

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,

Petitioner,

v.

SCALE VIDEO CODING LLC,

Patent Owner.

Case IPR2024-01371

Patent 11,019,372

PATENT OWNER'S PRELIMINARY RESPONSE

Under 37 C.F.R. § 42.107

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Exhibit	Description
2001	Declaration of Michael B. Adams
2002	Wu et al., <i>Enhanced End-system Support for Multimedia Transmission over the Differentiated Services Network</i> (2001)
2003	Amended Scheduling Order (Dkt. 43), <i>Scale Video Coding LLC v. Cisco Systems Inc.</i> , No. 4:23-CV-803-SDJ (E.D. Tex.)
2004	<i>Headwater Research LLC v. T-Mobile USA, Inc.</i> , No. 2:23-cv-00379-JRG-RSP, Dkt. 108 (E.D. Tex. Nov. 14, 2024)
2005	Minute Entry (Dkt. 64), <i>Scale Video Coding LLC v. Cisco Systems Inc.</i> , No. 4:23-CV-803-SDJ (E.D. Tex.)
2006	Declaration of Srikant Cheruvu

I. INTRODUCTION

The Petition (“Pet.”) should be denied. The asserted references are directed to an entirely different paradigm for video transmission from that claimed by the ’372 patent. Specifically, the references describe prioritizing video information into classes on a packet-by-packet basis, and therefore teach classifying different types of information within each layer with different priority levels. In contrast, the challenged claims all require forwarding video on a layer-by-layer basis. These differences arise from the fundamentally different type of network architecture that underlies the references.

In any event, the Board should use its discretion under § 314(a) to deny institution. For the reasons set forth below, each of the six *Fintiv* factors here weighs in favor of denial.

II. APPLICABLE LEGAL PRINCIPLES

“[T]he decision whether to institute an *inter partes* review is discretionary.” *Unified Patents Inc. v. C-Cation Techs., LLC*, IPR2015-01045, Paper 15 at 3 (PTAB Oct. 7, 2015) (citing 37 C.F.R. § 42.108(a)). Petitioner has the burden to show that it is likely to prevail as to at least one claim of the ’372 patent. 35 U.S.C. § 314; *SAS Institute Inc. v. Iancu*, 138 S. Ct. 1348 (2018).

To make a *prima facie* showing of obviousness under 35 U.S.C. § 103, the Petition must fulfill the requirements set forth in *Graham v. John Deere Co.*, 383

U.S. 1 (1966), including demonstrating that the cited references disclose each element of a challenged claim. *In re Magnum Oil Tools Int'l.*, 829 F.3d 1364, 1376 (Fed. Cir. 2016); *see also Apple Inc. v. Contentguard Holdings, Inc.*, IPR2015-00442, Paper 9 at 12-13 (PTAB July 13, 2015).

Petitioner also has the burden to show there would have been some motivation to modify or combine the asserted prior art, and that the proposed modifications or combinations would render the patented claims obvious. *Johns Manville v. Knauf Insulation*, IPR2018-00827, Paper 9 at 13 (PTAB Oct. 16, 2018) (informative).

Motivation and expectation of success are generally not present where the proposed modification or combination contradicts a reference's basic teachings or is inoperable. *AstraZeneca AB v. Mylan Pharms. Inc.*, 19 F.4th 1325, 1337 (Fed. Cir. 2021) ("Under this court's precedent, a prior art reference is said to teach away from the claimed invention if a skilled artisan 'upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken' in the claim. And a reference that properly teaches away can preclude a determination that the reference renders the claim obvious.")

III. BACKGROUND

A. Background of the Technology

The '372 patent is directed to scalable video coding (SVC), a video coding technology that enables efficient video transmission and decoding over various network conditions and device capabilities. Unlike traditional video codecs that provide a fixed resolution and quality, SVC allows for the encoding of video data into multiple layers or streams, each representing different levels of quality or resolution. These layers are typically referred to as spatial, temporal, and quality layers. (EX2001, ¶ 28.)

At the time of the inventions of the '372 patent, network bandwidth was a significant issue affecting streaming video. The available network infrastructure struggled to keep up with this demand, leading to congestion and slowdowns, particularly during peak usage hours. (EX2001, ¶ 29.)

Prior to the inventions of the '372 patent, the then-existing technologies (such as H.264/AVC) were designed to optimize compression efficiency while maintaining a fixed set of parameters, such as frame size, frame rate, and picture quality. When video is encoded with these parameters, it cannot easily adapt to changes in network conditions, device capabilities, or user preferences, and makes it challenging to deliver the same video content efficiently across different platforms and network environments. (EX2001, ¶ 30.)

Specifically, H.264/AVC used a single layer encoding approach, where the entire video sequence is encoded as a single-layered data stream at a fixed quality

and bitrate, and with all the information necessary for decoding the video. There was no mechanism to prioritize certain parts of the video for higher quality encoding or to allocate more bits to critical regions of the frame. H.264/AVC also did not support scalability features like temporal, spatial, or quality scalability, and could not adapt dynamically to changing network conditions or display resolutions, leading to buffering, stuttering, and reduced video quality. (EX2001, ¶ 31.)

The invention addresses these shortcomings with scalable coding techniques that adapt video quality to varying network conditions and device capabilities. Scalable coding allows encoding a video bitstream with multiple layers, each providing a different level of quality or resolution. (EX2001, ¶ 32.)

Specifically, SVC uses a layered coding approach where the video is encoded into a base layer with lower resolution/frame rate, and one or more enhancement layers that add higher resolution/frame rate data. This allows receivers to decode only the layers they can support based on their bandwidth constraints, reducing unnecessary transmission of high-quality layers over limited bandwidth links. Encoding the video into a single, multi-layered bitstream that can be adapted by dropping packets/layers as needed avoids the need for separate encoding of multiple bitstreams for different bandwidth conditions, significantly reducing overall bandwidth requirements compared to simulcasting multiple streams. (EX2001, ¶ 33.)

The base layer of the SVC bitstream is encoded at a relatively low bit rate, providing a basic low-resolution and low-frame-rate video stream. This base layer can be transmitted even over low bandwidth networks, ensuring at least a minimal video quality for all receivers. On top of the base layer, one or more enhancement layers are encoded at progressively higher bit rates, adding higher resolutions, frame rates, and quality levels to the video stream. Each enhancement layer incrementally increases the bit rate and quality, without requiring full decoding and re-encoding of the stream. (EX2001, ¶ 34.)

Furthermore, SVC provides three types of scalability: temporal scalability, which allows dropping complete frames from the bitstream, reducing the frame rate and hence bandwidth for low-bandwidth receivers; spatial scalability, which enables transmitting lower spatial resolutions by dropping enhancement layers, reducing bandwidth for smaller displays; and quality scalability, which allows dropping quality enhancement layers, lowering the video quality but also bandwidth requirements. (EX2001, ¶ 35.)

Prior to the inventions of the '372 patent, video routers simply discarded data packets that could not be forwarded to the data recipient due to congestion of the outgoing link. The packets discarded in this manner were determined randomly because they all shared the same priority and were not associated with an identifier identifying their priority relative to other packets. (EX1001 at 1:59-2:11;

EX2001, ¶ 36.) Moreover, once packets were discarded, they could not be recovered by the router. This is because conventional network routers operate in Layer 3 (the network layer) of the OSI (Open Systems Interconnection) model and conventional recovery techniques using retransmission requests were not suited for real-time transmission of video. (EX2001, ¶ 37.) Therefore, the data stream that is eventually received by one or more receivers further down the network is corrupted due to network congestion. There may also be a negative impact on the communication sessions of other nodes that communicate through a “bottleneck” router. (EX2001, ¶ 38.)

The claimed inventions recite that this functionality is performed by a “video router” or a “scalable video coding router.” These are specialized routers that, unlike prior art video routers, operate not only in Layer 3, but also in higher layers of the OSI Model, such as Layer 7 (the Application Layer), and are capable of more advanced routing decisions based on the content of application layer data packets. (EX1001, 5:38-44; EX2001, ¶ 39.)

Specifically, the video routers taught and claimed by the '372 patent can optimize and manage traffic flows based on detailed application-level data and therefore prioritize packets corresponding to particular layers of the incoming video stream in response to insufficient bandwidth and/or increased congestion identified by the router. (EX2001, ¶ 40.) Thus, the claimed video router provides

more granular control and optimization of streaming video traffic by understanding and interacting with the video data itself, rather than managing packet forwarding based solely on network-layer information. (EX2001, ¶ 41.)

In this manner, the flow of video data packets over the distribution paths between the video router and each of the video receiving devices is more predictable, in contrast to the conventional practice of randomly discarding packets in the event of network congestion. (EX2001, ¶ 42.)

B. The '372 Patent

The '372 patent issued from U.S. Pat. Appl. No. 15/010,573, filed January 29, 2016 and claims priority, via a series of continuation and divisional applications, to Provisional Pat. Appl. No. 60/647,601, filed January 26, 2005. (EX1001, Cover.)

Independent claim 1 of the '372 patent recites:

1. A video router, comprising:

a memory; and

a processor, wherein the processor executes instructions stored in the memory to cause the video router to:

receive a layered video data stream including a base layer and a set of enhancement layers,

identify bandwidth-limited conditions of an internet protocol network between the video router and a plurality of video receivers,

forward the base layer from the video router to at least two of the plurality of video receivers via the internet protocol network, and

selectively forward one or more of the set of enhancement layers, but fewer than all of the set of enhancement layers, to at least two of the plurality of video receivers through the internet protocol network based upon the identified bandwidth-limited conditions, and wherein the video router transmits the layered video data stream according to an internet protocol;

wherein each layer of the layered video data stream comprises data packets, each of which is encoded with a sequence number and a layer identifier, and wherein the layer identifier for each data packet is based upon a layer to which the packet belongs.

Independent claim 6 of the '372 patent recites:

6. A method for transmitting video signals, the method comprising:

receiving a layered video data stream comprising a base layer and a set of enhancement layers;

identifying bandwidth-limited conditions of an internet protocol network between a video router and a plurality of video receivers;

forwarding the base layer to at least two of the plurality of video receivers via the internet protocol network; and

selectively forwarding one or more of the set of enhancement layers, but fewer than all of the set of enhancement layers, to at least two of the plurality of video receivers through the internet protocol network based upon the identified bandwidth-limited conditions;

wherein the layered video data stream is transmitted according to an internet protocol; and

wherein each layer of the layered video data stream comprises data packets, each of which is encoded with a sequence number and a layer identifier, and wherein the layer identifier for each data packet is based upon a layer to which the packet belongs.

Independent claim 11 of the '372 patent recites:

11. A scalable video coding router, comprising:

a memory; and

a processor, wherein the processor executes instructions stored in the memory to cause the scalable video coding router to:

receive a layered video data stream that comprises a base layer and a set of enhancement layers,

identify bandwidth-limited conditions of an internet protocol network between the video router and a set of video receivers, and

forward the base layer from the video router to at least two of the set of video receivers;

wherein the scalable video coding router forwards all of the set of enhancement layers to at least two of the video receivers in the set of video receivers with bandwidth-sufficient conditions;

wherein the scalable video coding router selectively forwards one or more of the set of enhancement layers, but fewer than all of the set of enhancement layers, to at least two of the remaining video receivers in the set of video receivers based upon the identified bandwidth-limited conditions;

wherein the layered video data stream is transmitted according to an internet protocol; and

wherein each layer of the layered video data stream comprises data packets, each of which is encoded with a sequence number and a layer identifier, and wherein the layer identifier for each data packet is based upon a layer to which the packet belongs.

