

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.
Petitioner

v.

PORTSMOUTH NETWORK CORP.
Patent Owner

IPR2024-00954
U.S. Patent No. 8,199,637

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

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Patent Trial and Appeal Board
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PETITIONER’S EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 8,199,637 B2 to Bruckman et al. (“’637 Patent”)
1002	Declaration of Dr. Henry Houh
1003	<i>Curriculum Vitae</i> of Dr. Houh
1004	Prosecution History of U.S. Patent No. 8,199,637 B2
1005	U.S. Patent No. 8,208,370 B1 (“Mitchell”)
1006	U.S. Patent No. 7,113,699 B1 (“Bhate”)
1007	U.S. Patent Publication No. 2007/0047556 A1 (“Raahemi”)
1008	U.S. Patent No. 6,614,785 B1 (“Huai”)
1009	U.S. Patent Publication No. 2005/0073965 A1 (“Yamauchi”)
1010	U.S. Patent Publication No. 2006/0029097 A1 (“McGee”)
1011	U.S. Patent Publication No. 2006/0109802 A1 (“Zelig”)
1012	U.S. Patent Publication No. 2005/0271035 A1 to (“Cohen”)
1013	U.S. Patent No. 7,154,900 B1 (“Alanqar”)
1014	U.S. Patent No. 4,646,289 (“Tsiakas”)
1015	U.S. Patent No. 7,463,580 B2 (“Agmon”)
1016	Docket Control Order, <i>Portsmouth Network Corp. v. Cisco Sys., Inc.</i> , No. 2:23-cv-00441 (E.D. Tex. Dec. 18, 2023)
1017	Notice of Disclosures, <i>Portsmouth Network Corp. v. Cisco Sys., Inc.</i> , No. 2:23-cv-00441 (E.D. Tex. Jan. 8, 2024)

Exhibit No.	Description
1018	Order Granting Unopposed Motion for Leave to File Amended Complaint for Patent Infringement, <i>Portsmouth Network Corp. v. Cisco Sys., Inc.</i> , No. 2:23-cv-00441 (E.D. Tex. Mar. 12, 2024)
1019	Director’s June 21, 2022, Memorandum on Discretionary Denials

Citations to specific pages of exhibits follow the pagination added to those exhibits per 37 C.F.R. § 42.63(d)(2)(i).

All emphasis has been added unless noted otherwise.

All annotations in Figures have been added unless noted otherwise.

CLAIM LISTING

Claim 1

[1pre] A method for handling a communication failure in a network, comprising:

[1a] provisioning different first and second instances of a multipoint-to-multipoint (MP-MP) communication service over respective first and second alternative sets of links that connect a plurality of endpoints in the network,

[1b] each of the sets traversing a plurality of network nodes, which provide physical layer resources for operating the links;

[1c] providing the communication service to the endpoints over the first set of links using the first instance;

[1d] upon detecting a failure in the first set of links by a detecting node of the plurality of network nodes:

[1e] propagating failure information by the detecting node to each node of the other nodes of the plurality of network nodes traversed by the first set of links;

[1f] for each node of the other nodes of the plurality of network nodes traversed by the first set of links:

[1g] receiving the failure information; and

[1h] deactivating a physical layer of the first set of links connected thereto, thereby causing a loss of connectivity in the first set of links; and

[1i] responsively to sensing the loss of connectivity, resuming the communication service over the second instance by automatically transferring communication among the endpoints to the second set of links.

Claim 2

[2] The method according to claim 1, wherein the network comprises a ring network.

Claim 3

[3a] The method according to claim 1, wherein the communication service comprises a virtual private local area network service (VPLS), and

[3b] wherein the first and second instances comprise first and second VPLS instances.

Claim 4

[4] The method according to claim 1, wherein the communication service comprises a bridging service.

Claim 5

[5] The method according to claim 1, wherein said propagating failure information comprises advertising the failure using an Opaque Link State Advertisement (LSA) message of an Open Shortest Path First (OSPF) protocol.

Claim 6

[6] The method according to claim 1, wherein the one or more of the links in the first set of links comprise optical links, and wherein said deactivating the physical layer resources comprises disabling respective laser sources of the optical links.

