

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CIENA CORPORATION,
Petitioner,

v.

K.MIZRA LLC,
Patent Owner.

Case IPR2025-01364
Patent 10,735,320

**PATENT OWNER'S RESPONSE
TO PETITION FOR INTER PARTES REVIEW**

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STATUTES

35 U.S.C. § 101	v
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EXHIBIT LIST

Exhibit No.	Exhibit Description
2001	10/6/2025 Nokia email
2002	3/26/25 Stewart Memorandum
2003	2/28/25 USPTO Bulletin
2004	3/24/25 APJ Boalick Memorandum
2005	EDTX Complaint
2006	First Amended DCO in Nokia case
2007	NDGA Statistics
2008	10/21/2005 Hearing Transcript
2009	Nokia invalidity contentions excerpted
2010	First Amended Complaint NDGA
2011	FAQs for Interim Processes No. 22
2012	Hausman Declaration
2013	Declaration of Dr. Robert Akl, D.Sc.
2014	Ciena Corp.'s Motion to Dismiss For Lack of Subject Matter Eligibility Under 35 U.S.C. § 101, <i>K.Mizra LLC v. Ciena Corp.</i> , Case No. 1:24-cv-05442-SDG, Dkt. No. 42, N.D. Ga. (Apr. 14, 2035)

I. INTRODUCTION

Petitioner has, for multiple independent reasons, failed to show by a preponderance of evidence that the challenged claims of U.S. Patent No. 10,735,320 (EX1001 or the “'320 Patent”) are unpatentable.

First, the combination of Murphy (EX1005) and Taguchi (EX1006) would not render the challenged claims obvious. The state of the art at the time of the inventions, for example, did not disclose or suggest handling QoS guarantees on a granular per-application basis and mapping application flows to multiple pseudowires in a distributed manner accordingly. Given the materiality of the claimed distributed mapping methodology, Petitioner had to show that the missing element was present in the prior art but could not. *See Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1364-66 (Fed. Cir. 2016).

Second, Petitioner failed to show any specific rationale for modifying Murphy to include the claimed distributed mapping methodology. Murphy's architecture is focused on aggregating packet flows into a single LSP to reduce overhead. This differs from Taguchi's centralized policy server architecture for scheduling multiple LSPs. Given these critical differences, unsurprisingly, Petitioner has not demonstrated what improvement to Murphy's architecture, if any, a distributed mapping methodology could have added over its existing methods.

Third, Petitioner's rationale for using a claimed distributed mapping methodology—to handle QoS at the per-application level—came from the inventors of the '320 Patent. *Compare* EX1001 at 1:33-2:26 (QoS benefits), *with* Pet. at 37 (reasoning that the combination would allow “higher utilization of Murphy's LSPs while maintaining *QoS at the application level*”). That is hindsight because “the inventor's own path itself never leads to a conclusion of obviousness; that is hindsight.” *Otsuka Pharmaceutical Co., Ltd. v. Sandoz, Inc.*, 678 F. 3d 1280, 1296 (Fed. Cir. 2012).

Finally, Petitioner fails to demonstrate other requirements of the claims are taught by Murphy, including “identifying information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow” *and* “stored data that maps application flows with pseudowires [...] wherein the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the plurality of pseudowires.”

Neither Murphy nor Taguchi discloses identifying the applications or type of applications from which the data was sent. This a fundamental deficiency of the asserted prior art as a key feature of the '320 Patent invention is to handle QoS at the per-application level and to map application flows to pseudowires in an application-specific manner based on the identified application learned from higher

layer application level header information. Both Murphy and Taguchi have zero application awareness and instead classify data streams based on lower layer header information such as source and destination addresses.

For any one of these reasons, the Petition should be denied.

II. THE CHALLENGED PATENT—U.S. PATENT NO. 10,735,320

A. The Unique Insights of the '320 Patent Inventions

The '320 patent is directed to systems and techniques for managing application flow traffic (*i.e.*, data packets sent and received by an application such as VoIP) in MPLS networks by identifying an application flow at an edge node using unencapsulated packet headers or an ingress data stream, then using stored mapping data to determine multiple parallel pseudowire paths through the MPLS core over which to simultaneously communicate the sending application's data. *See, e.g.*, EX1001 at 3:17-41.

The invention of the '320 Patent involves mapping an application flow across multiple pseudowires with awareness of application-specific protocols and application-specific QoS requirements. The invention addresses shortcomings of prior art MPLS networks that map only Layer-1 or Layer-2 connections to pseudowires but failed to guarantee *per-application* QoS requirements. *Id.* at 1:22-57. This mapping in the claimed invention implements a distributed mapping (one-to-N) of the application data across multiple pseudowires based on a specific

application's needs (*e.g.*, splitting a large flow and prioritizing more important Real Time Protocol or RTP frames), with standard MPLS devices in the core requiring no modification to existing equipment. *Id.* at 4:29-50, 5:57-6:12, 8:35-38. The distributed mapping methodology sends the application data across the multiple pseudowires simultaneously to conserve bandwidth. *Id.* at 5:57-6:4 (“Sometimes, an application flow is distributed into multiple streams and transferred over the network via multiple Pseudowires (one-to-N) [...] to better utilize the available bandwidth.”). Because the distributed mapping splits up the application flow into multiple concurrent streams that might reach the receiving edge node at different times, in the egress direction, packets transferred on the multiple Pseudowires are “reassembled and/or re-sequenced” into the corresponding application flows. *Id.* at 8:29-32; *see also id.* at 4:41-44.

None of Petitioner's references teaches the use of a distributed mapping technique, in which an application flow is split and sent simultaneously across multiple parallel pseudowires. Murphy is focused on the opposite—*i.e.*, aggregating packet flows into a single LSP. *See, e.g.*, EX1005 at 1:52-54. And Taguchi is focused on selecting a single LSP that accommodates the incoming data stream through resource management. *See, e.g.*, EX1006 at ¶ [0021].

B. Claims of the '320 Patent

In Ground 1, Petitioner challenges Claims 1-5, 7-12, and 14-20 of the '320 Patent, which includes three independent claims—Claims 1, 8, and 15. Exemplary independent Claim 1, a method claim, is representative and recited below:

1[pre] A method, comprising:

- [1.1]** at a node associated with a multiprotocol label switching system (MPLS) network, performing:
- [1.2]** identifying information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow;
- [1.3]** in response to identifying the information, and based on stored data that maps application flows with pseudowires, determining a plurality of pseudowires corresponding to paths through the MPLS network, wherein the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the plurality of pseudowires; and
- [1.4]** communicating data related to the sending device application via at least one of the plurality of pseudowires.

EX1001 at 8:46-64.

Claims 2-5 and 7 depend on Claim 1. Independent Claim 8 essentially restates the method of Claim 1 as a device claim, and independent Claim 15 restates the method of Claim 1 as a computer-readable non-transitory medium claim. Claims 9-12 and 14 depend on independent Claim 8 and Claims 16-20 depend on independent Claim 15. Independent Claims 8 and 15 contain the same “a distributed mapping of

the application flow via at least one of the plurality of pseudowires” limitation. *Id.* at 9:42, 10:28-30. Petitioner references the same arguments for these claim elements in the Petition. Pet. at 73, 76.

III. PERSON OF ORDINARY SKILL IN THE ART

Patent Owner submits that a person of ordinary skill in the art (POSITA) at the time of the invention would have been someone with a bachelor's degree in electrical engineering, computer engineering, computer science, or a similar field, and two years or experience designing or developing network communication systems, or equivalent. Declaration of Dr. Robert Akl (“EX2013”) at ¶¶ 28-29. Additional education may be substituted for some of the experience, and vice versa. *Id.* The Petition proposes a slightly different definition for a POSITA. Pet. at 14. In any event, the Petition fails to show that any Challenged Claim of the '320 Patent is unpatentable under either of Petitioner's or Patent Owner's definition.

