug. 5, 2019) (informative) (claimed “main memory database system” not obvious where reference did not specify whether it used a main memory database system or a disk-based database system where petitioner did not demonstrate it would be a “good idea” to use main memory). Similarly, Petitioner is incorrect that no aspect of an obviousness analysis requires “that the benefits of a combination must outweigh alleged tradeoffs.” Reply, 26; *e.g.*, *Arctic Cat*, 795 F. App’x. at 833.

Thus, Petitioner fails to show the “a set of common keys” limitation is obvious.

#### **IV. CONCLUSION**

For the foregoing reasons, Petitioner has failed to demonstrate that any of the claims are unpatentable.

Date: April 21, 2021

Respectfully submitted,

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## **CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITS**

This Sur-Reply (the “Sur-Reply”) consists of 5,585 words, excluding table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The Sur-Reply complies with the type-volume limitation of 5,600 words as mandated in 37 C.F.R. §42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare the paper (Microsoft Word).

Respectfully submitted,

/ Parham Hendifar /

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Date: April 21, 2021

## **CERTIFICATE OF SERVICE**

The undersigned hereby certifies that the following documents were served by electronic service, by consent between the parties (Pet. at 85), on the date signed below:

### **PATENT OWNER DIVX LLC'S SUR-REPLY TO PETITION FOR INTER PARTES REVIEW OF UNITED STATES PATENT NO. 10,225,588**

#### **EXHIBITS 2025-2027**

The names and address of the parties being served are as follows:

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Date: April 21, 2021