Claim 7

[7] The method according to claim 1, wherein the one or more of the links in the first set of links comprise wire links, and wherein said deactivating the physical layer resources comprises disabling respective carrier signals of the wire links.

Claim 8

[8] The method according to claim 1, wherein the one or more of the links in the first set of links use a physical layer auto-negotiation protocol, and wherein said deactivating the physical layer resources comprises introducing an auto-negotiation error into the auto-negotiation protocol.

Claim 9

[9] The method according to claim 1, wherein the one or more of the links in the first set of links comprise a logical link, and wherein said deactivating the physical layer resources comprises releasing an association of the logical link with the first instance of the communication service.

Claim 10

[10] The method according to claim 1, wherein a link of the first set of links is a critical link, and wherein said deactivating the physical layer is performed only when the failure occurs in the critical link.

Claim 11

[11] The method according to claim 1, wherein said provisioning different first and second instances of a multipoint-to-multipoint communication service over respective first and second alternative sets of links comprises sharing respective allocations of network resources reserved for communicating over the first and second sets of links.

Claim 12

[12] The method of claim 1, wherein a link in the first set of links includes an optical link, and wherein deactivating the physical layer includes disabling a laser source of the optical link.

Claim 13

[13] The method of claim 1, wherein a link in the first set of links includes a wire link, and wherein deactivating the physical layer includes disabling a carrier signal of the wire link.

Claim 14

[14] The method of claim 1, wherein a link in the first set of links includes a link which uses a physical layer auto-negotiation protocol, and wherein deactivating the physical layer includes introducing an auto-negotiation error into the auto-negotiation protocol.

Claim 15

[15] The method of claim 1, wherein a link in the first set of links includes a logical link, and wherein deactivating the physical layer includes releasing an association of the logical link with the first instance of the communication service.

Claim 16

[16pre] A communication network serving a plurality of endpoints, the network comprising:

[16a] a plurality of links, comprising at least first and second alternative sets of links that interconnect the endpoints via the network; and

[16b] network nodes, which are traversed by the first and second sets of links and are arranged: to provide physical layer resources for operating the links;

[16c] to provide a communication service to the endpoints over the first set of links using a first instance of the communication service;

[16d] to detect a local failure in the first set of links;

[16e] to propagate a first message notifying all other nodes in the network that are traversed by the first set of links upon detecting the local failure; and

[16f] to receive a second message from another node indicating a remote failure in the first set of links; and

[16g] responsively to receiving the second message indicating the remote failure, to deactivate the physical layer resources of each node to links in the first set of links connected to that node upon receiving the second message, to cause a loss of connectivity in the first set of links and thus cause an automatic transfer of

communication among the endpoints to the second set of links, and to resume the communication service over the second set of links using a second instance of the communication service different from the first instance.

Claim 17

[17a] The network according to claim 16, wherein a first network node is arranged to detect the failure and

[17b] to send a third message indicating the failure to a second network node, and

[17c] wherein a third network node, which provides the physical layer resources to links in the first set, is arranged to deactivate the physical layer resources responsively to accepting the third message.

Claim 18

[18] The network according to claim 16, wherein the one or more of the links in the first set of links comprise optical links, and wherein the network nodes comprise respective laser sources for driving the optical links and are arranged to deactivate the physical layer resources by disabling the laser sources.

Claim 19

[19] The network according to claim 16, wherein the one or more of the links in the first set of links comprise wire links, and wherein the network nodes are arranged to deactivate the physical layer resources by disabling respective carrier signals of the wire links.

Claim 20

[20] The network according to claim 16, wherein the one or more of the links in the first set of links use a physical layer auto-negotiation protocol, and wherein the network nodes are arranged to deactivate the physical layer resources by introducing an auto-negotiation error into the auto-negotiation protocol.

Claim 21

[21] The network according to claim 16, wherein a subset of the links in the first set of links are classified as critical links, and wherein the network nodes are arranged to deactivate the physical layer resources only when the failure occurs in one of the critical links.