IV. CLAIM CONSTRUCTION

Petitioner submits that each claim term in the Challenged Claims should be given their plain and ordinary meaning and that no specific construction is required because the asserted prior art allegedly meets each of the claim terms under any reasonable interpretation. Pet. at 14. Petitioner, however, fails to engage with the plain and ordinary meaning of the terms “distributed mapping of the application flow” and “information associated with an application flow based on one or more

unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow.” Patent Owner, thus, proposes the following clarifications:

Claim Term	Patent Owner's Proposed Construction
“distributed mapping” (claims 1, 8, 15)	Plain and ordinary meaning, wherein the distributed mapping does not include sending the application flow on a single pseudowire at a time selected from a plurality of pseudowires, i.e., serial one-to-one mapping)
“identify[ing] information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow” (claims 1, 8, 15)	Plain and ordinary meaning, wherein information associated with an application flow refers to application-specific information such as the sending device application or the type of sending device application based on information including at least data in Layer 4 and above headers of the packet

A. “distributed mapping”

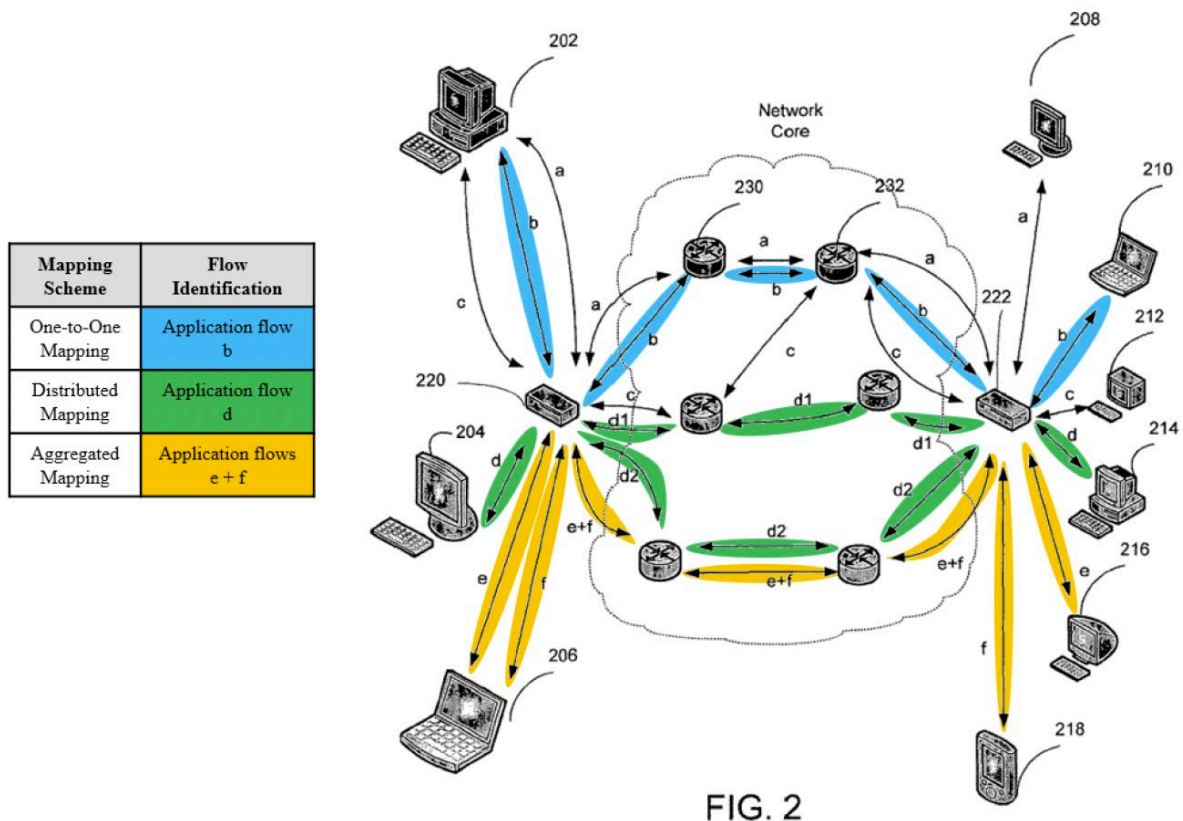
Patent Owner submits that this claim term should be afforded its plain and ordinary meaning, which does not include sending the application flow on a single pseudowire at a time selected from a plurality of pseudowires. The '320 Patent specification sets forth what a distributed mapping is and how it differs from other

types of mappings, including a 1-to-1 mapping. The patent describes the difference between a distributed mapping and 1-to-1 mapping of an application flow as follows:

As will be shown in more detail below, the edge nodes map the application flows into Pseudowires in the ingress direction. A number of mapping schemes are possible, such *as a one-to-one mapping, a distributed mapping where an application flow is mapped to multiple Pseudowires*, or an aggregated mapping where multiple flows are mapped to a single Pseudowire.

EX1001 at 4:31-35 (emphasis added).

According to the specification, “distributed mapping” refers to when “[a] single application flow “split into several pseudowires,” i.e., distributed and transmitted simultaneously across multiple pseudowires—hence, the name distributed mapping or ‘one-to-N’ mapping.” This is done to better utilize bandwidth. *Id.* at 4:31-44, 5:57-6:4 (“Sometimes, an application flow is distributed into multiple streams and transferred over the network via multiple Pseudowires (one-to-N) [...] to better utilize the available bandwidth.”). As an example, Figure 2 of the ’320 Patent below shows application flow d is subdivided into two parallel simultaneous streams distributed across Pseudowires d1 and d2. *Id.* at 4:37-39.



Id. at Fig. 2 (colored highlighting and mapping scheme table added). In contrast, the specification explains that “application flows a and b are one-to-one mapped to a separate pseudowire each.” *Id.* at 4:36-37. Importantly, distributed mapping is different from serial one-to-one mapping (i.e., wherein part of the data stream is sent along one pseudowire in one instance and then the data stream is switched to another pseudowire in a later instance). The concept of splitting a data stream for distributed mapping is clear from the specification, which describes the need at the egress to “reassemble[] and/or re-sequence[]” the data packets transferred on the multiple Pseudowires “into the corresponding application flows.” *Id.* at 8:29-32; *see also id.*

at 4:41-44. Reassembling/re-ordering of data packets is necessary because of the concurrent data streams that were split and distributed across multiple pseudowires at the ingress. EX2013 at ¶ 58-59.

Petitioner improperly expands the definition of distributed mapping to include serial one-to-one mappings, i.e., where multiple pseudowires using a one-to-one mapping are employed in series. Pet. at 56-58 (pointing to primary and backup LSPs, where the backup path is used only after the primary path fails). This ignores the disclosures in the '320 patent specification contrasting distributed mapping (which involves an application flow split and distributed across multiple parallel pseudowires for simultaneous transmission) from one-to-one mappings (which involves a single undivided application flow mapped onto a single pseudowire at a time).

For example, in Figure 2 above, despite there being multiple parallel pseudowire paths available in the system, a single application flow is transmitted on a single path selected among multiple available paths, i.e., a “one-to-one mapping.” EX2013 at ¶¶ 57-58. Under this mapping scheme, a single undivided application flow is transmitted on a single pseudowire path at a time. *Id.* The application flow in a 1-to-1 mapping is not split into multiple streams at the ingress and reassembled at the egress as would be required for a 1-to-n distributed mapping. *Id.* Therefore a POSITA would understand that the plain and ordinary meaning of “a distributed

mapping of the application flow” does not include transmitting the application flow on a single pseudowire at a time selected from a plurality of pseudowires. *Id.*

Patent Owner's proposed clarification above reflects how a POSITA would understand the meaning of the claim term in light of the '320 Patent specification and plain language of the claim itself.

B. “identifying information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow”

Patent Owner submits that this claim term should be given its plain and ordinary meaning, wherein information associated with an application flow refers to application-specific information such as the sending device application or the type of sending device application based on information including at least data in Layer 4 and above headers of the packet.

1. “information associated with an application flow”

The '320 Patent specification describes information associated with an application flow such as the application itself and the types of application:

an application flow refers to a set of packets exchanged between two or more devices for accomplishing a specific function. Application flow data includes data associated with Layer-4 or above as defined by the OSI protocol stack. In some embodiments, *an application flow includes data packets transmitted and received by an application, such as a*

Voice over IP (VoIP) session, instant messaging, Video-on-Demand (VoD), etc.