During prosecution of the '372 patent, the Examiner noted:

Claims 1,3-4,6,8,10-11,13,15,17-18,20,22-24 are considered allowable since none of the references of record alone or in combination disclose or suggest the combination of limitations specified in independent claim 1, including [sic] “video router selectively forward one or more of the set of enhancement layers but fewer than all of the set of enhancement layers to at least two

of the plurality of video receivers through the internet protocol network based upon identified bandwidth-limited conditions according to an internet protocol, wherein each layer comprises data packets each of which is encoded with a sequence number and a layer identifier". Claims 8 and 15 are similar.¹

The closest prior art (Desphande) teaches receiver based enhancement layer streaming. None of these references disclose [sic] "video router selectively forward one or more of the set of enhancement layers but fewer than all of the set of enhancement layers to at least two of the plurality of video receivers through the internet protocol network based upon identified bandwidth-limited conditions according to an internet protocol, wherein each layer comprises data packets each of which is encoded with a sequence number and a layer identifier."

(EX1002, 783-84.)

C. Challenged Claims

Petitioner has challenged claims 1-3, 5-8, 10-13, and 15 of the '372 patent in its Petition. Claims 1, 6, and 11 are independent. Claims 2, 3, and 5 depend from claim 1. Claims 7, 8, and 10 depend from claim 6. Claims 12, 13, and 15 depend from claim 11. (EX1001; Pet. at 78-80.)

IV. CITED REFERENCES

A. Shao-028

U.S. Patent 7,093,028 ("Shao-028") (EX1005) is generally directed to a "scalable video transmission scheme" in which different types of video information are prioritized or classified according to their importance, such that

¹ "Claim 8" refers to claim 6 of the '372 patent as published. "Claim 15" refers to claim 11 of the '372 patent as published. (See EX1002, 803-08.)

packets containing lower priority information may be dropped during transmission. (EX1005, Abstract.) For example, when there is not enough network bandwidth to transmit all of the prioritized information about an object, some (e.g., lower priority) information may be dropped at the server or at an intermediate network node to reduce the bit rate. Thus, when the server transmits multiple video objects over a channel of limited bandwidth capacity, the bit rate allocated to each object can be adjusted according to several factors, such as importance of the information and client interaction. (*Id.*, Abstract.)

Shao-028 criticizes then-conventional methods of assigning all data packets the same priority during transmission, because data packets of higher priority or importance in time-critical applications (such as video streaming) may be among those lost or dropped, which would significantly degrade the performance of the application. (*Id.*, 1:53-62.) Shao-028 therefore purports to focus on improving the quality of service (QoS) for time-critical data streams. (*Id.*, 1:64-67.)

Shao-028 describes using a differential services-based network architecture to prioritize different parts of object data with different transmission priority levels, based on their importance. (*Id.*, 3:10-16; 4:28-30; 8:12-45.) Object-based data or “media data” in Shao-028 refers to video data, image data, audio data, text data, computer instructions, or associated control data. Object data can represent a two-dimensional or three-dimensional object. (*Id.*, 4:31-39.) For example, in video,

some parts (like shape information) are more crucial than others (like texture details). (*Id.*, 5:15-31; 8:24-39.) Data packets containing prioritized video information are then encoded and transmitted to downstream client devices. (*Id.*, 4:18-22.)

Specifically, Shao-028 describes the use of Video Transmission Agents (VTAs), operatively coupled to a server transmitting a video stream and to a downstream client device. (*Id.*, Figs. 3, 6; 8:50-60.) In one embodiment, Shao-028 describes, optionally, a VTA included within a hardware device such as a network node. (*Id.*, 9:5-8.) According to Shao-028, VTAs are responsible for filtering out less important data packets based on priority and client requirements, (*id.*, 13:62-67), coordinating bandwidth allocation among multiple clients, (*id.*, 13:10-22), and adapting to changing network conditions and user interactions. (*Id.*, 10:46-51.)

B. Shao-423

U.S. Pub No. 2001/0047423 (“Shao-423”) (EX1006) is a continuation-in-part of Shao-028, and purports to describe methods and arrangements for transmitting adaptive multimedia content over networks that provide differential services. (EX1006, Abstract.) Similar to its parent, Shao-423 describes compressing video objects, generating at least one corresponding elementary stream containing the compressed video objects, using a differential services based

architecture to classify information within each elementary stream based on importance, and assembling the classified information into packets associated with different classes of network packets. (*Id.*, Abstract.)

Shao-423 further describes methods and arrangements to implement application-aware intelligent resource controls, for example, at or near the edge of a network to coordinate limited resources among competing users and applications. In accord with the concept of application-awareness, Shao-423 enables a network to implement resource management and control in a more efficient and intelligent manner. (*Id.* [0013].) Shao-423 further describes the use of a multimedia processing agent (MPA) at potential bottleneck regions in a network to implement packet-level fast transcoding and related signaling. (*Id.* [0014].)

For example, Shao-423 teaches the use of application-flow-layer identifiers to identify applications, flows, and layers within a single network session. (*Id.*, [0063].)

V. LEVEL OF ORDINARY SKILL IN THE ART

For purposes of this Preliminary Response only, Patent Owner adopts Petitioner's alleged definition. Should *inter partes* review be instituted, Patent Owner reserves the right to present an alternative definition for a person of ordinary skill in the art, along with any appropriate additional evidence.

VI. CLAIM CONSTRUCTION

In an *inter partes* review proceeding, “a claim of a patent . . . shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b).

The Petition alleges that no express constructions of the claims are necessary to assess whether the cited art reads on the challenged claims. (Pet. at 4-5.) For purposes of this Preliminary Response only, Patent Owner presents no express constructions of the claims. Patent Owner reserves the right to propose constructions of the claims should *inter partes* review be instituted.

VII. THE PETITION SHOULD BE REJECTED UNDER § 314(A) BECAUSE PETITIONER IS UNLIKELY TO PREVAIL WITH RESPECT TO ANY CHALLENGED CLAIM

Petitioner has not demonstrated a reasonable likelihood that a POSITA would have found the challenged claims obvious over Grounds 1 and 2.

A. Ground 1: Petitioner Has Failed to Show that Claims 1-3, 5-8, 10-13, and 15 Are Obvious over Shao-028 under 35 U.S.C. § 103

With regard to claims 1-3, 5-8, 10-13, and 15, Petitioner has failed to show a reasonable likelihood that Shao-028 renders obvious each and every element of the challenged claims.

a) Independent Claims 1, 6, 11

Petitioner has failed to show that at least the following limitations in independent claims 1, 6, and 11 of the '372 patent are suggested or taught by Shao-028.

- i. **[1.4] identify bandwidth-limited conditions of an internet protocol network between the video router and a plurality of video receivers;**
[6.2] identifying bandwidth-limited conditions of an internet protocol network between a video router and a plurality of video receivers;
[11.4] identify bandwidth-limited conditions of an internet protocol network between the video router and a set of video receivers.

Claim elements [1.4] and [11.4] require that the claimed “video router” (claims 1) or “scalable video coding router” (claim 11) identify bandwidth-limited conditions of an internet protocol network between the video router and a plurality of video receivers. Similarly, claim element [6.2] requires that the method of claim 6 perform the step of identifying bandwidth-limited conditions of an internet protocol network between the video router and a plurality of video receivers. Petitioner's arguments are identical for all three elements. (Pet. at 22-32.) (EX2001, ¶ 66.)

Petitioner's arguments fail as to claims 1, 6, and 11 because it does not demonstrate that Shao-028 teaches a video router or a scalable video coding router “identify[ing] bandwidth-limited conditions of an internet protocol network

between [a/the] [video/scalable video coding] router and a [set/plurality] of video receivers,” as required by those claims.

a. VTAs in Shao-028 Do Not “Identify” Bandwidth-Limited Conditions

Neither Petitioner nor its expert set forth their understanding of the plain and ordinary meaning of the term “identification.” (*See* Pet. at 4-5.) Nevertheless, Petitioner goes on to rely on an interpretation purportedly adopted by Patent Owner’s expert in the parallel proceeding: “the action of recognizing or determining situations where the available bandwidth within the network is restricted or constrained.” (Pet. at 5.)

Yet, even under the interpretation purportedly adopted by Patent Owner’s expert, Petitioner fails to demonstrate that Shao-028 teaches any “identification” by a video router of bandwidth-limited conditions, for example, in “recognizing or determining situations where the available bandwidth within the network is restricted or constrained.” (EX2001, ¶ 68.)

As an initial matter, Petitioner repeatedly asserts that VTA 84c (shown with a red box in annotated Figures 3 and 6 below) is the claimed “video router.”²

² Besides 84c, the remaining VTAs 84a and 84b are not implemented within a network node. Petitioner therefore does not cite 84a or 84b as capable of “identifying bandwidth-limited conditions.”

(E.g., Pet. at 24 (“VTA 84c (‘the video router’)”); EX1003 ¶¶ 75, 112.)³ However, video transmission agents (VTAs) in Shao-028 do not perform any network-related functions such as “identifying bandwidth-limited conditions.”

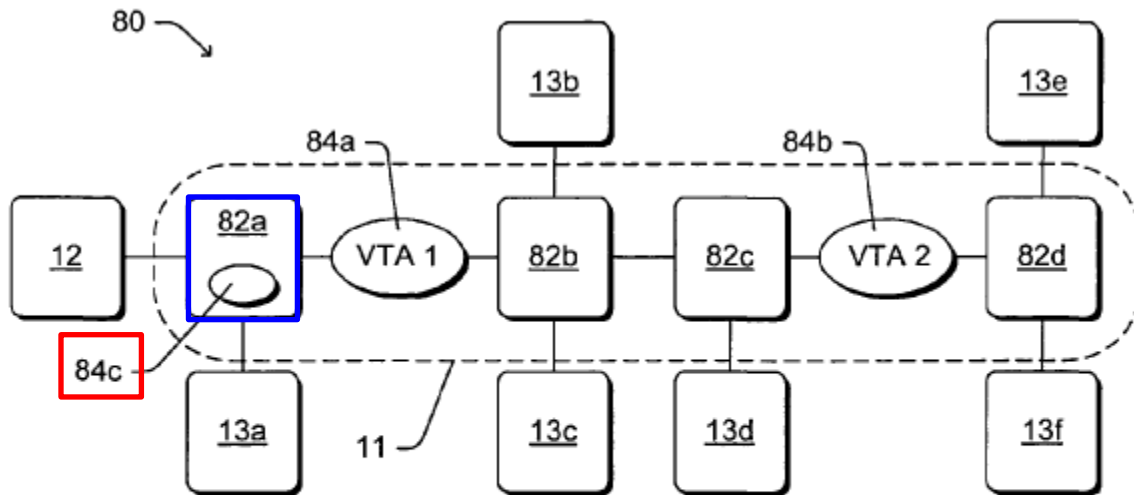


Fig. 3

(EX1005, Fig. 3 (annotated).)

³ As Petitioner's expert recognizes, Fig. 6 appears to contain a numbering error. (See EX1003 ¶ 75 n.21.) Mr. Adams explains that to remain consistent with Fig. 3, the VTA on the right hand side of Fig. 6 (connected to client 13e) should be VTA 84b.