Claim 22

[22] The communication network of claim 16, wherein a link in the first set of links includes an optical link, and wherein deactivating the physical layer resources includes disabling a laser source of the optical link.

Claim 23

[23] The communication network of claim 16, wherein a link in the first set of links includes a wire link, and wherein deactivating the physical layer resources includes disabling a carrier signal of the wire link.

Claim 24

[24] The communication network of claim 16, wherein a link in the first set of links includes a link which uses a physical layer auto-negotiation protocol, and wherein deactivating the physical layer resources includes introducing an auto-negotiation error into the auto-negotiation protocol.

Claim 25

[25] The communication network of claim 16, wherein a link in the first set of links includes a logical link, and wherein deactivating the physical layer resources includes releasing an association of the logical link with the first instance of the communication service.

I. INTRODUCTION

U.S. Patent No. 8,199,637 (“’637 Patent”) is directed to handling a communication failure in a network by providing a backup failover communication service. However, this was well-known. For example, U.S. Patent No. 8,208,370 to Mitchell, Jr. *et al.* (“Mitchell”), based on the combination of its embodiments, render obvious such a fast link failover system. Cisco Systems, Inc. (“Petitioner”) requests cancellation of claims challenged in this Petition.

II. MANDATORY NOTICES

A. Real Party-In-Interest (37 C.F.R. § 42.8(b)(1))

Petitioner certifies that the real party-in-interest is Cisco Systems, Inc.

B. Related Matters (37 C.F.R. § 42.8(b)(2))

On September 26, 2023, Portsmouth Network, Corp. (“Patent Owner”) filed a complaint against Petitioner alleging infringement of U.S. Patent Nos. 6,917,986, 7,035,279, 7,596,088, and 8,014,394. *See Portsmouth Network, Corp. v. Cisco Sys., Inc.*, Case No. 2:23-cv-00441 (E.D. Tex.). Patent Owner later dropped infringement allegations based on U.S. Patent No. 7,596,088, but added infringement allegations based on the ’637 Patent on April 8, 2024. *See id.*, Order Granting Unopposed Motion for Leave to File Amended Complaint for Patent Infringement (March 12, 2024) (EX1018).

Petitioner has filed petitions for *inter partes* review of U.S. Patent Nos. 6,917,986, 7,035,279, and 8,014,394.

Patent No.	IPR Case No.
U.S. 6,917,986	IPR2024-00505
U.S. 7,035,279	IPR2024-00503
U.S. 8,014,394	IPR2024-00506

C. Lead And Back-Up Counsel (37 C.F.R. § 42.8(b)(3))

Petitioner is filing a power of attorney appointing the practitioners associated with Customer Number 132,593. Petitioner designates the following lead and first backup counsel:

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D. Service Information (37 C.F.R. § 42.8(b)(4))

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Telephone: 212-351-3400

Email: CiscoPortsmouthIPRService@desmaraisllp.com

Please address all correspondence to lead and back-up counsel. Petitioner consents to service in this proceeding by email at the addresses above and at CiscoPortsmouthIPRService@desmaraisllp.com.

III. FEES

Petitioner concurrently submits required fees for this Petition. The Board is authorized to charge Desmarais LLP's deposit account, No. 50-6822, for any fee deficiency.

IV. GROUNDS FOR STANDING

Petitioner certifies that the '637 Patent is available for *inter partes* review and that Petitioner is not estopped or barred from requesting *inter partes* review.

V. OVERVIEW OF CHALLENGE AND RELIEF REQUESTED

Under 37 C.F.R. §§ 42.22(a)(1) and 42.104(b)(1)-(2), Petitioner requests cancellation of claims 1-25 ("Challenged Claims") of the '637 Patent.