EX1001 at 3:24-31 (emphasis added). The specification further states: “[s]everal fields from each of the headers are extracted to provide information useful for identifying the application flow [...] Other types of applications such as Voice over IP or instant messaging can be identified using a similar technique, although different headers and fields may be used.” *Id.* at 21-31.

The objective of the '320 Patent is to achieve QoS guarantees at a per-application level, which was not possible with the prior art QoS mechanisms that handled QoS at the lower layer level (e.g., Layer-1 or Layer-2) without any awareness of the application that sent the data (e.g., voice, video, etc.). *Id.* at 1:33-2:26. The application-specific QoS scheme of the '320 Patent allows a more tailored approach to mapping data flows to pseudowire paths since, for example, “video streams can generally tolerate out-of-sequence delivery, [while] packet voice traffic can sometimes tolerate packet loss, but is sensitive to packet delay.” *Id.* at 1:52-57. Thus, identifying the application flow, such as application-specific information, the identity of the sending device application, or the type of sending device application (e.g., VoIP, instant messaging, or Video-on-Demand (VoD)), is integral for the

purpose of mapping the flow accordingly on a per-application basis. EX2013 at ¶ 65.

In the parallel district court litigation in the Northern District of Georgia, Petitioner relied on an implicit construction of the claim term “information associated with an application flow” to generically refer to “information about a communication.” EX2014 at 24. Here, Petitioner is applying a similarly overly broad construction. *See, e.g.*, Pet. at 48-55 (pointing to Murphy’s path data and generic *lower layer* packet attribute information).

2. “based on one or or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow”

The '320 Patent specification teaches that the Level 4 headers are used in determining the information associated with an application flow:

an application flow refers to a set of packets exchanged between two or more devices for accomplishing a specific function. *Application flow data includes data associated with Layer-4 or above as defined by the OSI protocol stack.* In some embodiments, an application flow includes data packets transmitted and received by an application, such as a Voice over IP (VoIP) session, instant messaging, Video-on-Demand (VoD), etc.

EX1001 at 3:24-31 (emphasis added).

The specification states that the *combination of various headers* including Layer-2 MAC header fields and Layer 4 headers is used to identify specific application flows. *Id.* at 5:8-13. The specification also states that *several fields from each of the headers* including Layer 3 and Layer 4 headers are extracted to provide information useful for identifying the application flow. *Id.* at 5:14-31. Thus, a POSITA would understand that the claim limitation “*based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow*” requires identification of an application flow based on data that at least includes Layer 4 and above header information. EX2013 at ¶¶ 67-68.

As such, claim element 1.2 as understood by a POSITA in light of the specification should be given its plain and ordinary meaning, wherein information associated with an application flow refers to application-specific information such as the sending device application or the type of sending device application based on information including at least data in Layer 4 and above headers of the packet.

V. GROUND 1: CHALLENGED CLAIMS 1-5, 7-12, AND 14-20 ARE NOT OBVIOUS OVER MURPHY IN VIEW OF TAGUCHI

A. Overview of Prior Art

1. Murphy (EX1005)

Murphy is directed to techniques for carrying end-to-end QoS–signaled flows (e.g., RSVP) across an intermediate network that does not itself support the resource

reservation protocol, by aggregating those flows into MPLS Label Switched Paths (LSPs) and forwarding both control and data as MPLS traffic. EX1005 at 1:57-3:8. In particular, RSVP-enabled edge networks are coupled through an intermediate network; the edge routers receive RSVP requests specifying QoS (e.g., bandwidth/burst) and map them to one or more LSPs so that the intermediate network devices need not monitor per-flow resource allocation or maintain RSVP state. *Id.* at 2:58-3:8.

Murphy teaches methods in which the edge router selects or provisions LSPs based on the requested QoS and current bandwidth allocations, groups flows on the basis of common attributes such as source and destination addresses, protocol, portocol port numbers, type-of-service (ToS) byte, DiffServer Code Point (DSCP), and forwarding equivalence classes (FECs), aggregates packets accordingly, and assigns MPLS labels to encapsulate and forward them along the selected LSPs. *Id.* at 1:40-56, 4:14-59. The patent teaches encapsulating even the RSVP request itself in an MPLS packet so the request is “opaque” to intermediate routers—i.e., one or more devices along the path do not support or execute RSVP—while still enforcing QoS via the mapped LSPs. *Id.* at 1:57-3:8.

2. Taguchi (EX1006)

Taguchi is directed to a network policy control system for MPLS/IP networks that improves how communication streams (such as VoIP traffic) are routed and

resource-managed across label switched paths (“LSPs”) in an IP core network. The specification explains that prior systems required a centralized MPLS server to explicitly configure filter conditions and determine which LSP should carry each incoming stream whenever a session was established, creating scalability and processing burdens on the control infrastructure. EX1006 at ¶¶ [0002]-[0010]. Taguchi seeks to solve these problems by defining “virtual communication paths” associated with combinations of a first-stage LSR, last-stage LSR, and service class (“CoS”), and by enabling the first-stage label switching router itself to determine the appropriate virtual communication path for a received stream based on attributes such as destination address and service class stored in the packet. *Id.* at ¶¶[0011]-[0012], [0051]-[0054].

Taguchi further describes a policy server that performs resource reservation and virtual path management for session streams using user information such as terminal addresses, service class, VPN identifiers, and required line resource capacity. *Id.* at ¶¶ [0013]-[0026], [0050]-[0062]. The disclosed system can dynamically determine whether sufficient resources exist on a selected virtual communication path, increase resource capacity where needed, and support resource management on a per-VPN basis. *Id.* at ¶¶ [0015]-[0024], [0060]-[0062]. The specification also emphasizes distributed or hierarchical policy-control architectures using secondary call-control devices and secondary policy servers to reduce

signaling load and improve scalability as the number of sessions increases. *Id.* at ¶¶ [0027]-[0040].

B. Neither Murphy nor Taguchi Teaches or Suggests Distributed Mapping

1. Murphy Does Not Teach or Suggest “Distributed Mapping”

The claims specifically require “a distributed mapping of the application flow” across multiple pseudowires. EX1001, cl. 1.3. Murphy does not disclose distributed mapping and instead discloses, at most, an *aggregated* mapping of multiple data packet flows into a single labeled switch path (LSP) or mapping of a single packet flow to one LSP at a time (i.e., 1-to-1 mapping). EX2013 at ¶ 69. First, Murphy states that: “[p]acket flows having common forwarding equivalence classes and QoS requirements may be ***aggregated to flow through a single LSP*** having allocated resources, such as bandwidth, capable of supporting the QoS requirement.” EX1005 at 1:52-56; *see also id* at 4:25-29 (“***map requested packet flows*** sharing a forwarding equivalence class within network 8 ***to a single LSP***”). This is aggregated mapping. EX2013 at ¶¶ 68-69. This is also shown in FIG. 4 of Murphy, which shows, for example, aggregated mapping (Flows 1 and 2 to LSP 1) or one-to-one mapping (Flow 3 to LSP 2). EX1005, Fig. 4. Murphy further states: “[p]acket flows having common forwarding equivalence classes and QoS requirements may be *aggregated to flow through a single LSP.*” *Id.* at 1:52-54; *see also id* at 4:31-32 (“an

LSP may carry traffic associated with a number of flows”). Murphy also discloses mapping a packet flow to a primary LSP and a backup LSP. EX1005 at 8:41-46. This is serial one-to-one mapping. EX2013 at ¶¶ 70-71.

Importantly, Petitioner admits that Murphy's disclosure of aggregated mapping, one-to-one mapping, and serial one-to-one mapping does not disclose distributed mapping. Petitioner is not asserting anticipation under Section 102, but only obviousness under Section 103. *See* Pet. at 58-60. The only claim requirement that Petitioner points to as lacking in Murphy is the distributed mapping. *Id.* at 58-59. The Petition describes Figure 4 of Murphy as follows:

Murphy disclosed that the mapping data 62 associated a data packet flow to one LSP (e.g., FLOW 3 to LSP 2) and two packet flows to one LSP (e.g., FLOW 1 and FLOW 2 to LSP 1). EX-1005 7:16-26.