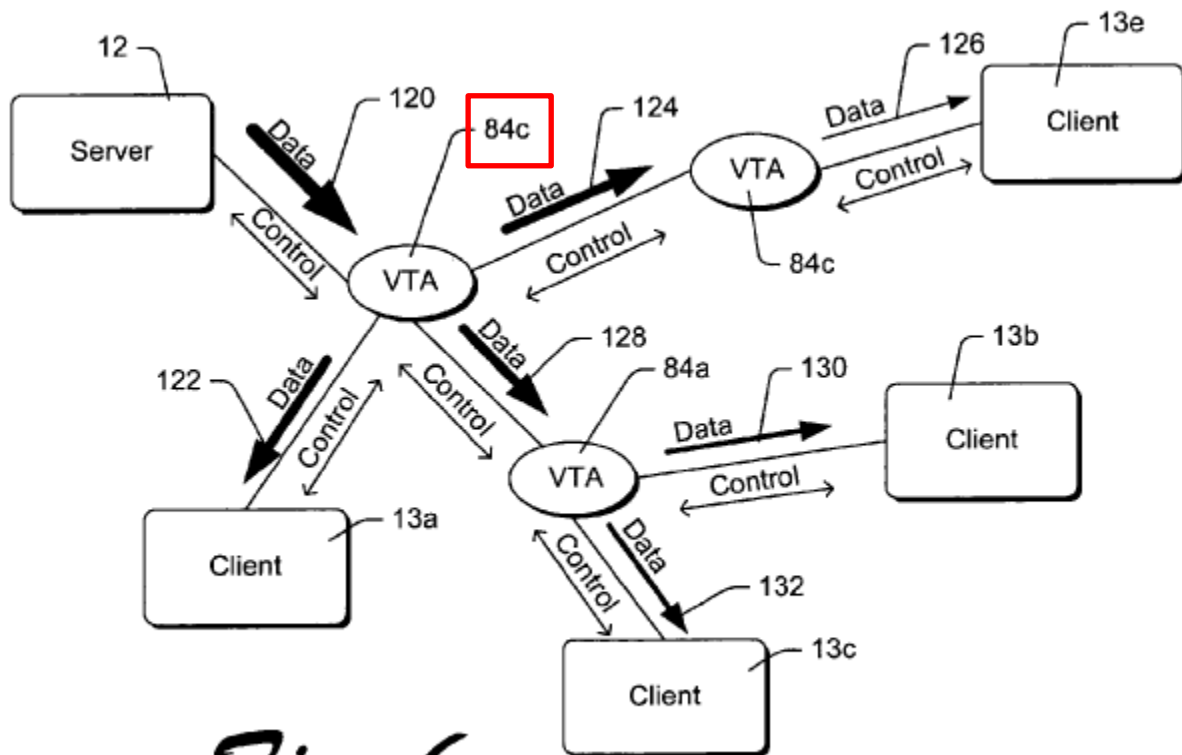


Fig. 6

(EX1005, Fig. 6 (annotated).)

Shao-028 is clear that VTAs merely serve to “*receive* the prioritized object-based data packets from the server device and *the control requests from the client device*, and to selectively output at least a portion of the received prioritized object-based data packets to the client device *based in response to the control requests.*”

(EX1005 3:6-10.) For example, VTA 84c “may be operatively configured to selectively control the data packets that are provided to client device 13a.” (*Id.*, 9:6-8.) Neither Petitioner nor its expert identify any teaching in Shao-028 that the above functions correspond to any network-related functionality, such as identifying bandwidth-limited conditions. (EX2001, ¶ 71.)

Acknowledging this deficiency, Petitioner contends that “a ***router implementing*** a ‘video transmission agent (VTA)’ in Shao-028 is termed herein as a ‘VTA Router.’” (Pet. at 8 n.1.) According to Shao-028, VTAs rely on differential services provided by the network:

In certain implementations, the VTA is implemented ***within a network that is further configured to provide differential services*** to the prioritized object-based data packets, such that prioritized object-based data packets having lower priority levels are selectively dropped should the network become congested.

(EX1005 3:10-16.) (EX2001, ¶ 72.)

Petitioner cites VTA 84c, within network node 82a (annotated in blue above), as the only example of a “VTA Router” meeting these elements. In doing so, Petitioner recognizes that any network-related functionality (i.e. differential services) is provided by network nodes, and not by VTAs or “VTA Routers.”

Therefore, even under Petitioner’s strained definition of a “VTA Router,” it has not shown that any such router in Shao-028 satisfies elements [1.4], [6.2], and [11.4].

(EX2001, ¶ 73.)

Even assuming, *arguendo*, that a “VTA Router” can perform network-related functionality, no such “VTA Router” in Shao-028 identifies any “***bandwidth-limited conditions***” between the VTA Router and a plurality of video receivers. As described above in Section IV.A, Shao-028 is directed to providing differential services based on transmission priority levels of portions of the object-based media information. (EX1005, 2:14-21; 2:56-61; 3:10-16; 4:23-30; 8:12-29;

10:42-45; 10:51-56; 12:2-7; 13:1-5.) (EX2001, ¶ 74.) As Mr. Adams explains, differential services is a networking architecture that provides a mechanism for classifying and prioritizing network traffic. It allows different types of traffic to be treated differently, ensuring that critical traffic, such as voice or video calls, receives priority over less important traffic like email or file transfers. (EX2001, ¶ 75.)

With differential services, traffic is divided into different classes based on its importance and requirements, which are identified by a Differentiated Services Code Point (DSCP) field in the IP header and dictate how the packet should be treated by routers along its path. (EX2001, ¶ 76.) Prioritizing critical traffic in this manner improves quality of service (QoS), resulting in better performance and reliability. (EX2001, ¶ 76; EX2002, 3-4; EX1003, ¶ 65; EX1009, ¶¶ [0008], [0011], [0013], [0027].)

Differential services operates by handling traffic in aggregate classes rather than on a per-flow basis. (EX2001, ¶ 77.) In a differential services network, the application-layer device (e.g. server) or edge router may perform traffic classification and assign the appropriate DSCP value based on agreed-upon bandwidth and priority levels. (*Id.*) On the other hand, core routers simply prioritize or drop packets based on the DSCP values in the IP headers, ensuring high-priority traffic is less likely to be dropped. (EX2001, ¶ 77; EX2002, 3-4;

EX1003, ¶ 65; EX1009, ¶¶ [0008], [0011], [0013], [0027].) While edge and core routers can decide when to drop packets based on congestion in the overall network, such routers are not capable of detecting packet loss or increased latency on links with specific client devices; that functionality, should it exist, resides in end systems that operate via transport layer protocols. (EX2001, ¶ 78.) Indeed, the overall goal of differential services is to ensure high-priority traffic is protected and lower-priority traffic is deprioritized. (*Id.*)

In other words, VTAs or “VTA Routers” in a differential services architecture described in Shao-028 do not “identify” any network conditions (including bandwidth, congestion, or packet loss); such network conditions are recognized and monitored throughout the network. (EX2001, ¶ 79.) The VTA simply marks video packets as high-priority so that the network may prioritize such high-priority video traffic over lower-priority traffic. (*Id.*) In contrast, the ’372 patent describes a video router that is independently capable of recognizing and managing congestion. (*See* EX1001, Fig. 8A; 22:15-25.)

Petitioner does not address the fact that Shao-028 is directed to a completely different paradigm for prioritizing video traffic from that in the ’372 patent. For example, differential services focuses on network-level QoS management by means of DSCP fields. (EX2001, ¶ 80; EX2002, 3-4; EX1003, ¶ 65; EX1009, ¶¶ [0008], [0011], [0013], [0027].) Scalable video coding (SVC) focuses on content-

level adaptability for video streams by encoding video into layers (e.g., a base layer and several enhancement layers) that can be independently transmitted or dropped. (EX2001, ¶ 81.) The '372 patent is directed to forwarding base and enhancement layers coded using SVC by identifying bandwidth limited conditions in the network, thereby ensuring that video quality degrades gracefully during network congestion, by discarding enhancement layers while maintaining the base layer for continuity. (*Id.*)

Second, differential services uses conventional network routers and operates at the network layer (i.e., Layer 3 of the OSI Model), which requires traffic to be pre-classified and marked by edge routers or application-layer devices. (EX2001, ¶ 82.) The routers then use these DSCP values to prioritize, shape, or drop traffic based on policies. (*Id.*) On the other hand, SVC uses video routers operating at the application layer (i.e., OSI Layer 7), and does not require any explicit marking or classification at the network layer. (EX1001, 5:38-44; EX2001, ¶ 83.) Layered video streams are therefore able to adapt dynamically to available bandwidth or to identified network conditions. (EX2001, ¶ 83.)

Finally, the differential services method of grouping traffic into classes and managing QoS for those classes rather than individual flows requires consistent policy enforcement and DSCP interpretation across all routers. (EX2001, ¶ 84.) On the other hand, SVC allows clients with different bandwidth capacities to

receive different quality levels from the same video stream. (EX2001, ¶ 85.) The SVC router (the claimed “video router” or “scalable video coding router”) determines the specific quality level that each client receives based on identified bandwidth conditions *between the router and the specific client*. (*Id.*)

Because Shao-028 teaches a differential services based network architecture, any VTAs 84 or their associated network nodes 82 are not responsible for, and are not capable of, identifying any bandwidth-limited conditions on links with each client device. (EX2001, ¶ 86.)

b. Petitioner's Examples of “Identification” All Fail

Petitioner purports to cite three different scenarios of “identification” of bandwidth-limited conditions in Shao-028, but each of its arguments fails to demonstrate the presence of this element.

First, Petitioner argues that “identifying bandwidth-limited conditions” is met by “meet[ing] [Quality of Service] QoS requirements”:

Initially, Shao-028 discloses “identifying bandwidth-limited conditions” by “**meet[ing] [Quality of Service] QoS requirements**.” Ex.1005, 8:43. Shao-028 explains that “when the Internet is congested, some of the data packets may be dropped or otherwise lost during transmission” and “missing data packets can significantly degrade the performance of a multimedia application.” Ex.1005, 1:54-63. Dropping data packets with lower priorities ensures that packets with higher priorities get delivered, which “allows for different QoS’s to be provided based on the importance associated with the user and/or information content.” Ex.1005, 8:14-23. Shao-028 states that “**lost or untimely receipt of data packets**” (e.g., “**bandwidth-**

limited conditions) can result in failure to meet the expected or required QoS. Ex.1005, 1:45-53. Indeed, the system in Shao-028 is designed to “meet QoS requirements” because Shao-028’s methods and arrangements are “provided to significantly increase the Quality of Service (QoS) provided by packet-switched networks during the transmission of time-critical data streams.” Ex.1005, 8:43, 2:3-7. Ex.1003, ¶117.

(Pet. at 25-26.)

As best as Patent Owner can discern, Petitioner appears to conflate “meeting” with “identifying,” and the phrases “QoS requirements” or “lost or untimely receipt of data packets” with “bandwidth-limited conditions.” (EX2001, ¶ 89.) Petitioner does not provide any support for this argument.⁴ Even assuming “lost or untimely receipt of data packets” is a “bandwidth-limited condition,”⁵ Petitioner does not explain how “meeting QoS requirements” can *identify* “lost or untimely receipt of data packets.” (EX2001, ¶ 90.) Nor is “meeting” predetermined “requirements” tantamount to “identifying,” “recognizing,” or “determining” them. (See Pet. at 5.) (EX2001, ¶ 90.)

Indeed, Shao-028 explains that “QoS requirements” are considered by the *server 12*, not by the VTA, in *creating* a “differentially prioritized” video stream in the first instance:

Prioritization of object-oriented video information may be

⁴ Petitioner’s expert merely echoes this argument and does not cite anything in Shao-028. (EX1003 ¶ 117.)

⁵ As Mr. Adams explains, lost or untimely receipt of data packets is not in itself a “bandwidth-limited condition” without knowing *why* any such packets were lost or delayed.

advantageously implemented using this type of differential service capability to provide a scalable video differentiated transmission scheme in which media objects that are identified in a video frame, or portions thereof, are associated with various differential priorities during transmission.

...

The resulting differentially prioritized data stream has many benefits. For example, the resulting prioritized data stream can be used to better control data flow at server 12 or within network 11, meet QoS requirements, enhance user interaction capabilities, and/or better support multicasting services to a plurality of receiving nodes 13(a)–13(n).

(EX1005, 8:24-49.) (EX2001, ¶ 92; EX2002, 4-5 (an “Application Collaborator” component within a “streaming server” is responsible for “resource coordination” and “map[ping] packet priorities from individual encoders into network classes.”).)