A. Prior Art References

The '637 Patent was filed on July 22, 2008, claiming priority to U.S. Provisional Application No. 60/737,733, filed November 16, 2005. Thus, the '637 Patent is subject to pre-AIA provisions of 35 U.S.C. §§ 102 and 103. The following references are pertinent to the grounds of unpatentability provided below:

1. U.S. Patent No. 8,208,370 to Mitchell, Jr. *et al.* (“Mitchell”) (EX1005), filed March 31, 2004, issued June 26, 2012, and is prior art under 35 U.S.C. § 102(e).
2. U.S. Patent No. 7,113,699 to Bhate *et al.* (“Bhate”) (EX1006), was filed August 15, 2002, issued September 26, 2006, and is prior art under 35 U.S.C. § 102(e).
3. U.S. Publication No. 2007/0047556 to Raahemi *et al.* (“Raahemi”) (EX1007), was filed August 29, 2005, published March 1, 2007, and is prior art under 35 U.S.C. § 102(e).
4. U.S. Patent No. 6,614,785 to Huai *et al.* (“Huai”) (EX1008) was filed on January 5, 2000, published September 2, 2003 and is prior art under 35 U.S.C. § 102(b).
5. U.S. Patent Publication No. 2005/0073965 to Yamauchi (“Yamauchi”) (EX1009) was filed September 30, 2004, published April 7, 2005, and is prior art under 35 U.S.C. § 102(e).
6. U.S. Publication No. 2006/0029097 to McGee *et al.* (“McGee”) (EX1010) was filed February 1, 2005, published February 9, 2006, and is prior art under 35 U.S.C. § 102(e).

B. Grounds For Challenge

Ground	Claims	Basis	References
#1	1, 7, 9-11, 13, 15-17, 19, 21, 23, 25	§ 103	Mitchell
#2	2, 6, 12, 18, 22	§ 103	Mitchell and Bhate
#3	3, 4	§ 103	Mitchell and Raahemi
#4	5	§ 103	Mitchell and Huai
#5	8, 14, 20, 24	§ 103	Mitchell and Yamauchi
#6	9, 15, 25	§ 103	Mitchell and McGee

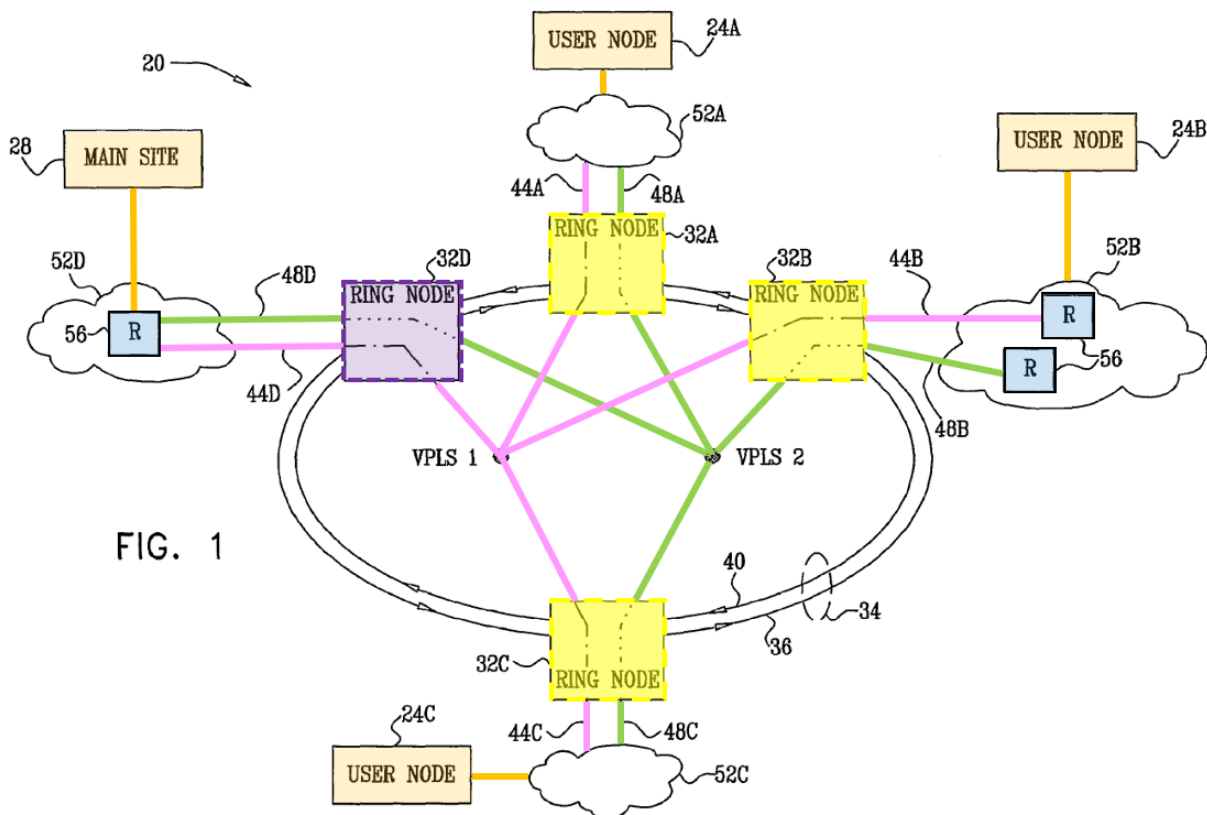
This Petition, supported by the declaration of Dr. Houh (EX1002), demonstrates there is a reasonable likelihood that the Petitioner would prevail with respect to at least one challenged claim. 35 U.S.C. § 314(a). Petitioner respectfully requests institution.