Pet. at 57 (citing EX1005 at 7:16-26 and FIG.4).

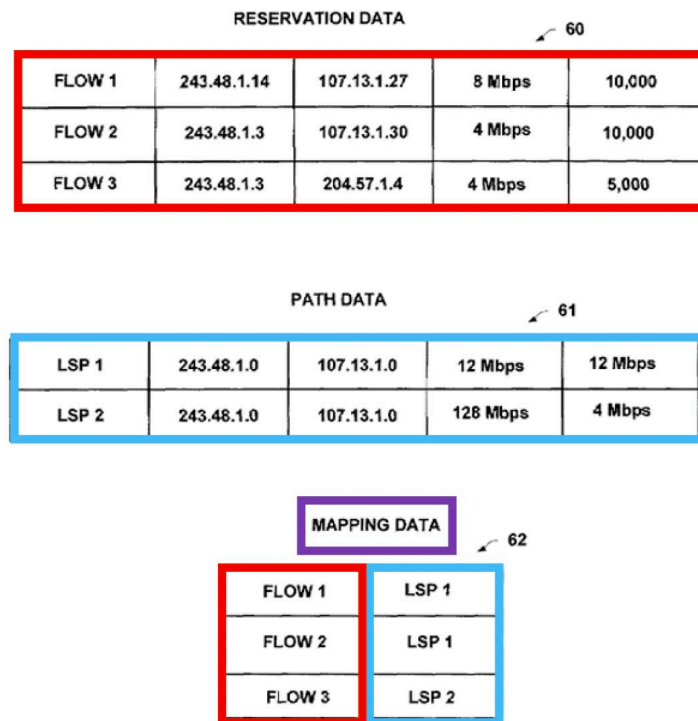


FIG. 4

EX1005 at FIG. 4 (annotations added by Petitioner). Petitioner is acknowledging the disclosure of aggregated mapping (“Flows 1 and 2 to LSP 1”) or one-to-one mapping (“Flow 3 to LSP 2”). Petitioner also points to the disclosure in Murphy of “mapping a packet flow to a primary LSP and a backup LSP.” Pet. at 57-58 (citing EX1005 at 8:41-46). *Petitioner does not allege that this serial one-to-one mapping is distributed*, instead alleging this merely discloses “a ... mapping of the application flow via at least one of the plurality of pseudowires” (Pet. at 58)—implicitly admitting that Murphy does not disclose a 1-to-n distributed mapping.

Petitioner is correct that the cited passage does not teach distributed mapping. Rather, it is a mapping of the application flow to a single primary LSP and in the

event that the primary LSP fails, the application flow is serviced by a single backup LSP. EX1005 at 8:43-46; EX2013 at ¶¶ 70-71. This is serial one-to-one mapping. EX2013 at ¶ 70-71. This is confirmed in Murphy's description of the purpose of the backup pseudowire, which states that a primary LSP and backup LSP are implemented "to provide a degree of *fault-tolerance*." EX1005 at 8:41-43 (emphasis added).

Murphy's implementation of mapping a packet flow to a primary LSP and a backup LSP is in stark contrast to a distributed mapping as taught by the '320 Patent where a single application flow is split into multiple concurrent streams of data mapped to multiple pseudowires and then subsequently reassembled/re-ordered back into a single application flow. EX2013 at ¶¶ 57-59, 70. Thus, Murphy does not disclose distributing a single application flow into multiple streams and mapped to multiple parallel pseudowire paths—Murphy's primary and backup LSP topology is for fault tolerance in a serial one-to-one mapping of one application flow to a single pseudowire at a time. *Id.* at ¶¶ 70-71.

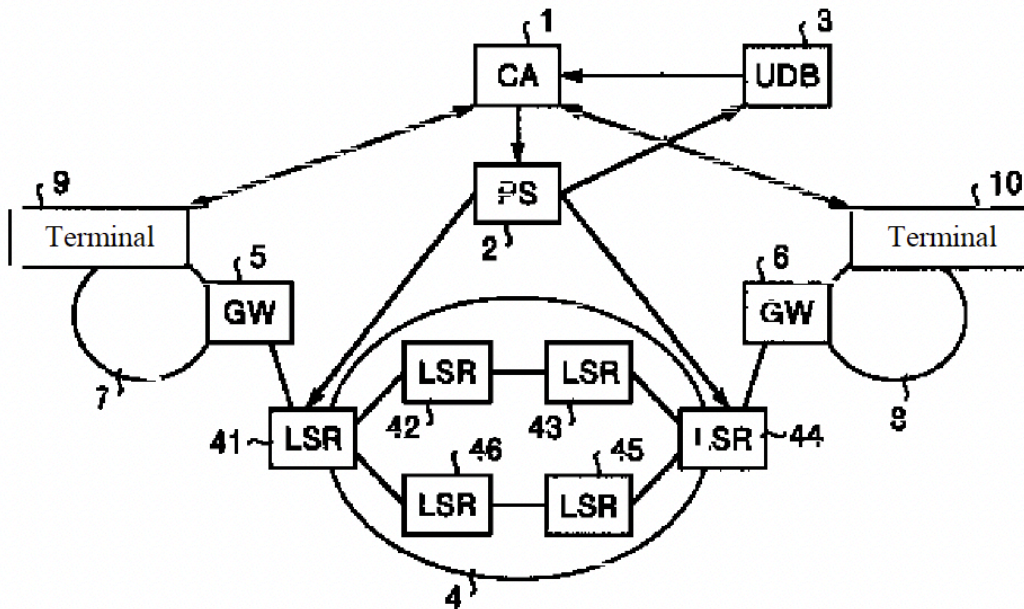
2. Taguchi Does Not Teach or Suggest "Distributed Mapping"

Taguchi does not remedy this deficiency in Murphy. As detailed below, Taguchi also shows two available LSP paths, but the data stream is sent on only one selected path at a time, rather than using the '320 Patent's 1-to-n distributed mapping

approach, in which a single stream is subdivided and distributed concurrently into multiple parallel paths

Taguchi is directed to a system which comprises a network of label switch routers (LSRs) for carrying streams of data, where the combination of two endpoint LSRs—*i.e.*, a first stage LSR and a last stage LSR—is defined as a “virtual communication path.” *See, e.g.*, EX1006 at ¶¶ [0048], [0052], FIG. 1. Such virtual communication path may encompass one or more label switch paths (LSPs) traversing different sets of intermediate LSRs as illustrated below in FIG. 1 such as the LSP traversing LSRs 41, 42, 43, and 44 *or* the LSP traversing LSRs 41, 46, 45, and 44, where endpoint LSR 41 is the first stage LSR and endpoint LSR 44 is the last stage LSR. *Id.*

FIG. 1



Taguchi's objective is to *select a single LSP* that accommodates the incoming data stream. EX2013 at ¶ 74. For example, Taguchi describes its “network policy control system [that] includes [...] label switch path setting means *for selecting an LSP accommodating the stream* from the label switch path defining means when a session is established between two terminals.” EX1006 at ¶ [0021] (emphasis added); *see also id* at ¶¶ [0022]- [0023], [0027] (“setting the LSR to *transfer the stream to the LSP when a determination is made that the selected LSP can accommodate the stream*”) (emphasis added), ¶¶ [0028], [0045]-[0046]. Here, the way Taguchi “accommodates” a single stream with a selected path is that the stream remains associated with a single selected logical path for QoS/resource-management

purposes, rather than being packet-sprayed or transmitted across multiple parallel LSPs simultaneously. *Id.*; EX2013 at ¶ 75. In other words, Taguchi does not disclose a distributed mapping of a single data stream concurrently to multiple parallel pseudowires as claimed in the '320 Patent. *Id.*

Petitioner contends that Taguchi discloses a distributed mapping relying on a single sentence in the English translation of the Japanese publication: “when its ‘virtual communication path’ had multiple LSPs [...] the stream is transferred while being scheduled for each LSP so as not to exceed the resource capacity of each LSP.” Pet. at 60 (citing EX1006 at ¶ 73). The translated paragraph reads as follows:

[0073] Furthermore, the first stage LSR 41 that receives the packets of the stream transfers the packets of the stream to the virtual communication path for which resources were reserved when the session was established. Here, if the virtual communication path is made of a single LSP, the stream is transferred to that LSP. Furthermore, *when a virtual communication path is made of a plurality of LSPs, the stream is transferred while being scheduled for each LSP so as not to exceed the resource capacity of each LSP.*

EX1006 at ¶ [0073] (emphasis added). This does not suggest distributed mapping, but rather refers to the resource scheduling mechanism in Taguchi *to ensure that resource capacity of each LSP in series in a given path is not exceeded*. This is

shown, for example, in Figure 1 as LSRs 41-44. EX2013 at ¶¶ 75-78. For example,

Taguchi states:

the policy server 2 determines whether the stream can be accommodated in the matching virtual communication path (step S34). In other words, if the remaining resource capacity of the virtual communication path is sufficient and the required resource capacity for the stream can be secured, or if the remaining resource capacity of the virtual communication path is insufficient but the *resource capacity can be added by means such as increasing the resource capacity of the LSP in the virtual communication path or setting up a new LSP*, a determination is made that the virtual communication path can be accommodated.