The process by which the server 12 in Shao-028 considers “QoS requirements” of the various client devices in the process of creating a “differentially prioritized data stream,” is further illustrated in the context of Fig. 6 with a blue arrow:

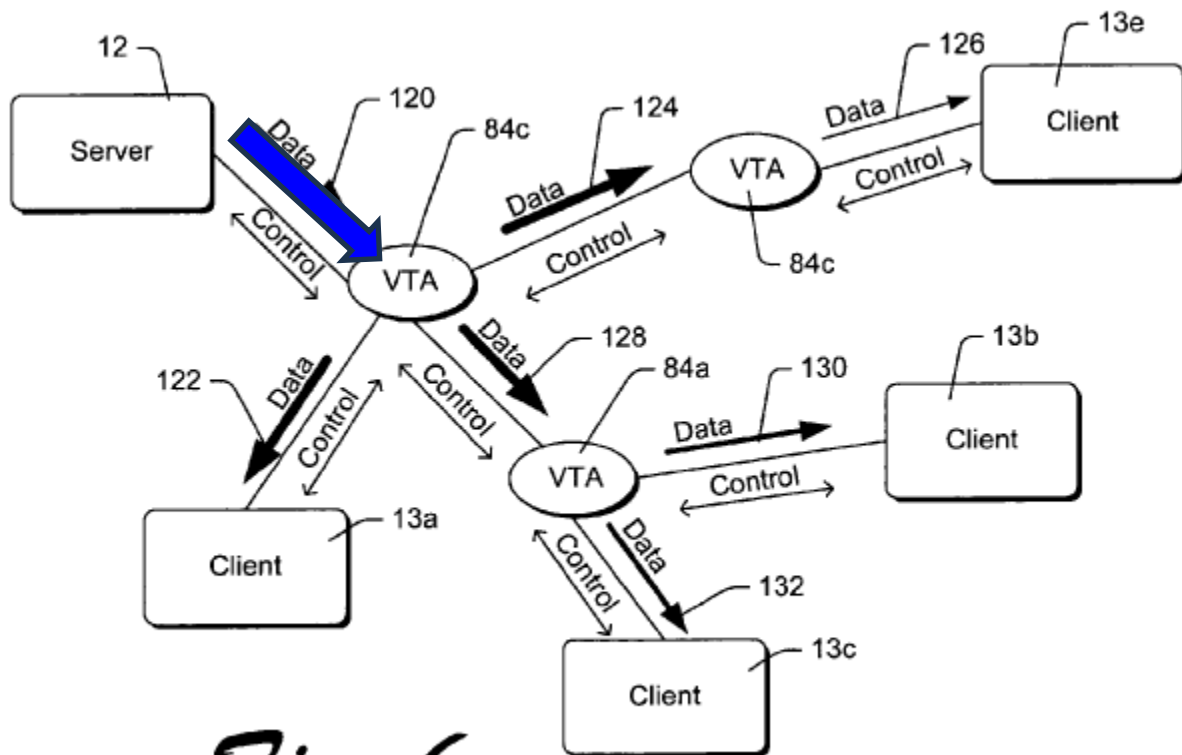


Fig. 6

(EX1005, Fig. 6; EX2001, ¶ 93.)

Nothing in Petitioner's cited paragraph describes any functionality of a VTA, much less performing any "identification" of "QoS requirements."

(EX2001, ¶ 94.)

Second, Petitioner argues that "identifying bandwidth-limited conditions" is met by "using a resource allocation policy that calculates available resource and required resource . . . for a network link," for example, network congestion:

In Shao-028, a VTA Router thus "identifies bandwidth-limited conditions" (e.g., **upstream and downstream congestion**) by using a resource allocation policy that **calculates available resource and required resource** (e.g., "network bandwidth" can be one of the resources) for a network link. Shao-028 further

explains that **upstream congestion** is “determined by the link state between the VTA and its next upstream VTA (or the server 12 if it has no upstream VTA)” and **downstream congestion** is “determined by (Capacity, Requirement) of all its next downstream VTAs and the clients connecting directly to this VTA” Ex.1005, 13:39-47. Shao-028 explains that its resource allocation policy is mathematically expressed using the two-element set “(Capacity, Requirement)” and employed at a VTA to determine available resource and required resource to support a multicasting session. Ex.1003, ¶118 (citing Ex.1005, 13:31-35).

Dr. Chatterjee explains **Capacity and Requirement** in Shao-028. “Capacity represents the amount of the resource available for a video object in the VTA or the end system of the user to handle the video object. Requirement represents the amount of the resource for a video object required by the VTA or the user.” Ex.1005, 13:35-39. According to Dr. Chatterjee, **‘Capacity’ and ‘Requirement’ are therefore parameters or metrics for making the assessment of “bandwidth-limited conditions.”** Ex.1003, ¶119.

(Pet. at 28.)

As best as Patent Owner can discern, Petitioner appears to assert that **“upstream and downstream congestion”** are bandwidth-limited conditions which are “identified” by the use of a **“link state”** and a **“(Capacity, Requirement)”** parameter set, respectively. However, this argument is unsupported by the actual teachings of Shao-028, as shown below. (EX2001, ¶ 96.)

Here, Petitioner misquotes the relevant portions of Shao-028. The reference does **not** teach that “upstream congestion is ‘determined by the link state between the VTA and its next upstream VTA’” or that “downstream congestion is ‘determined by (Capacity, Requirement)’” (EX2001, ¶ 97.) Instead, **“the**

Capacity of a VTA is determined by the link state between the VTA and its next upstream VTA.” (EX1005, 13:39-40.) (EX2001, ¶ 97.) Similarly, “the Requirement of a VTA [and *not “downstream congestion”*] is determined by (Capacity, Requirement)” (EX1005, 13:43-44.)

Capacity and Requirement are not themselves “bandwidth-limited conditions.” (EX2001, ¶ 98.) Petitioner’s expert opines simply that Capacity and Requirement may be “parameters or metrics *for making the assessment of* ‘bandwidth-limited conditions.’” (EX1003 ¶ 119.) But even under this theory, Petitioner does not explain how computing Capacity or Requirement “identif[ies] bandwidth-limited conditions” between the VTA and video receivers. (EX2001, ¶ 98.)

As Petitioner recognizes, “Capacity” of a VTA is based on “the link state between the VTA and its next *upstream* VTA.” (EX1005, 13:39-40.) The Capacity of the VTA is therefore not indicative of “bandwidth-limited conditions” on the *downstream* link with any video receiver. (EX2001, ¶ 99.)

Similarly, the Requirement of a client is not indicative of “bandwidth-limited conditions” between a VTA and the client; instead, it is “determined by the user’s preference and interactivity behavior.” (EX1005 13:54-55.) (EX2001, ¶ 100.) The user’s “preference” and “interactivity behavior” are predetermined factors and are not dependent on network bandwidth or congestion. (EX2001, ¶

100.) Petitioner's argument that a "resource allocation policy," comprising the "(Capacity, Requirement)" parameter set for a client, serves to "identify bandwidth-limited conditions" between the VTA and the client is therefore unsupported. (Pet. at 28-29; EX1003 ¶ 119.) (EX2001, ¶ 101.)

Third, Petitioner argues that this element is met by the VTA's consideration of "other recognized needs (e.g., downstream feedback/control)":

Shao-028 explains that "VTA 84 a ... selectively filter[s] out or otherwise drop[s] data packets according to their respective transmission priority levels based on **network and/or other recognized needs (e.g., downstream feedback/control)**," Ex. 1005, 8:57-60, and "VTA 84b ... selectively filter[s] out or otherwise drop[s] data packets according to their respective transmission priority levels based, again, on network and/or other recognized needs," Ex. 1005, 8:66-9:2. For example, "VTAs will filter out data packets from upstream according to **downstream requirements (e.g., according to the network link and a particular client[']s capabilities)**." Ex. 1005, 10:26-28.

In addition, Shao-028 explains that information related to a client's needs and/or capabilities are signaled as **feedback** is received at a VTA Router in the form of "control requests from the client device." Ex.1005, 3:4-10. Shao-028 further explains that "the **control paths provide a mechanism for negotiating or otherwise establishing what object data 14 needs to be transmitted and how best to allocate limited bitrate among multiple video objects according to network state and users' interaction.**" Ex.1005, 10:13-15. Ex.1003, ¶121.

Shao-028 therefore also explains that a client (or "receiver") is involved in "identify[ing] bandwidth-limited conditions of an internet protocol network between the video router and a plurality of video receivers" by **signaling information related to its needs to the VTA Router in the form of feedback.** Ex.1003, ¶¶121-122 (citing Ex.1010, 8-9).

(Pet. at 30-32.)

Even assuming a VTA receives “feedback” or “control” information from a downstream client, Petitioner does not demonstrate how the mere receipt of such information “identifies bandwidth-limited conditions” between the VTA and a plurality of video receivers. (EX2001, ¶ 103.) Conspicuously absent from this argument is a citation of any actual “identifying” step—including “recognizing” or “determining” (*see* Pet. at 5)—and any specific “bandwidth-limited conditions” that are “identified” in this manner. (EX2001, ¶ 103.)

Rather, Petitioner tacitly acknowledges that the *client—and not the VTA*—may be “involved in ‘identify[ing] bandwidth-limited conditions of an internet protocol network between the video router and a plurality of video receivers’ by signaling information related to its needs to the VTA Router in the form of feedback.” (Pet. at 31-32.) But Petitioner does not describe what “bandwidth-limited conditions” are “identified” by this process or how they are “identified.” This statement again confirms that a VTA plays no role in identifying bandwidth-limited conditions between itself and a plurality of video receivers, as the claims require. (EX2001, ¶ 104.)

Petitioner does not offer any other argument or evidence for this element. Because Petitioner's arguments as to this element are all unsupported by the actual evidence, Ground 1 fails.

ii. **[1.5] forward the base layer from the video router to at least two of the plurality of video receivers via the internet protocol network;**

[6.3] forwarding the base layer to at least two of the plurality of video receivers via the internet protocol network;

[11.5] forward the base layer from the video router to at least two of the set of video receivers;

Elements [1.5], [6.3], and [11.5] require “forward[ing] the base layer” of the received layered video stream. Petitioner has not shown that Shao-028 teaches this element. (EX2001, ¶ 106.)

Petitioner cites “ten different layers,” including “Intra (I) coded frame layers, Predicted (P) frame layers, Bi-directionally (B) predicted frame layers,” as examples of a “base layer.” (Pet. at 32-33, citing EX1005 5:39-58; 2:35-39.)

However, Petitioner fails to show that any of these layers are *forwarded* to a video receiver, as the claims require. (EX2001, ¶ 107.)

Instead, Petitioner's cited excerpt from Shao-028 merely teaches **receiving** such layers as MPEG-4 encoded information, **assigning** them priority levels, and **selectively transmitting portions** of the information downstream:

In accordance with certain aspects of the present invention, a method is provided for use in transmitting media information. The method includes **receiving a data bitstream that includes object-based media information**, **associating portions of the object-based media information with a plurality of different transmission priority levels**, and **selectively transmitting the portions of the object-based media information over a network that is configured to provide differential services**

based at least on the plurality of different transmission priority levels.

...

In certain other implementations, the object-based media information is encoded using MPEG-4 or other like techniques. Here, media object may be represented by Intra (I) coded frame layers, Predicted (P) frame layers, Bi-directionally (B) predicted frame layers, Intra (I) coded frame enhancement layers, Predicted (P) frame enhancement layers, and Bi-directionally (B) predicted frame enhancement layers. These frame layers may be associated with specific transmission priority levels.

(EX1005 2:12-45 (annotated).) (EX2001, ¶ 108.)

Therefore, Shao-028 teaches, at best, that “portions” of one or more base layers may be selectively transmitted to a video receiver, and does not teach that any base layer is itself “forwarded.” (EX2001, ¶ 109.) Petitioner’s other cited excerpt provides specific examples, from the MPEG-4 specification, of information that is prioritized and selectively transmitted. This information may include, *inter alia*, “shape” information, “texture” information, and “motion” information for I, P, and B frame base layers, along with “enhancement layers” for I, P, and B frames:

1. Control information, (e.g., Video Object Head, Video Object Layer Head and Video Object Plane head);
2. Shape information of an Intra (I) coded frame base layer
3. Texture DC information of an Intra (I) coded frame base layer
4. Texture AC information of an Intra (I) coded frame base layer

5. Shape information of a Predicted (P) frame base layer
6. Motion information of a Predicted (P) frame base layer
7. Texture information of a Predicted (P) frame base layer
8. Shape information of a Bi-directionally (B) predicted frame base layer
9. Motion information of a Bi-directionally (B) predicted frame base layer
10. Texture information of a Bi-directionally (B) predicted frame base layer
11. Intra (I) coded frame enhancement layer
12. Predicted (P) frame enhancement layer
13. Bi-directionally (B) predicted frame enhancement layer

(EX1005, 5:42-62.) (EX2001, ¶ 110.)