VI. OVERVIEW OF THE '637 PATENT**A. Purported Invention**

The '637 Patent is directed to a method for handling communication failures in a multipoint-to-multipoint network. EX1001, Abstract. According to the '637 Patent, existing communication services between endpoints had a drawback when there is a failure in the communication service in that a transfer to a backup instance of the communication service was too slow. EX1001, 4:1-16. The '637 Patent's purported invention provides a predetermined backup instance of the

communication service and deactivates a physical layer of the primary instance to allegedly result in a faster transfer when failure occurs. EX1001, 4:17-37. EX1002, ¶¶34-36.

Figure 1 of the '637 Patent (below) depicts an exemplary first and second instances (e.g., *VPLS1* and *VPLS2*) of a communication service formed in conjunction with the ring nodes **32A-32C** and **32D**. EX1001, 4:41-43, 5:1-5, 5:11-20, 5:36-60. EX1002, ¶37.



EX1001, FIG. 1. As shown above, *VPLS1* is configured in conjunction with the ring nodes **32A-C** and **32D** and provides the communication service to the endpoints (*main site 28* and *user nodes 24A-C*) over a *first set of network links*. EX1001, 5:1-

5, 5:26-38. A backup instance of the communication service *VPLS2* is also configured in conjunction with ring nodes **32A-C** and **32D** to provide communication services to the *main site 28* and *user nodes 24A-C* over a *second set of network links*. EX1001, 5:1-5, 5:11-16, 5:26-40. EX1002, ¶¶38-41.

As a specific example, when the *detecting network node 32D* “detects a local failure or other loss of connectivity in one of the links,” EX1001, 7:10-13, the *detecting network node 32D* “propagates this information to the **other nodes** of the primary topology ... by distributing a message, ... [called] a remote fault indication (RFI).” EX1001, 7:13-15. Then, **each network node** “disables the physical layers of the primary topology links that are locally-connected to the node.” EX1001, 7:16-18. Finally, “the endpoints rapidly detect a local loss of connectivity and trigger” a failover to *VPLS2*. EX1001, 7:22-25. EX1002, ¶42.

B. Prosecution History

The '637 Patent was filed on July 22, 2008 as Application No. 12/093,824 with original claims 1-28, claiming priority to Provisional Application No. 60/737,733, filed on November 16, 2005. EX1001, Cover; EX1004, 1-33. For the purposes of this IPR only, Petitioner applies the earliest claimed priority date of November 16, 2005. EX1002, ¶43.

On December 15, 2009, the Office rejected all claims, and specifically, the Office rejected claims 5, 6, 11, 12, 21, and 24 as being indefinite and claims 1-28 as

being anticipated and/or obvious over several references. EX1004, 128-138. None of the prior art references cited by the Office are relied upon in this Petition. *See, e.g.*, EX1001, Cover. EX1002, ¶44.