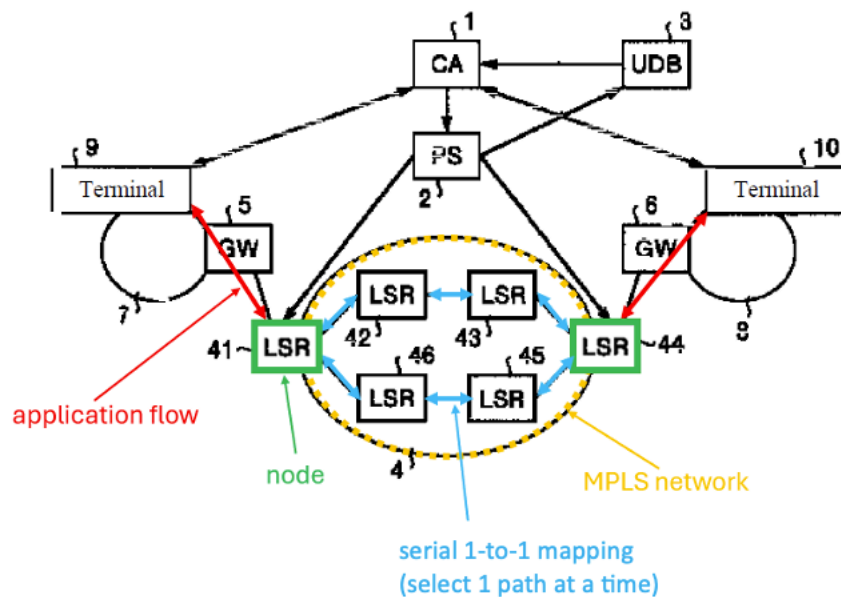
Id. at ¶ [0061] (emphasis added). Taguchi further explains that:

Furthermore, if the policy server 2 determines that the virtual communication path can accommodate the aforementioned stream (if Yes in step S34), *the remaining resource capacity of the virtual communication path, [sic] acquired by subtracting the resource capacity of the aforementioned stream from the remaining resource capacity of the virtual communication path* is [sic] associated with the virtual communication path, and is stored together with the session identifier and the resource capacity of the aforementioned stream (step S35).

Id. at ¶ [0062] (emphasis added).

In other words, the scheduling for each LSP refers to the allocation and management of resources associated with the stream *for each* of the LSPs so as not to exceed the resource capacity of each LSP. EX2013 at ¶¶ 76-78. For example as shown below, Taguchi illustrates a virtual communication with indeed two candidate routes (i.e., “41-2-43-44” and “41-46-45-44”). But as explained above, and just like Murphy, *only a single one of those two paths is selected at a time* such that the incoming data stream is routed on the selected path—i.e., serial one-to-one mapping. EX1006 at ¶¶ [0021], [0028], [0045]-[0046], [0059]-[0062].

FIG. 1



As is shown above, the data is still transmitted as one stream over a single selected LSP (such as “LSP 41-42-43-44”) at a time in a serial 1-to-1 mapping manner, which the '320 Patent has clearly distinguished from a 1-to-n distributed

mapping. EX1001 at 4:29-39, FIG. 2; EX2013 at ¶¶ 75-78. Indeed, Taguchi does not expressly or inherently disclose a distributed mapping of a single stream subdivided across multiple parallel paths. EX2013 at ¶¶ 75-78.

Petitioner misreads this sentence in Taguchi, which is devoid of any disclosure whatsoever that the single stream is split into multiple parallel sub-streams and mapped onto multiple LSPs for simultaneous data transmission across the multiple parallel paths. Pet. at 60. Nor does Petitioner point to any disclosure in Taguchi of reassembling sub-streams of data back to a single stream as would be required by such a distributed mapping. EX1001 at 8:29-34; EX2013 at ¶¶ 58-59. The only support for Petitioner's interpretation of this sentence in Taguchi is its expert Dr. Reddy's declaration. EX1003 at ¶ 132. But, Dr. Ready likewise fails to support the Petition's theory with factual underpinnings. The declaration merely parrots verbatim the Petition and fails to provide any further reasoning for why a POSITA would have understood Taguchi as the Petition claims. *Compare* EX1003 at ¶ 132 *with* Pet. at 60:

Petition at 60	Dr. Reddy Declaration at ¶ 132
For example, a first LSP above included the path through LSRs 41, 42, 43, and 44, and a second LSP included the path through LSRs 41, 46, 45, 44. EX-1006 ¶52. Further, <i>Taguchi</i> disclosed that when its “virtual communication path” had multiple LSPs, such as that shown above, “the stream is transferred while being scheduled for each LSP so as not to exceed the resource capacity of each LSP.” EX 1006 ¶73. Thus, <i>Taguchi</i> disclosed <i>a distributed mapping of the application flow via at least one of the plurality of pseudowires</i> . EX 1003 ¶132.	For example, a first LSP above included the path through LSRs 41, 42, 43, and 44, and a second LSP included the path through LSRs 41, 46, 45, 44. EX-1006 ¶52. Further, <i>Taguchi</i> disclosed that when its “virtual communication path” had multiple LSPs, such as that shown above, “the stream is transferred while being scheduled for each LSP so as not to exceed the resource capacity of each LSP.” EX 1006 ¶73. Thus, <i>Taguchi</i> disclosed <i>a distributed mapping of the application flow via at least one of the plurality of pseudowires</i> .

The Reddy declaration merely states in conclusory fashion, and without citation or analysis, that a POSITA would understand that because Taguchi discloses scheduling for each LSP so as not to exceed the resource capacity of each LSP, Taguchi discloses a distributed mapping of the application flow. EX1003 at ¶ 132. This conclusory statement parroting the Petition should be accorded little if any weight. *cxLoyalty, Inc. v. Maritz Holdings Inc.*, 986 F.3d 1367, 1378 (Fed. Cir. 2021) (“We do not accord weight to conclusory expert testimony.”); *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15-17 (PTAB Aug. 24, 2022) (precedential) (denying institution and noting that the petitioner’s expert declaration “merely repeats, verbatim, the conclusory assertion for which it is offered to support

... and is entitled to little weight”), *sua sponte Director Review*, Paper 12 at 5 (PTAB Feb. 10, 2023) (affirming denial of institution and “giving little weight to Petitioner’s expert because the expert declaration merely offered conclusory assertions without underlying factual support and repeated, *verbatim*, Petitioner’s conclusory arguments”), *POP Review denied*, Paper 13 (PTAB Feb. 10, 2023).

At bottom, there is no disclosure in Taguchi that packets from a single stream are sub-divided across multiple LSPs for simultaneous parallel transmission. Critically, this is not disclosed in the single sentence Petitioner cites in Taguchi’s paragraph [0073] (“when a virtual communication path is made of a plurality of LSPs, the stream is transferred while being scheduled for each LSP so as not to exceed the resource capacity of each LSP”). Taguchi is instead focused on resource management by selecting an LSP, reserving sufficient resources, increasing capacity if needed, and routing the stream across a selected path that can “accommodate” the stream. EX1006 at ¶¶ [0021]-[0023], [0027]-[0028], [0045]-[0046], [0059]-[0062]; EX2013 at ¶¶ 75-78. Therefore, Murphy and Taguchi, either alone or in combination, fail to disclose or render obvious distributed mapping.