Each of these types of information are *classified by transmission priority level*, in classes 1 through 5 (class 0 includes “control information”):

The preceding types of information can be selectively classified as having different transmission priority levels. Thus, for example, without considering the enhancement layers, the base layers of compressed information may be classified as follows:

CLASS 0: Control information.

CLASS 1: Shape information of the Intra (I) coded frame base layer and texture DC information of the Intra (I) coded frame base layer.

CLASS 2: Texture AC information of the Intra (I) coded frame base layer.

CLASS 3: Shape information of the Predicted (P) frame base layer and motion information of the Predicted (P) frame base layer.

CLASS 4: Texture information of the Predicted (P) frame base layer.

CLASS 5: Shape information of the Bi-directionally (B) predicted frame base layer, motion information of the Bi-directionally (B) predicted frame base layer and texture information of the Bi-directionally (B) predicted frame base layer.

(EX1005, 5:63-6:16.) (EX2001, ¶ 111.)

The above excerpts from Shao-028 demonstrate that information within any base layer (such as an I, P, or B frame base layer) is prioritized and organized into *different* classes based on their transmission priority levels. (EX2001, ¶ 112; EX2002, 4-5; EX1003, ¶ 65; EX1009, ¶¶ [0008], [0011], [0013], [0027]; EX1012, 23.) For example, Shao-028 specifically explains that some information within each layer (like shape information) is more crucial than others (such as texture details) (EX1005, 5:15-31; 8:24-39.) (EX2001, ¶ 113.) Depending on network conditions, lower priority classes—such as class 4 (texture information of the P frame base layer) or class 5 (shape information of the B frame base layer)—may be selectively dropped by the VTA. (EX1005, 10:29-30; EX2001, ¶ 113.) These excerpts—which Petitioner overlooks—confirm that no base layer is forwarded to a downstream receiver in its entirety, as the challenged claims require. (EX2001, ¶ 114.)

Petitioner acknowledges as much, in arguing that this element is met merely by the VTA “sending the resulting *filtered* data bitstream” to a client. (Pet. at 32.)

But neither Petitioner nor its expert explain why a “filtered” data bitstream would contain all of the information for a “base layer.” Therefore, Petitioner does not offer any evidence that any base layer in Shao-028 is “forwarded” to a video receiver. (EX2001, ¶ 115.)

As Mr. Adams further explains, Shao-028 is based on a fundamentally different framework from that taught and claimed by the '372 patent. (EX2001, ¶ 116.) Specifically, Shao-028 relies on the use of differential services, wherein traffic is divided into different classes based on its importance and requirements. (*Id.*) Differential services operates by handling traffic in aggregate classes and managing QoS on a *per-class* basis rather than on a per-flow or per-layer basis. (EX2001, ¶ 117; EX2002, 1-5, 7; see also EX1003, ¶ 65; EX1009, ¶¶ [0008], [0011], [0013], [0027]; EX1012, 23.) On the other hand, scalable video coding as claimed by the '372 patent focuses on content-level adaptability for video streams by encoding video into layers (e.g., a base layer and several enhancement layers) that can be independently transmitted or dropped. (EX2001, ¶ 118.)

Petitioner and its expert overlook these critical distinctions between Shao-028 and the challenged claims. Because Shao-028 in its totality disproves Petitioner's theory regarding this element, Ground 1 fails.

- iii. **[1.6] selectively forward one or more of the set of enhancement layers, but fewer than all of the set of enhancement layers, to at least two of the plurality of**

video receivers through the internet protocol network based upon the identified bandwidth-limited conditions;

[6.4] selectively forwarding one or more of the set of enhancement layers, but fewer than all of the set of enhancement layers, to at least two of the plurality of video receivers through the internet protocol network based upon the identified bandwidth-limited conditions;

[11.6] wherein the scalable video coding router forwards all of the set of enhancement layers to at least two of the video receivers in the set of video receivers with bandwidth-sufficient conditions;

[11.7] wherein the scalable video coding router selectively forwards one or more of the set of enhancement layers, but fewer than all of the set of enhancement layers, to at least two of the remaining video receivers in the set of video receivers based upon the identified bandwidth-limited conditions;

Elements [1.6], [6.4], and [11.7] recite “selectively forward[ing]” at least one of the enhancement layers in the received layered video stream to video receivers based on upon the identified bandwidth-limited conditions. Conversely, element [11.6] recites forwarding all of the received enhancement layers to video receivers with “bandwidth-sufficient conditions.” (EX2001, ¶ 120.)

Petitioner fails to show that Shao-028 teaches elements [1.6], [6.4], [11.6], and [11.7] for at least two reasons. (EX2001, ¶ 121.)

a. Shao-028 Does Not Teach Forwarding At Least One Enhancement Layer Under All Conditions

Elements [1.6], [6.4], and [11.7] do not merely recite forwarding “enhancement layers.” These elements recite that ***at least one*** (i.e., “one or more”)

enhancement layer must be forwarded to video receivers regardless of any bandwidth-limited conditions. The decision on how many *additional* enhancement layers to selectively forward to those receivers depends on identified bandwidth-limited conditions. (EX2001, ¶ 122.)

As Mr. Adams explains, a base layer in SVC provides only a minimal acceptable quality of the video stream. (EX2001, ¶ 123.) Enhancement layers improve the video quality in terms of resolution, frame rate, or signal-to-noise ratio. (*Id.*) Adding at least one enhancement layer can therefore enhance the quality (e.g., higher resolution or smoother motion) while requiring additional bandwidth. (*Id.*)

On the other hand, because SVC is designed for graceful quality degradation under constrained network conditions, dropping all enhancement layers may result in video quality that is below an acceptable threshold for a wide range of users and devices. (EX2001, ¶ 124.) Retaining at least one enhancement layer may therefore ensure smoother transitions in quality as bandwidth availability changes, by minimizing the perception of quality loss during network congestion. (*Id.*) This innovative approach balances network efficiency and user satisfaction, avoiding overly degraded video. (*Id.*)

Moreover, in some instances, decoders may rely on receiving at least one enhancement layer to perform advanced decoding functions such as better error

resilience or smoother playback in case of packet loss. (EX2001, ¶ 125.)

Ensuring at least one enhancement layer is transmitted to the decoder can therefore make the video stream more robust to transmission issues. (*Id.*)

As set forth above, Shao-028 relies on a differential services-based architecture, wherein traffic is handled in aggregate classes based on priority, and QoS is managed on a per-class basis rather than on a per-flow or per-layer basis. (EX2001, ¶ 126; EX2002, 1-2; EX1003, ¶ 65; EX1009, ¶¶ [0008], [0011], [0013], [0027]; EX1012, 23.) Unlike with SVC, a differential services-based network does not implement content-level adaptability for video streams by encoding video into layers that can be independently transmitted or dropped. (EX2001, ¶ 126.)

Shao-028 provides an explicit example of a classification of data within each layer by transmission priority. Specifically, Shao-028 teaches that shape and texture information of I, P, and B frame base layers are organized in Classes 1 through 5 (with Class 0 representing essential “control information”). (EX1005, 6:1-16.) (EX2001, ¶ 127.) Further, “shape information . . . may be more important than motion or texture information,” (EX1005, 8:36-39), and therefore “data packets containing texture information for a particular video object may be dropped by the VTA.” (*Id.*, 10:29-30.) These excerpts confirm that Shao-028 does not teach forwarding video on a layer-by-layer basis. (EX2001, ¶ 127.)

Shao-028 further explains that “if network congestion occurs and/or the receivers require lower bit rates (e.g., as specified through some sort of user-interactivity behavior), then the bit rate for the video object needs to be reduced.” (EX1005, 12:25-29.) Reduction of the bit rate in this manner depends on the priority of each *packet*, not each *layer*. (*Id.*, 12:46-59 (“For example, if some information within a B frame needs to be dropped, then a selective B frame discarding scheme . . . can be adopted. In another example, if texture information within a P frame needs to be partly discarded, the approach can randomly discard ‘A’ percentage of P frame texture information.”).) (EX2001, ¶ 128.)

Nowhere in this classification scheme is there a reference to enhancement layers. (EX1005, 5:65-67 (“without considering the enhancement layers”).) (EX2001, ¶ 129.) Therefore, as Mr. Adams explains, Shao-028 contemplates that *no* enhancement layers may be forwarded to a video receiver. (EX2001, ¶ 129.) This is in direct contrast to the claimed requirement that at least one enhancement layer be forwarded regardless of network conditions, and reaffirms Shao-028’s reliance on a differential services architecture for its inventions, rather than the claimed SVC methodology. (*Id.*)

Petitioner does not address this requirement of the claims. For example, Petitioner argues:

Furthermore, and referencing Figure 6, Shao-028 further discloses that “VTA 84 a . . . *selectively filter[s] out or otherwise*

drop data packets according to their respective transmission priority levels (“selectively forward[ing] one or more of the set of enhancement layers”) based on network and/or other recognized needs (e.g., downstream feedback/control) [“based upon the identified bandwidth-limited conditions”].” Ex.1005, 8:57-60; see also 8:66-9:2. In particular, Shao-028 teaches that a VTA *“filter[s] the received data bitstream by selectively discarding data packets having lower priorities*, and sending the resulting filtered data bitstream to a client 13 and/or a next (downstream) VTA 84.” Ex.1005, 13:10-15. Shao-028 is therefore explaining that by “discarding data packets having lower priorities,” “the resulting filtered data bitstream” sent to clients is *“fewer than all of the set of enhancement layers.”* Ex.1003, ¶138.

(Pet. at 37-38.) (EX2001, ¶ 130.)

Petitioner therefore *assumes* that “filter[ing] the received data bitstream by selectively discarding data packets” would result in at least one enhancement layer getting forwarded under all network conditions, but does not provide any evidence for its assumption. (EX2001, ¶ 131.) And in any event, Petitioner is mistaken, as the actual teachings of Shao-028 above demonstrate. (*Id.*)

b. Because Shao-028 Does Not Teach “Identifying Bandwidth-Limited Conditions,” it also Does Not Teach Selectively Forwarding “Based Upon Identified Bandwidth-Limited Conditions”

As set forth in Section VII.A.a.i above (and incorporated here by reference), Shao-028 does not teach the “identifying bandwidth-limited conditions” elements of the challenged claims. Therefore, Shao-028 also does not teach any selective forwarding *“based upon the identified bandwidth-limited conditions.”* (EX2001, ¶ 132.)

Further, Petitioner and its expert do not address what specific “identified bandwidth-limited conditions” are used as criteria in Shao-028 to “selectively forward” enhancement layers. At best, Petitioner relies on vague and generalized references to “dynamically changing network conditions,” (Pet. at 37; EX1003 ¶ 137), “downstream feedback/control,” (Pet. at 38; EX1003 ¶ 138), and “transmission priority levels.” (Pet. at 38; EX1003 ¶ 139.) (EX2001, ¶ 133.)

As set forth in Section VII.A.a.i, none of the above examples are “identified bandwidth-limited conditions.” In the first two examples, Petitioner does not explain how any selective forwarding is “*based upon*” “dynamically changing network conditions” or on “downstream feedback/control.” Petitioner asserts only that this element is met by the use of “selective transmission processes that drop data packets as needed *to take advantage of differentiated classes*,” and “according to their respective *transmission priority levels*.” (Pet. at 37-38.)