3. A POSITA Would Not Have Combined Murphy and Taguchi

A POSITA would not have combined Murphy and Taguchi in the manner proposed by Petitioner because the proposed combination requires fundamentally

altering Murphy's aggregation-oriented MPLS architecture to incorporate Taguchi's materially different centralized policy-server framework. EX2013 at ¶¶ 79-80. Petitioner's observation that both references involve QoS and LSPs (Pet. at 33-36, 60-61) does not supply the "articulated reasoning with some rational underpinning" required to establish obviousness. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). Rather than explain how Murphy's RSVP/MPLS aggregation mechanisms would actually operate together with Taguchi's centralized multi-LSP scheduling system, the Petition extracts isolated concepts from each reference and reconstructs the challenged claims using hindsight. For example, Petitioner's rationale for using a claimed distributed mapping methodology—to handle QoS at the per-application level—came from the inventors of the '320 Patent. *Compare* EX1001 at 1:33-2:26, *with* Pet. at 37 (reasoning that the combination would allow "higher utilization of Murphy's LSPs while maintaining *QoS at the application level*").

The Petition argues that a POSITA would have modified Murphy to incorporate Taguchi's use of multiple LSPs because doing so would purportedly allow Murphy to "continue providing QoS for larger packet flows by distributing the packet flows along two or more LSPs without having to establish a new LSP." Pet. at 35-36. Petitioner further contends that the modification would require only "basic software modifications to the data structures of Murphy's edge routers." *Id.* at 39. The references themselves undermine both assertions.

First, Petitioner's rationale rests on an incorrect read of what Taguchi actually discloses. The Petition assumes that Taguchi teaches splitting and distributing an application flow across multiple pseudowires simultaneously. Pet. at 34-35. But, as discussed above, Taguchi does not disclose simultaneously distributing divided application traffic across multiple pseudowires. Rather, Taguchi discloses scheduling an undivided stream across selected LSPs based on resource-capacity considerations. Thus, the foundation of Petitioner's motivation to combine theory does not accurately reflect Taguchi's actual teachings.

Second, Petitioner's premise that Taguchi would improve Murphy by avoiding formation of new LSPs ignores Murphy's express disclosures regarding its flexibility in handling LSP assignment and packet-flow routing. Murphy already contemplates selecting among available LSPs, dynamically generating mappings, and establishing new LSPs where appropriate. Murphy teaches that the routing device may "select the LSP from a set of LSPs." EX1005 at 12:20-21; FIGs. 5. Murphy further discloses that the system may "initiate the formation of the LSP in response to receiving the request." *Id.* at 12:17-19. Figure 7 likewise depicts selecting an LSP and later selecting a new LSP. *Id.* at FIG. 7 ("Select LSP [and then] Select New LSP"). Murphy's access control module may also "dynamically generate[] the mapping upon receiving the requests." *Id.* at 14:1-3.

Petitioner's reliance on generalized "bandwidth sharing" and "load balancing" benefits likewise fails to supply a sufficient rationale for modifying Murphy in the specific manner proposed. Although the Petition asserts that distributing traffic across multiple LSPs could increase available bandwidth and reduce congestion, Pet. at 36-37, Murphy already discloses mechanisms for selecting among available LSPs, dynamically generating mappings, and establishing new LSPs where appropriate. EX1005 at 12:17-21; 14:1-3; FIG. 7. The Petition does not adequately explain why a POSITA would have found Murphy's existing aggregation-oriented approach inadequate to motivate replacing or substantially modifying it with Taguchi's more coordination-intensive multi-LSP scheduling architecture (as detailed below) merely to obtain generic load-balancing or bandwidth-sharing benefits.

Third, Petitioner's proposed modification is fundamentally inconsistent with Murphy's stated architectural objectives. EX2013 at ¶ 84. Murphy explains that RSVP/resource reservation protocols "can introduce significant overhead within a network" because routing devices "must continually monitor resource allocation and maintain significant state data related to the route," making such protocols difficult to support in large networks with "tens of thousands of devices concurrently reserving and making use of resources along end-to-end routes." EX1005 at 1:25-36. Murphy addresses this problem through aggregation and simplified forwarding

behavior. Murphy explains that “[r]equests having common forwarding equivalence classes may be aggregated to flow through a single LSP.” EX1005 at Abstract; *see also id.* at 4:26-27 (“map requested packet flows sharing a forwarding equivalence class [...] to a single LSP”). Murphy likewise emphasizes that routers within the MPLS network “need not monitor and support state information associated with the individual end-to-end packet flows.” *Id.* at Abstract.

Petitioner's combination directs Murphy in the opposite direction, and thus would not yield predictable results consistent with its original intent. EX2013 at ¶ 85. Rather than aggregating flows into a single LSP to reduce reservation overhead and simplify forwarding behavior, Petitioner proposes fragmenting a single flow across multiple independently managed and scheduled LSPs. Pet. at 39-40 (“mapping of a single packet flow to multiple LSPs”). That approach is fundamentally inconsistent with Murphy's aggregation-oriented design. EX2013 at ¶ 85. Petitioner never reconciles this fragmented approach with Murphy's stated objective of reducing reservation-state overhead through aggregation. To the contrary, distributing a single flow across multiple LSPs necessarily introduces additional coordination burdens, including traffic scheduling, synchronization, path management, and resource reservation complexity. *Id.* Further, the Petitioner does not explain how the proposed combination would reassemble/re-order sub-streams of data back to a single stream as would be required by a distributed mapping. *See*

EX1001 at 8:29-34. And Taguchi does not teach any such reassembly of packets. The Petition simply assumes that Murphy would benefit from Taguchi's architecture without addressing this direct architectural tension.

Fourth, a POSITA would not be motivated to combine these two references because Taguchi's architecture is not a simple "multiple LSP" enhancement to Murphy. EX2013 at ¶ 86. Petitioner's assertion that the proposed modification would involve only "basic software modifications" further underscores the hindsight nature of the combination theory. Pet. at 39. Taguchi does not merely disclose the generic use of multiple LSPs. Instead, Taguchi discloses a substantially different and considerably more complex centralized policy server architecture. EX2013 at ¶ 86. Specifically, Taguchi discloses a centralized policy server including "virtual communication path defining means" for defining a "virtual communication path" "composed of one or more LSPs." EX1006 at ¶¶ [0011], [0023]. The policy server determines and configures one or more LSPs forming the virtual communication path and performs resource reservation and resource capacity determination. *Id.* at ¶¶ [0023], [0052]. Taguchi further discloses coordinated scheduling across multiple LSPs, explaining that "the stream is transferred while being scheduled for each LSP so as not to exceed the resource capacity of each LSP." *Id.* ¶ [0073].

Although Petitioner identifies potential theoretical benefits associated with distributing traffic across multiple LSPs (Pet. at 36-37), the Petition does not

adequately explain how Murphy's aggregation-oriented RSVP/MPLS architecture would actually be modified to incorporate Taguchi's centralized reservation management and multi-LSP scheduling mechanisms through mere "basic software modifications." Nor does the Petition explain how Murphy's routing devices—which are specifically designed to reduce reservation overhead associated with individual flows—would interoperate with Taguchi's centralized policy server controlled virtual communication paths. See *In re NuVasive, Inc. v. Medtronic Sofamor Danek USA, Inc.*, 842 F.3d 1376, 1382–83 (Fed. Cir. 2016) (obviousness analysis insufficient where petitioner failed to explain why a POSITA would have combined references in the manner proposed).

The Petition also fails to address the operational consequences of the proposed modification. Murphy's architecture depends on reservation data, path data, and mapping data associated with packet flows and LSPs. EX1005 at 5:52-6:4, 13:1-7. Taguchi, in contrast, discloses coordinated scheduling across multiple LSPs based on determinations regarding remaining resource capacity. EX-1006 at ¶¶ [0023], [0073]. Petitioner provides no explanation for how Murphy's reservation data, packet-flow mappings, and QoS-based LSP selection mechanisms would interact with Taguchi's multi-LSP scheduling and resource reservation procedures. These are not peripheral implementation details—they are central operational issues arising directly from Petitioner's proposed modification. EX2013 at ¶ 87.

C. The Prior Art Neither Teaches, Nor Suggests, “identifying information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow”

The alleged prior art combination of Murphy and Taguchi does not disclose claim element 1.2 as detailed below. As an initial matter and as detailed above in Section IV.B, a POSITA would understand that claim element 1.2, “identifying information associated with an application flow based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow” in light of the intrinsic record should have its plain and ordinary meaning, wherein information associated with an application flow refers to application-specific information such as the sending device application or the type of sending device application based on information including at least data in Layer 4 and above headers of the packet. *See supra* § IV.B.

1. The Prior Art Neither Teaches, Nor Suggests, “identifying information associated with an application flow”

Murphy does not disclose “identifying information associated with an application flow” as required by the '320 Patent claims. EX1001 at 8:49-53. As an

initial matter, the Petition contends that Murphy alone discloses this claim element.¹ Pet. at 42-48. As explained below, Murphy does not disclose identification of an application flow or application-specific information that informs the identifying of the sending application or the type of application. Murphy does not have any awareness of the specific application from which the packets were sent, nor does it have any need to do so for its primary purpose of supporting QoS / RSVP requests and aggregating packet flows across networks.

The '320 Patent describes an application flow and its headers and associated information as:

an application flow refers to a set of packets exchanged between two or more devices for accomplishing a specific function. *Application flow data includes data associated with Layer-4 or above as defined by the OSI protocol stack.* In some embodiments, an application flow includes data packets transmitted and received by an application, such as a Voice over IP (VoIP) session, instant messaging, Video-on-Demand (VoD), etc.

¹ The Petition does not assert that Taguchi by itself or together with Murphy discloses this claim element. *See* Pet. at 42-48. And Taguchi does not cure this deficiency in Murphy. Therefore, the asserted prior art combination does not disclose claim element 1.2

Id. at 3:24-31 (emphasis added). The Petition contends that Murphy discloses claim element 1.2 because it discloses “generating, maintaining, and referencing the ‘attributes’ pulled form the packet-header fields of the packet flows.” Pet. at 43. More specifically, Petitioner points to Murphy’s “reservation data” including attributes such as source address, destination address, protocol, protocol port numbers, type-of-service (ToS) byte, the DiffServeCode Point (DSCP), etc. Pet. at 43-45.

These attributes do not identify the application flow, the identity of the sending device application, or the type of application that sent the data. EX2013 at ¶ 91. These attributes are associated with the prior art mechanisms that the ’320 Patent intended to overcome. For example, one of Murphy’s “reservation” data attributes is DiffServeCode Point, but the ’320 Patent described DiffServ in the context of the prior art as follows:

DiffServ model addresses the scalability problems associated with the IntServ/RSVP model. *Instead of handling QoS on a per flow basis, the user applications are classified into a small number of uniformly defined traffic classes.* Each data packet stores its traffic class information in its IP header. At each intermediate node, the packet receives appropriate QoS treatment according to its traffic class. *Since DiffServ provides relative QoS, in order to guarantee QoS to a particular flow, the model typically requires the network bandwidth to be over-provisioned.* Further, the model only incorporates a subset of

available QoS technology, such as priority queuing and Random Early Discard (RED) in dealing with temporary traffic congestion. The model is often not applicable in networks where physical links cannot be sufficiently over-provisioned.

EX1001 at 2:6-26 (emphasis added). The same is true of the other attributes. Thus Murphy's DiffServ data and other similar attributes do not qualify as application flow information as used in the context of the '320 Patent. EX2013 at ¶¶ 91-92.

Murphy does not disclose identifying an application flow or information specifying the sending device application or type of sending device application. Murphy merely discloses packet flows and explains that "a flow generally represents packets having a common set of attributes that may include, source and destination addresses, protocol, protocol port numbers, type-of-service (ToS) byte, DiffServe Code Point (DSCP), or the like." EX1005 at 4:34-38. Murphy is devoid of any disclosure that an application flow is identified based on these attributes or that information from these headers are extracted to identify a specific application flow as in the '320 Patent (*see, e.g.*, EX1001 at 8:49-53, 5:12-13, 5:19-26). In other words, Murphy does not disclose identifying anything about the actual application that sent the packets as Murphy does not attain any application awareness or knowledge of the application protocol and protocol requirements for purposes of supporting application specific QoS policies and application specific mapping.

Instead, Murphy is focused on QoS aggregation, forwarding equivalence classes, RSVP reservation aggregation, MPLS encapsulation, and bandwidth management. EX1005 at 1:40-2:8. For example, Murphy states “[p]acket flows having common forwarding equivalence classes and QoS requirements may be aggregated to flow through a single LSP having allocated resources such as bandwidth, capable of supporting the QoS requirement.” *Id.* at 1:52-56. A POSITA would understand that this neither discloses or involves identification of an application flow or has a dependency on application specificity. EX2013 at ¶ 93. Indeed, a POSITA would understand that forwarding equivalence class involves header information below Layer 4 and does not identify a specific application. *Id.*

Further, Murphy describes “mapping requests for end-to-end packet flows through a network to Labeled Switch Paths (LSPs) within the network, and forwarding packets associated with the end-to-end packet flows along the LSPs based on the mapping” where the flows have certain of those common attributes as listed above. *See, e.g.*, EX1005 at 1:52-56, 2:8-12. A POSITA would understand that this involves conventional traffic engineering for packet forwarding rather than application-specific mapping and forwarding. EX2013 at 94.

Murphy does not disclose identification of an application flow, nor does it need to have any awareness of the application for its purposes of aggregating RSVP/QoS packet flows into MPLS Label Switched Paths (LSPs) based on common

forwarding/QoS characteristics. In fact, Murphy states: “Label-switching routers within network 6 forward the end-to-end packet flows in accordance with the labels of the packets, and *without regard to the content of the packets.*” EX1005 at 4:55-58.

2. The Prior Art Neither Teaches, Nor Suggests, Using “one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow”

Claim element 1.2 of the '320 Patent requires: “identifying information associated with an application flow *based on one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow.*” EX1001 at 8:49-53 (emphasis added). Murphy does not disclose identifying an application flow in the specific way that is required by the '320 Patent claims—i.e., *based on* one or more unencapsulated packet headers of the application flow or based on an ingress data stream that includes the application flow. As detailed above in Section IV.B.2, a POSITA would understand this claim limitation to have its plain and ordinary, wherein information including at least Level 4 headers are used in determining the information associated with an application flow.

The '320 Patent describes an application flow and the use of its Layer 4 and above headers and associated information:

an application flow refers to a set of packets exchanged between two or more devices for accomplishing a specific function. *Application flow*

data includes data associated with Layer-4 or above as defined by the OSI protocol stack. In some embodiments, an application flow includes data packets transmitted and received by an application, such as a Voice over IP (VoIP) session, instant messaging, Video-on-Demand (VoD), etc.

Id. at 3:24-31 (emphasis added). The Petition contends that Murphy discloses claim element 1.2 because it discloses “generating, maintaining, and referencing the ‘attributes’ pulled from the packet-header fields of the packet flows.” Pet. at 43. More specifically, Petitioner points to Murphy’s “reservation data” including attributes such as source address, destination address, protocol, protocol port numbers, type-of-service (ToS) byte, the DiffServeCode Point (DSCP), etc. *Id.* at 43-45.

However, none of these attributes are information including at least Layer 4 and above headers. EX2013 at ¶ 98. These attributes are associated with the prior art mechanisms that the ’320 Patent intended to overcome, which are lower layer header information. *Id.*

D. The Prior Art Neither Teaches, Nor Suggests, “stored data that maps application flows with pseudowires ... the stored data indicates for a sending device application, a distributed mapping of the application flow”

Claim element 1.3 requires “stored data that maps application flows with pseudowires [...] wherein the stored data indicates, for a sending device application, a distributed mapping of the application flow via at least one of the plurality of

pseudowires.” In other words, the stored data must include data that specifies a *sending device application* for mapping the *identified application flow* which was detailed above in Section V.C. Murphy does not disclose stored data that specifies a sending device application, nor does it disclose any identification or awareness of the application flow.² Instead as further explained below, Murphy teaches away from the '320 Patent by routing packets based on lower layer information as in the prior art rather than higher layer application specific information.