These statements do not establish that a VTA selectively forwards enhancement layers based upon identified bandwidth-limited conditions; instead, the “differentiated classes” and “transmission priority levels” that Petitioner refers to are predetermined by the server in the differential services-based environment of Shao-028. (EX1005, 8:24-49.) (EX2001, ¶ 135.) The only criteria that Petitioner identifies as the basis for any selective forwarding—transmission priority levels—reaffirms Patent Owner’s underlying argument throughout this Preliminary

Response that Shao-028 relies on a differential services architecture for its inventions, and not the claimed SVC methodology. (EX2001, ¶ 136.)

c. Because Shao-028 Does Not Teach “Identifying Bandwidth-Limited Conditions,” it also Does Not Teach Forwarding to Receivers with “Bandwidth-Sufficient Conditions”

Element [11.6] additionally recites forwarding all of the set of the enhancement layers to at least two video receivers with “bandwidth-sufficient conditions.”

As set forth in Section VII.A.a.i above (and incorporated here by reference), Shao-028 does not teach the “identifying bandwidth-limited conditions” elements of the challenged claims. For the same reasons, Shao-028 also does not teach identifying “bandwidth-sufficient conditions.” (EX2001, ¶ 138.)

Further, Petitioner's argument for identifying “bandwidth-sufficient conditions” is limited to a claim construction position Patent Owner's expert took in the parallel proceeding, and a brief statement from its own expert. Specifically, Petitioner asserts:

Additionally, in support of PO's assertion that no construction is necessary for this term at the District Court, PO's expert stated that “‘bandwidth sufficient conditions’ describes network conditions where the available bandwidth (traffic capacity) is adequate to support the transmission of all the enhancement layers of the video stream without causing congestion or degradation in quality.” Ex.1020, ¶144.

Therefore, as demonstrated below, Shao-028 teaches or suggests element [11.6] consistent with Patent Owner's or any reasonable

interpretation.

...

see also Ex.1005, Abstract (“[W]hen network congestion occurs or there is not enough network bandwidth to transmit all of the prioritized information about an object, some (e.g., lower priority) information may be dropped at the server or at an intermediate network node to reduce the bit rate.”). Ex.1003, ¶¶130-131 (citing Ex.1005, Abstract, 3:10-16; 10:23-25).

Accordingly, *Dr. Chatterjee explains that when no packets are discarded, “all of the prioritized information about an object”—which would include “all of the set of enhancement layers”—are forwarded because there is no network congestion, i.e., the network has “enough bandwidth” or otherwise has “bandwidth-sufficient conditions”* Ex.1005, Abstract. Ex.1003, ¶132, see also Ex.1003, ¶44 (citing Ex.1015, Fig. 5-57 and 142 (teaching an example of “receiv[ing] all layers”)).

(Pet. at 34-35.) (EX2001, ¶ 139.)

However, neither Petitioner nor its expert identify any teachings in Shao-028 of a scenario where “no packets are discarded . . . because there is no network congestion.” Moreover, even under this hypothetical scenario, Petitioner wrongly assumes that forwarding “all of the prioritized information about an object” would including forwarding “all of the set of enhancement layers.” (EX2001, ¶ 140.)

As detailed above, Shao-028 teaches a differential services based architecture wherein traffic is handled in aggregate classes based on priority, and QoS is managed on a per-class basis rather than on a per-flow or per-layer basis. (EX2001, ¶ 141.) Therefore, Shao-028 does not teach assigning priority levels to

or classifying any enhancement layers. (*See* EX1005, 5:65-67; EX2001, ¶ 141.)

Nor does Shao-028 teach a link between a lack of network congestion and transmission of “all of the set of enhancement layers,” as element [11.6] requires. (EX2001, ¶ 141.)

Because Petitioner's arguments as to elements [1.6], [6.4], [11.6], and [11.7] are all unsupported by the actual evidence, Ground 1 fails.

iv. **[1.9] a layer identifier, and wherein the layer identifier for each data packet is based upon a layer to which the packet belongs.**

[6.7] a layer identifier, and wherein the layer identifier for each data packet is based upon a layer to which the packet belongs.

[11.10] a layer identifier, and wherein the layer identifier for each data packet is based upon a layer to which the packet belongs.

Elements [1.9], [6.7], and [11.10] all recite a “layer identifier . . . based upon a layer to which the packet belongs.” As set forth below, Shao-028 does not teach these elements. (EX2001, ¶ 143.)

As explained above, Shao-028 is based on a differential services architecture, wherein traffic is handled in aggregate classes based on priority, and QoS is managed on a per-class basis rather than on a per-flow or per-layer basis. (EX2001, ¶ 144.) Unlike with SVC, a differential services-based network does not implement content-level adaptability for video streams by encoding video into layers that can be independently transmitted or dropped. (*Id.*) Therefore, Shao-

028 does not contain any teaching of encoding or forwarding video streams as layers, and consequently no teaching of using a “layer identifier” to denote the “layer to which [each] packet belongs.” (*Id.*)

Petitioner overlooks this fundamental distinction between the operation of Shao-028 and the claimed inventions of the '372 patent. (EX2001, ¶ 145.) First, Petitioner asserts that a “Network Header (NPH)” in Shao-028 is the claimed “layer identifier” because it “identifies the transmission priority level.” (Pet. at 47-48, citing EX1005, 9:32-37, Fig. 4.) Here, Petitioner cites values P0, P1, and P2, of the “transmission priority level,” which correspond to *data packet portions 104a ... 104d*. (Pet. at 48-49, citing EX1005, 9:12-31.)

Fig. 4, reproduced below, confirms that Shao-028 assigns transmission priority levels on a packet-by-packet basis, and not on a layer-by-layer basis:

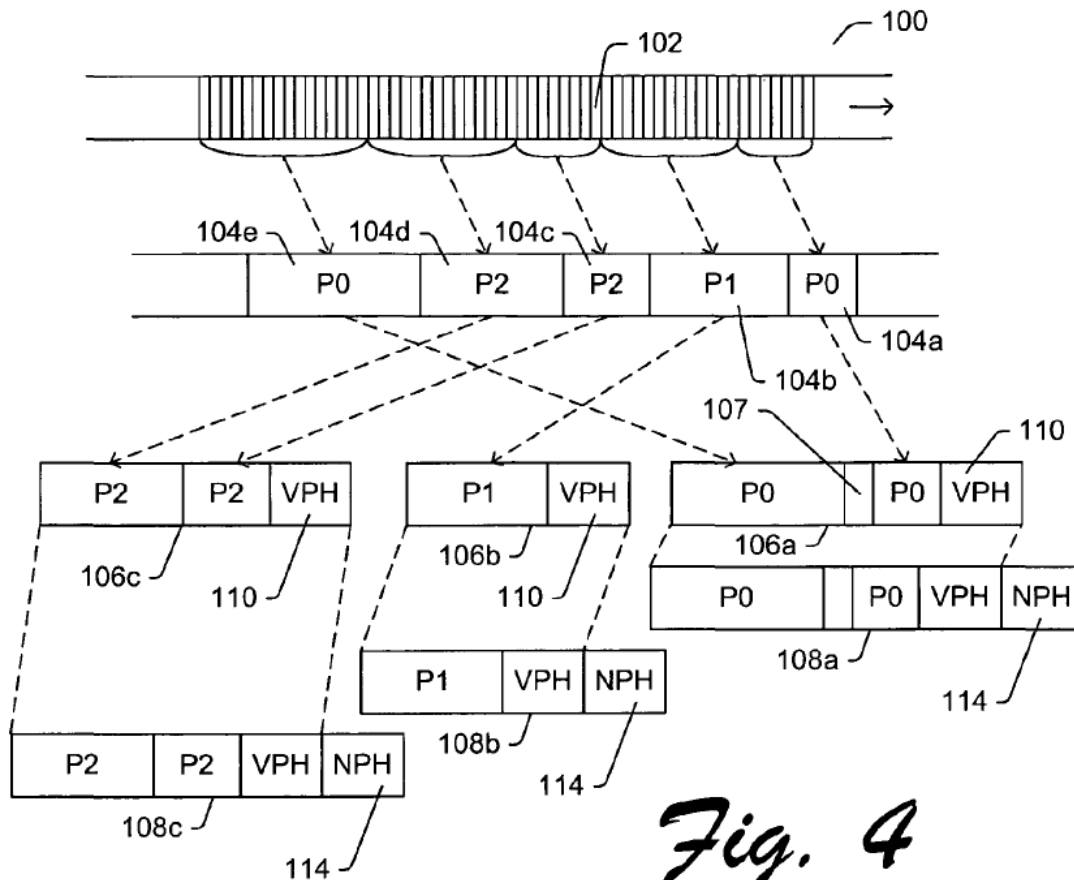


Fig. 4

(EX1005, Fig. 4; 9:9-11.) (EX2001, ¶ 146.)

Because Shao-028 does not handle video traffic on a layer-by-layer basis, it does not utilize or assign any layer identifiers. (EX2001, ¶ 147.) Petitioner's description of MPEG-4 layers in Shao-028, (Pet. at 49, citing EX1005, 5:39-64), overlooks the fact that under the differential services-based framework of Shao-028, a transmission priority level does not uniquely identify a "layer" to which a packet belongs. (EX2001, ¶ 148.) For example, information within a "layer" can have multiple priority levels, as shown by Classes 1 through 5, (EX1005, 6:1-6; 5:42-62; EX2001, ¶ 149), and some layers may not even be assigned a priority

level. (EX1005, 5:65-67 (“without considering the enhancement layers”).)
(EX2001, ¶ 149.) All of this evidence confirms that in Shao-028, video data is handled in classes based on priority, and not on a layer-by-layer basis. (*Id.*)

Recognizing these deficiencies, Petitioner and its expert then pivot to asserting that “a data packet in Shao-028 *necessarily* includes a ‘layer identifier,’” because “a decoder (e.g., at a client) would use a ‘layer identifier’ to determine which portions of the bit stream are to be regenerated.” (Pet. at 50-51.) Here, Petitioner simply assumes, without evidence, that the “media objects ‘using I, P, B, and enhancement frame layers’ . . . would *necessarily* be identified by “layer identifier[s].” (Pet. at 50-51.) (EX2001, ¶ 150.)

Petitioner's apparent argument that a “layer identifier” is inherent in Shao-028 disregards the actual evidence. Specifically, Shao-028 itself demonstrates another, different, approach to transmitting video information—assigning *different priority levels* to information *within* each layer and transmitting those priority levels within an NPH header. (EX2001, ¶ 151.)

For example, Shao-028 explains that “if network congestion occurs and/or the receivers require lower bit rates,” the bit rate for the object may be reduced, depending on the priority of each *packet*, not its layer. (EX1005, 12:36-37 (“all information with priorities P_j ($k < j < N$) will be discarded at the sender.”); 12:46-59 (“For example, if some information within a B frame needs to be dropped, then a

selective B frame discarding scheme . . . can be adopted. In another example, if texture information within a P frame needs to be partly discarded, the approach can randomly discard ‘A’ percentage of P frame texture information.”.) (EX2001, ¶ 152.)

Shao-028 further explains that the following information is *sufficient* for a decoder to decode the received bitstream:

```
typedef struct
{
    char name[30]; //information category
    int priority; //class level
    int startpos; //starting position of this part information within the
    bitstream
    int length; //length of this part information
    bool VOPEndFlag; //label of the end of a frame of the video
    object
} IndexItem;
```

(EX1005, 6:35-50.) (EX2001, ¶ 153.)

Nothing in this “struct” corresponds to or identifies a layer. (EX2001, ¶ 154.) This excerpt further confirms that a decoder does not receive a layer identifier, or any other information that is “based upon a layer to which [a] packet belongs,” to decode the received bitstream. (*Id.*) Instead, a priority level (indicated by “int priority; // class level”) is sufficient. (*Id.*) This is because, in contrast to “traditional” decoding methods, less than an entire layer’s worth of

information is sufficient to decode a frame that is transmitted according to the methods in Shao-028:

Traditionally, different types of information such as shape, motion and texture information would have been interleaved together at this stage, despite the fact that each has an inherent and different level of importance during the decoding process. . . . However, ***shape and motion information may be enough*** for decoder 17 to generate a coarse video frame that will have a lower quality than the original frame due to the loss of texture information.

(EX1005, 11:43-55.) (EX2001, ¶ 155.) In a related paper, the inventors of Shao-028 further explained why their approach, which provides “differentiation within one flow,” was a better solution than a “layered transmission and multicasting approach,” such as that claimed by the ’372 patent. (EX2001, ¶ 156; EX2002, 2.)

Therefore, to the extent Petitioner asserts that “traditional” MPEG-4 methods (such as those in EX1021 or EX1022) would have informed a POSITA to use a “layer identifier,” Shao-028 teaches away from those methods by using priority levels instead of layers. (EX2001, ¶ 157.) *See, e.g., AstraZeneca AB v. Mylan Pharms. Inc.*, 19 F.4th 1325, 1337 (Fed. Cir. 2021) (“Under this court’s precedent, a prior art reference is said to teach away from the claimed invention if a skilled artisan ‘upon reading the reference, would be discouraged from following the path set out in the reference, ***or would be led in a direction divergent from the path that was taken***’ in the claim. And a reference that properly teaches away can preclude a determination that the reference renders the claim obvious.”).

Because Petitioner's arguments as to elements [1.9], [6.7], and [11.10] are all unsupported by the evidence, Ground 1 fails.

b) Dependent Claims 2-3, 5, 7-8, 10, 12-13 and 15

Ground 1 does not render obvious dependent claims 2, 3, and 5 of the '372 patent because at minimum, they each depend from independent claim 1, which is not rendered obvious, for all the reasons set forth above in subsection Section VII.A.a. Because Petitioner has not shown a reasonable likelihood that independent claim 1 is rendered obvious, each dependent claim is likewise not obvious. (EX2001, ¶ 159.)

Ground 1 does not render obvious dependent claims 7, 8, and 10 of the '372 patent because at minimum, they each depend from independent claim 6, which is not rendered obvious, for all the reasons set forth above in subsection Section VII.A.a. Because Petitioner has not shown a reasonable likelihood that independent claim 6 is rendered obvious, each dependent claim is likewise not obvious. (EX2001, ¶ 160.)

Ground 1 does not render obvious dependent claims 12, 13, and 15 of the '372 patent because at minimum, they each depend from independent claim 11, which is not rendered obvious, for all the reasons set forth above in subsection Section VII.A.a. Because Petitioner has not shown a reasonable likelihood that

independent claim 11 is rendered obvious, each dependent claim is likewise not obvious. (EX2001, ¶ 161.)

B. Ground 2: Petitioner Has Failed to Show that Claims 1-3, 5-8, 10-13, and 15 Are Obvious over Shao-028 and Shao-423 under 35 U.S.C. § 103

With regard to claims 1-3, 5-8, 10-13, and 15, Petitioner has failed to show a reasonable likelihood that Shao-028 in view of Shao-423 render obvious each and every element of the challenged claims. (EX2001, ¶ 162.)

a) Independent Claims 1, 6, 11

As an initial matter, Petitioner relies on Shao-423 only for elements [1.9], [6.7], and [11.10]. (Pet. at 56-70.) Petitioner continues to rely on Shao-028 for elements [1.4], [1.5], [1.6], [6.2], [6.3], [6.4], [11.4], [11.5], [11.6], and [11.7]. Therefore, for all the reasons set forth above for those elements in Section VII.A, Ground 2 does not render obvious independent claims 1, 6, and 11. (EX2001, ¶ 163.)

Moreover, as set forth below, Shao-423 does not teach the following elements of the challenged claims:

- i. **[1.9] a layer identifier, and wherein the layer identifier for each data packet is based upon a layer to which the packet belongs.**
[6.7] a layer identifier, and wherein the layer identifier for each data packet is based upon a layer to which the packet belongs.

[11.10] a layer identifier, and wherein the layer identifier for each data packet is based upon a layer to which the packet belongs.

As Petitioner states, Shao-028 and Shao-423 are “analogous art,” and “relate to the same technical field and address the same problem.” (Pet. at 60-61.)

Petitioner understates the similarities between the two: Shao-423 is a continuation-in-part of Shao-028. (EX1006, Cover.) Shao-423 therefore teaches largely the same solution taught by Shao-028, namely, utilizing transmission priority levels to selectively discard packets within a differential services based architecture.

(EX2001, ¶ 165.) For the same reasons explained above and as set forth further below, Shao-423 does not teach [1.9], [6.7], and [11.10]. (*Id.*)

Petitioner purports to cite a “Flow label field 502” used as an “application-flow-layer identifier” in Shao-423 as meeting this element. (Pet. at 57, citing EX1006, [102], Figs. 5, 6.) Specifically, Petitioner argues that a “3-bit layer identifier” field in flow label 502 corresponds to the “layer identifier.” (Pet. at 58, 69-70, citing EX1006, [101]-[106]; Figs. 5, 6.) Petitioner mischaracterizes the teachings of Shao-423. (EX2001, ¶ 166.)

First, the “layer” described in [101]-[106] and Fig. 6 of Shao-423 is not a video layer (such as a base layer or enhancement layer) as claimed by the '372 patent. (EX2001, ¶ 167.) Instead, the term “layer” as used in Shao-423 refers to “application flow layers”: a “TCP/UDP layer,” an “IP layer,” a “queuing layer,” an

“application-aware QoS control layer,” a “packet classifier/mapping layer,” a “QoS packet scheduler layer,” and/or a “scheduling and/or multiplexing layer.”

(EX1006, [0058].) (EX2001, ¶ 167.)

Specifically, the cited “application-flow-layer identifier” is used by application-aware resource controllers (ARCs) and multimedia processing agents (MPAs). (EX1006, [0102], [0050].) (EX2001, ¶ 168.) An ARC “handl[es] application-based signaling according to an application-aware resource control policy,” and not video layers. (EX1006, [0062], [0054], [0063].) (EX2001, ¶ 168.) An ARC may also “use[] an adaptive transmission scheme . . . to adapt the flow rate to a network state and/or user requirements,” but again, there is no evidence that this functionality has anything to do with video layers. (EX1006, [0071].) (EX2001, ¶ 168.)

An MPA may be used at potential bottleneck regions in a network to implement packet-level fast transcoding and related signaling, (EX1006, [0014]), for example, to “adapt the stream rate to network state and user requirements.” (EX1006, [0074].) (EX2001, ¶ 169.) An MPA may receive video object streams, filter received streams by selectively discarding packets with lower priorities, send filtered video object streams to clients or a next MPA, receive requests from clients or a next MPA and act upon them, coordinate bandwidth allocation among multiple video object streams, perform application-aware admission control, and

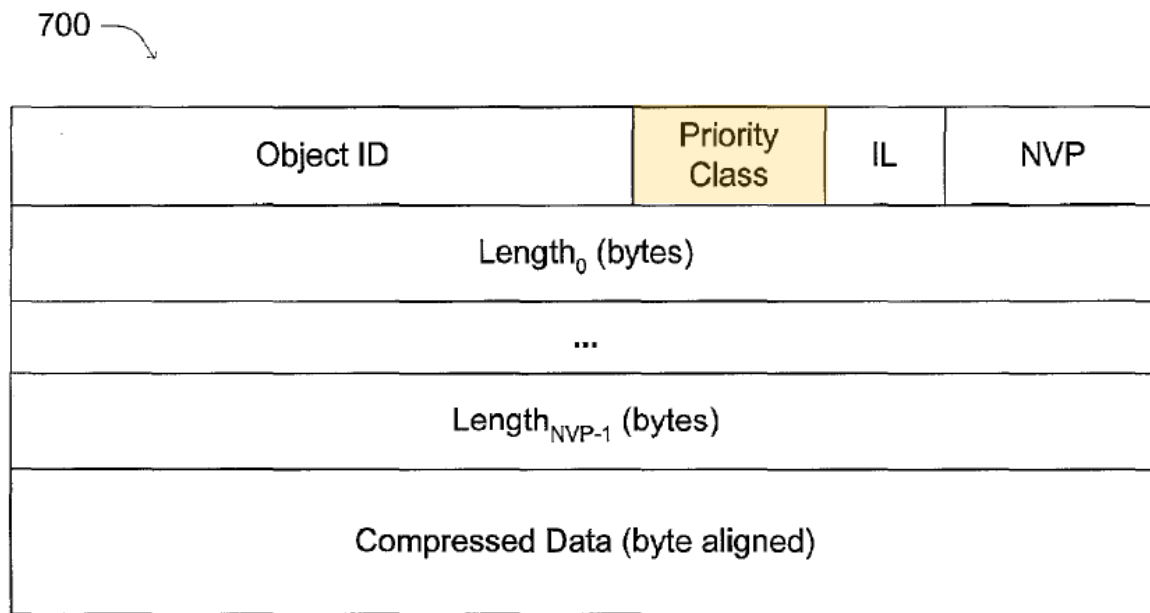
perform dynamic bandwidth re-allocation according to the semantic information of a video object. (EX1006, [0075]-[0083].) (EX2001, ¶ 169.)

But nothing in these disclosures of Shao-423 relates to using the “3-bit layer identifier” field within “flow label 502” to identify layers of video streams, such as base layers or enhancement layers, as the challenged claims require. (EX2001, ¶ 170.) Instead, Shao-423 confirms that the “3-bit layer identifier” or “application-flow-identifier” is used, at best, to perform network-related functionality, such as coordinating bandwidth allocation or reallocation. (*Id.*)

The above descriptions of an MPA are consistent with the use of a differential services based architecture in Shao-028. (EX2001, ¶ 171.) Indeed, Shao-423 teaches the same methodology of organizing video data packets into classes by priority level and selectively discard packets with lower priorities, as that in Shao-028. (EX1006, [0105].) (EX2001, ¶ 171.)

Furthermore, Shao-423 *distinguishes* its approach from other kinds of “scalable coding schemes,” including *layered coding using base and enhancement layers*. (EX1006, [0106].) (EX2001, ¶ 172.) For example, just like Shao-028, Shao-423 teaches “a new bitstream classification, prioritization, and packetization scheme . . . in which different types of data such as shape, motion, and texture are re-assembled, assigned to different priority classes, and packetized into different classes of network packets provided by differentiated services.”

(EX1006, [0107]-[0109].) (EX2001, ¶ 172.) This fact is further confirmed by the “application level packet format 700 . . . for object-based video,” in Fig. 7 of Shao-423, reproduced below and annotated, which shows the use of “priority class[es]” to prioritize packets, but not a “layer identifier” to prioritize or identify layers:



where:

IL = 1, interleaved, or 0 otherwise

NVP = Number of video packets in the ALP

Length = Length of each compressed data (full or part information of a video packet)

Fig. 7

(EX1006, Fig. 7 (annotated).) (EX2001, ¶ 173.)

Specifically, Shao-423 states: “when network resources cannot satisfy the rate requirement of the video object flow, those *packets* with lower priorities will be discarded by the sender and/or intermediate nodes earlier than those with higher

priorities.” (EX1006, [0111].) This means that packets with the same priority are handled in the same manner. (EX1006, [0112].) (EX2001, ¶ 174.)

Therefore, nothing in Shao-423 teaches or describes using a “layer identifier” to identify layers of video streams, such as base layers or enhancement layers, as the challenged claims require. Instead, Shao-423 teaches away from the SVC methodology of selectively forwarding base and enhancement layers.

(EX1006, [0106].) (EX2001, ¶ 175.) *See, e.g., AstraZeneca AB*, 19 F.4th at 1337.

Because Petitioner's arguments as to elements [1.9], [6.7], and [11.10] are therefore unsupported by the evidence, Ground 2 fails.

b) Dependent Claims 2-3, 5, 7-8, 10, 12-13 and 15

Ground 2 does not render obvious dependent claims 2, 3, and 5 of the '372 patent because at minimum, they each depend from independent claim 1, which is not rendered obvious, for all the reasons set forth above in subsection Section VII.B.a. Because Petitioner has not shown a reasonable likelihood that independent claim 1 is rendered obvious, each dependent claim is likewise not obvious. (EX2001, ¶ 177.)