² The Petition does not assert that Taguchi discloses “stored data that maps application flows,” as Petitioner rests solely on Murphy to meet this limitation. Petitioner only relies on Taguchi for the “distributed mapping” claim limitation. Therefore, the combination of Murphy and Taguchi does not disclose this claim element. Further, Taguchi does not cure this deficiency as Taguchi does not store any data specifying the sending device application, nor does it perform any mapping based on the application flow.

1. Murphy Does Not Teach or Suggest “stored data that maps application flows with pseudowires ... the stored data indicates for a sending device application, a distributed mapping of the application flow . . . ”

The Petition relies on Murphy's “mapping data” and “path data” to meet this claim limitation. Pet. at 51-58. According to Murphy, reservation data, path data, and mapping data is maintained in a router data structure as shown below, where the mapping data associates packet flows with LSPs. EX1005 at EX-1005 at 3:34-36, 5:55-6:4, 7:16-26, Fig. 4.

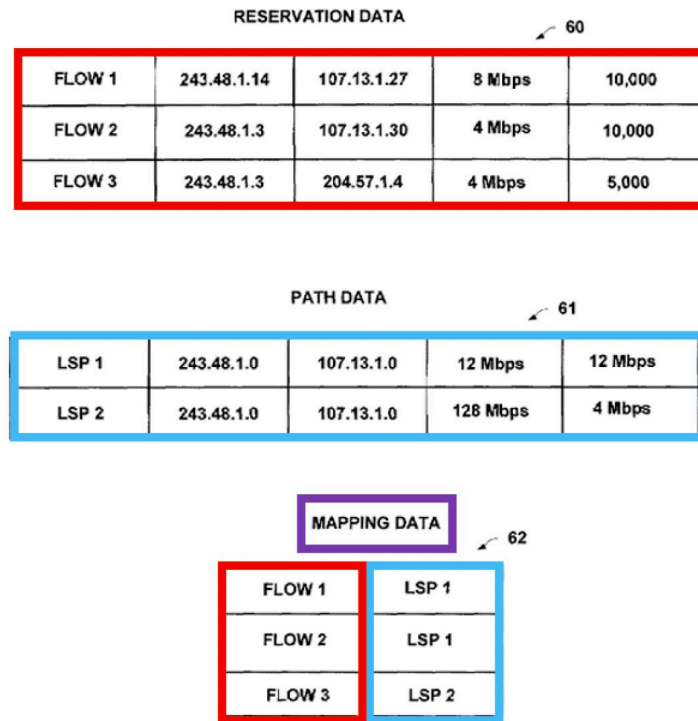


FIG. 4

Id. at FIG. 4 (annotations added by Petitioner).

None of this stored data shown meets the claimed limitation for “stored data that maps application flows” and that “indicates for a sending device application, a distributed mapping of the application flow.” EX2013 at ¶ 101. None of this stored data in Murphy specifies the sending device application. *Id.* Instead, Murphy teaches away from the '320 Patent because the data shown above such as source and destination addresses are lower layer information that does not inform anything about the sending device application. *Id.*

As the '320 Patent explains, application flow information necessary for mapping application flows involves Layer 4 and above data which informs knowledge of the application flow and/or the sending device application such as VoIP, instant messaging, VoD, etc.:

an application flow refers to a set of packets exchanged between two or more devices for accomplishing a specific function. *Application flow data includes data associated with Layer-4 or above as defined by the OSI protocol stack.* In some embodiments, an application flow includes data packets transmitted and received by an application, such as a Voice over IP (VoIP) session, instant messaging, Video-on-Demand (VoD), etc.

Id. at 3:24-31 (emphasis added). The '320 Patent aimed to overcome the shortcomings of the prior art that mapped pseudowires based exclusively on lower

layer information without any dependency on higher layer application specific knowledge. *Id.* at 1:46-2:21.

As shown above in Figure 4, Murphy maps flows based on conventional Layer 3 attributes, *not* on Layer 4 and above application-level information associated with a sending device application. EX2013 at ¶ 103. Murphy does not disclose a mapping defined for a specific sending device application, nor does its stored mapping data reflect any application-level specificity. *Id.* Instead, Murphy teaches routing decisions based on lower-layer packet attributes, not application-based mapping as required by the '320 Patent. *Id.* Murphy confirms that its routing decisions are not based on application awareness or any application specific dependencies: “Label-switching routers within network 6 forward the end-to-end packet flows in accordance with the labels of the packets, and ***without regard to the content of the packets.***” EX1005 at 4:55-58. Therefore, Murphy teaches away from the '320 Patent and does not disclose this claim limitation. EX2013 at ¶ 103.

2. Taguchi Does Not Teach or Suggest “stored data that maps application flows with pseudowires . . . the stored data indicates for a sending device application, a distributed mapping of the application flow . . .”

Even if the Petition relies on Taguchi for this limitation, which it does not, Taguchi does not cure the deficiencies of Murphy. Taguchi does not disclose stored

mapping data that specifies a sending device application or application flow, nor does the Petition make any assertion that it does.

The Petition relies on Taguchi narrowly for the “distributed mapping” claim limitation, for which it points to Taguchi’s storage of certain information. Pet. at 59-60 (citing EX1006 at ¶ [0005]- [0006], [0050]- [0052]). But this does not disclose stored data that maps application flows and that indicates the sending device application. EX2013 at ¶ 105. For example, Taguchi explains that the user information stored in the user information database includes “flow identification information (terminal address/address mask, transport protocol type, encoding method, and the like), CoS (Class of Service, service class) indicating the service grade applied to the flow, and the required line resource capacity.” EX1006 at ¶[0050]. None of this information is for application specific mapping or identifies the actual application or type of application from which the data was sent. EX2013 at ¶ 105.

Indeed, Taguchi does not disclose identifying higher layer application specificity such as determining that traffic belongs to a particular application (e.g., Zoom, YouTube, etc.) based on higher layer packet header inspection or application layer signatures. EX2013 at ¶ 106. Rather, Taguchi classifies and identifies flows based on lower layer attributes like in Murphy, (e.g., source and destination addresses, broad service classes such as forward equivalence class information, etc.),

but not based on application-awareness. *Id.* Therefore, Murphy in combination with Taguchi also does not disclose this claim limitation.

VI. GROUND 2: CHALLENGED CLAIMS 6 AND 13 ARE NOT OBVIOUS OVER MURPHY IN VIEW OF TAGUCHI AND BOOTH

In Ground 2, the Petition asserts the *Booth* reference together with the *Murphy* and *Taguchi* combination from Ground 1 as allegedly teaching Claims 6 and 13, which depend on independent Claims 1 and 8, respectively. The Petition does not allege that this asserted combination satisfies any of the limitations of the independent claims, including those identified above in § V as not being disclosed by the prior art combination in Ground 1. Thus, for at least the same reasons as detailed above in § V for why *Murphy* and *Taguchi* do not disclose or render obvious independent Claims 1 and 8, dependent claims 6 and 13 are not obvious over the combination of *Murphy*, *Taguchi*, and *Booth*.

VII. CONCLUSION

Each of the asserted prior art references *Murphy*, *Taguchi*, and *Booth* alone or in combination does not disclose key limitations of Challenged Claims 1-20 of the '320 Patent. Therefore, the challenged claims should be affirmed.

Respectfully Submitted,

Dated: May 13, 2026

/s/ C. Maclain Wells
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Patent Owner's Response
IPR2025-01364 (U.S. Patent No. 10,735,320)

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CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Under the provisions of 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the word count for all portions of the foregoing Patent Owner's Response totals 9530 words per Microsoft Word, which complies with the requirement of 14,000 words allowed under 37 C.F.R. § 42.24(d).

Respectfully submitted,

Date: May 13, 2026.

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(Case No. IPR2025-01364)

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CERTIFICATE OF SERVICE

As authorized by Patent Owner's Mandatory Notice, I hereby certify that on May 13, 2026, a copy of this document has been served in its entirety by electronic mail on Petitioner's lead and backup counsel.

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