Ground 2 does not render obvious dependent claims 7, 8, and 10 of the '372 patent because at minimum, they each depend from independent claim 6, which is not rendered obvious, for all the reasons set forth above in subsection Section VII.B.a. Because Petitioner has not shown a reasonable likelihood that

independent claim 6 is rendered obvious, each dependent claim is likewise not obvious. (EX2001, ¶ 178.)

Ground 2 does not render obvious dependent claims 12, 13, and 15 of the '372 patent because at minimum, they each depend from independent claim 11, which is not rendered obvious, for all the reasons set forth above in subsection Section VII.B.a. Because Petitioner has not shown a reasonable likelihood that independent claim 11 is rendered obvious, each dependent claim is likewise not obvious. (EX2001, ¶ 179.)

VIII. THE BOARD SHOULD EXERCISE ITS DISCRETION TO DENY INSTITUTION

The core motivation behind the *inter partes* review system is facilitating a more efficient patent system. *Thryv, Inc. v. Click-To-Call Techs., LP*, 140 S. Ct. 1367, 1374 (2020) (internal citations omitted). To that end, 35 U.S.C. § 314(a) gives the Board discretion to deny institution of an IPR “where [a] district court has set a trial date to occur earlier than the Board’s deadline to issue a final written decision in an instituted proceeding.” *See NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 3 (PTAB Sept. 12, 2018) (precedential, designated May 7, 2019)). Such an institution “would be an inefficient use of Board resources in light of the ‘advanced state’ of the parallel district court litigation” *Id.* at 2.

The Board established six factors to be considered when determining whether discretionary denial is appropriate in view of related parallel proceedings:

1. Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. The proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
3. The level of investment in the parallel proceeding by the court and the parties;
4. The overlap between issues raised in the petition and in the parallel proceeding;
5. Whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. Any other circumstances that impact the Board's exercise of discretion, including the merits.

Apple Inc., v. Fintiv, Inc., IPR2020-00019, Paper 11 at 6 (PTAB Mar. 20, 2020) (precedential, designated May 5, 2020) (the "*Fintiv* factors").

A. Trial in the Co-Pending Litigation Is Scheduled for Earlier than the Board's Deadline to Issue a Final Written Decision

The '372 patent is asserted in active litigation in an action in the Eastern District of Texas, *Scale Video Coding LLC v. Cisco Systems Inc.*, C.A. No. 4:23-cv-00803-SDJ (E. D. Tex.) ("Texas Case"). Petitioner and Patent Owner, the only Parties in the Texas Case, are actively engaged in fact discovery, including completed and scheduled depositions, subpoenas to third parties, Interrogatories issued by both parties, and various discovery disputes which have been raised in

that matter. The Texas Case has also proceeded past the *Markman* Hearing and is currently awaiting a final Claim Construction Order from the court. Trial in the Texas Case is currently scheduled to begin August 25, 2025. (*See* EX2003.)

Patent Owner's deadline to file its preliminary response in this *inter partes* review is December 30, 2024, and the Board must determine whether to institute an IPR within three months of receiving this Preliminary Response, by March 30, 2025. 35 U.S.C. § 314(b)(1). And pursuant to 35 U.S.C. § 316(a)(11) and 37 C.F.R. 42.100(c), the Board must issue its final written decision within one year of the date of institution. Thus, the expected date of the Final Written Decision in this proceeding is March 30, 2026.

Because trial in the Texas Case is scheduled for approximately *seven months* prior to the deadline for a final written decision on the Petition, the *Fintiv* Factors apply here. As discussed below, each of the *Fintiv* Factors weighs against institution of the Petition. The Board should therefore exercise its discretion under 35 U.S.C. § 314(a) and deny the Petition.

B. Each of the *Fintiv* Factors Weighs in Favor of Denying Institution of the Petition

a) *Fintiv* Factor 1: Whether the Court Granted a Stay or Evidence Exists That One May Be Granted if a Proceeding Is Instituted

Contrary to Petitioner's argument, the first *Fintiv* Factor weighs in favor of denying institution because *no stay motion is pending in the Texas Case and no*

evidence exists that one may be entered. Petitioner does not dispute that no motion to stay the Texas Case has been filed and that no evidence exists indicating whether either Party may contemplate such a motion at a later stage of the action. (Pet. at 71.) In fact, a stay of the Texas Case is unlikely in any event.

In the Eastern District of Texas, until a stay motion is actually filed, courts in the EDTX “have uniformly denied motions for a stay” “when the PTAB has not yet acted on a petition for inter partes review.” *Trover Group, Inc. v. Dedicated Micros USA*, No. 2:13-cv-1047-WCB, 2015 U.S. Dist. LEXIS 29572, at *17 (E.D. Tex. Mar. 11, 2015) (Bryson, J.). Thus, even if either party in the Texas Case were to file a motion to stay, such a motion is unlikely to be granted before the Board issues an institution decision in this matter. The deadline for such an institution decision is March 30, 2025, *only five months* before the scheduled trial date in the Texas Case.

The proper analysis under Factor 1 of *Fintiv* does not require absolute certainty as to what the Court will do. Rather, the analysis requires examining whether evidence exists that a stay is likely to be granted if a proceeding is instituted. *Fintiv*, IPR2020-00019, Paper 11 at 6 (“evidence exists that one *may* be granted”) (emphasis added).

Here, there simply is no evidence before the Board that Petitioner has even committed to moving for a stay if an IPR trial is instituted. Nor is there even one

speculative factor suggesting that a stay would likely be granted if Petitioner were to file such a motion. On the other hand, the general practice of courts in the EDTX underscore the unlikelihood that a mere hypothetical motion to stay pending IPR would be granted. (EX2004, 4 (“The ‘universal practice’ in this District, as well as the practice of most district courts, is to deny a motion for stay when the Board has not yet acted on a petition for IPR.”).)

Accordingly, this factor is *not* neutral as Petitioner argues (Pet. at 71), but rather weighs in favor of denial.

b) *Fintiv* Factor 2: Proximity of the Court's Trial Date to the Board's Projected Statutory Deadline for a Final Written Decision

As noted above, the deadline for a final written decision on the Petition is May 30, 2026 and trial has been scheduled in the Texas Case for August 25, 2025. Like in *Apple Inc. v. Fintiv, Inc.*, the nine-month period here between the scheduled district court trial date and the projected deadline for the Board's final written decision on the Petition weighs against institution. IPR2020-00019, Paper 15 at 12-13 (May 13, 2020) (Informative, designated July 13, 2020) (“Because the currently scheduled District Court trial is scheduled to begin two months before our deadline to reach a final decision, this factor weighs somewhat in favor of discretionary denial in this case.”) The second *Fintiv* Factor therefore strongly favors denying institution of the Petition.

c) *Fintiv* Factor 3: Investment in the Parallel Proceedings by the Court and the Parties

As discussed above, the district court in the Texas Case has already completed the claim construction process, with the parties having already submitted all briefing for the court's consideration and the *Markman* hearing. (EX2005.) Only a claim construction order remains pending. Moreover, a substantial amount of time and resources have thus been and will continue to be invested in the Texas Case. The PTAB has previously recognized that such an investment may favor denial of institution. *See Apple Inc., v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 6 (“[D]istrict court claim construction orders may indicate that the court and parties have invested sufficient time in the parallel proceeding to favor denial.”)

Moreover, fact discovery is ongoing in the Texas Case and expert discovery is scheduled to begin soon after the Claim Construction Order issues. For example, initial infringement and invalidity contentions have been served and the parties have served and responded to multiple interrogatories and made multiple document productions. The Parties have also taken a number of depositions, with several more likely during the coming weeks, prior to when the institution decision is expected in this matter.

Based on the amount of time and effort expended by the parties and the court in the co-pending district court litigation, the third *Fintiv* Factor favors denial of institution of the Petition here.

d) *Fintiv* Factor 4: Overlap Between Issues Raised in the Petition and in the Parallel Proceeding

Petitioner's only argument for *Fintiv* Factor 4 relies on guidance provided by former USPTO Director, Kathi Vidal. To begin with, Ms. Vidal has exited as Director of the USPTO. (See https://www.linkedin.com/posts/vidal-at-uspto_last-day-at-uspto-us-department-of-commerce-activity-7273302461149290496-AT8Q (updated December 20, 2024).) Any procedure issued from former Director Vidal is therefore no longer in effect. Further, as Petitioner admits, the Director's Interim Procedure for Discretionary Denials is merely "guidance" provided by a former USPTO Director. (See Pet. at 72-73.) Such guidance—which, as stated, is no longer in effect—cannot overcome the Precedential Decision issued in *Fintiv*. Petitioner's citation to former Director Vidal's guidance is therefore inapplicable to this matter.

As stated above, the '372 patent is asserted in the co-pending Texas Case. The court in the Texas Case will therefore have a full and fair opportunity to evaluate the validity of the '372 patent approximately *seven months* before the Board's deadline to issue a similar decision. Petitioner's insistence that its challenge of dependent claims 3, 5, 8, 10, 13, and 15 favors institution is also

unpersuasive. Petitioner does not raise any new substantive arguments regarding these claims, and instead bootstraps on its arguments for the independent claims. (Pet. at 53 (“For the same reasons addressed above with respect to claim limitation [1.6], [6.4], and [11.7] . . .”); 55 (“For the same reasons addressed above with respect to claim limitation [1.6], [6.4], and [11.7] . . .”).)

Fintiv Factor 4 therefore favors denial of institution.

e) *Fintiv* Factor 5: Whether the Petitioner and the Defendant in the Parallel Proceeding Are the Same Party

Petitioner's argument with respect to *Fintiv* Factor 5 is based on an entirely false statement. Contrary to Petitioner's statement, the cited portion of *Fintiv* in the Petition explicitly states that when “a petitioner is *unrelated* to a defendant in an earlier court proceeding,” such a fact weighs against discretionary denial.

Fintiv, IPR2020-00019, Paper 11 at 13–14 (PTAB Mar. 20, 2020). The cited portion of *Fintiv* therefore does not state that “this factor should play a role only where a Petitioner is unrelated to a defendant in a district court proceeding,” as Petitioner falsely represents. (Pet. at 73.)

In fact, this Factor weighs in favor of denying institution where “Petitioner [] and Patent Owner are the defendant and plaintiff, respectively, in the Parallel Litigation” *Western Digital Corp. v. Martin Kuster*, IPR2020-01410, Paper 13 at 15 (P.T.A.B. Feb. 17, 2021); *see also Code200, UAB v. Luminati Networks*

Ltd., IPR2020-01358, Paper 11 at 10 (P.T.A.B. Feb. 2, 2021) (finding this factor to favor denial “[g]iven the commonality of most of the parties in [the IPR] and [the] district court case”).

Because, as in *Western Digital*, Petitioner and Patent Owner are the defendant and plaintiff, respectively, in the Texas Case, this Factor favors denying institution.

f) *Fintiv* Factor 6: Other Circumstances That Impact the Board's Exercise of Discretion, Including the Merits

Fintiv Factor 6 also favors discretionary denial. Other than stating in a conclusory fashion that its grounds are “compelling” (Pet. at 73), Petitioner offers nothing else for this factor—ignoring highly relevant facts weighing heavily against institution. As discussed earlier in this Preliminary Response, Petitioner's grounds are not strong and even if the Grounds have some credibility, they must be strong enough to outweigh all of the other factors that weigh, as established above, in favor of discretionary denial.

When considered along with the surety that the Texas Case is unlikely to be stayed and the overlap with the issues alleged in the Petition, it simply does not make sense for the Board to institute based on the instant Petition.

IX. CONCLUSION

For the foregoing reasons, the Petition to institute *inter partes* review of any claim of the '372 patent should be denied.

Dated: December 30, 2024

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that there are 13,920 words in this paper, excluding any table of contents, table of authorities, mandatory notices under 37 C.F.R. § 42.8, certificate of word count, certificate of service, or appendix of exhibits. This certification relies on the word count of the word-processing system used to prepare this paper.

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing document and accompanying exhibits were served electronically by electronic mail on December 30, 2024 on the following counsel of record:

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