Applicant canceled claim 5 and amended claims 1, 6-13, 21, and 23 amending the independent claims to recite “propagating failure information by a detecting node to each node of the other nodes of the plurality of network nodes traversed by a first set of links” and “receiving the failure information at a node and deactivating a physical layer of the first set of links connected thereto, thereby causing a loss of connectivity in the first set of links.” EX1004, 157-161, 165-166. EX1002, ¶¶45-46.

The Office again rejected claims 1-4 and 6-28 as anticipated and/or obvious over the same prior art references. EX1004, 169-182. EX1002, ¶47.

Next, the Applicant filed a Request for Continued Examination, canceling claims 13-22, adding new claims 29-36, and amending claim 23. EX1004, 196-207. Notably, the Applicant newly-argued “claim 1 requires that ***physical layers of all links connected [to] all other nodes*** other than the detecting node are to be deactivated.” EX1004, 206. EX1002, ¶48.

After another rejection by the Office for indefiniteness (*see, e.g.*, EX1004, 231-235), and further amendments to provide antecedent basis for a number of

indefinite claim terms (*see* EX1004, 244-252), the Office allowed the claims (EX1004, 256-278). EX1002, ¶¶49-50.

VII. CLAIM CONSTRUCTION

The claims should be construed “in accordance with the ordinary and customary meaning of such claims 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); *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*). Moreover, the Board “need[s] only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor, Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Here, Petitioner submits no terms require construction for the purposes of this IPR. EX1002, ¶¶52-53.

VIII. LEVEL OF ORDINARY SKILL IN THE ART

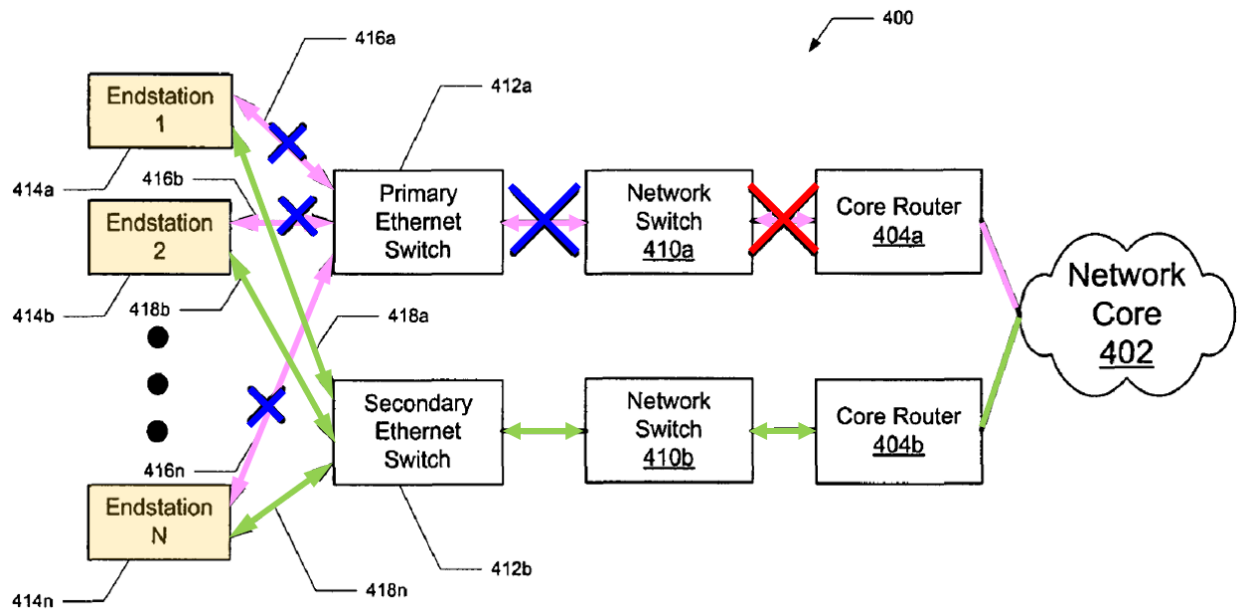
A POSITA would have had a bachelor’s degree in computer science, computer engineering, electrical engineering, or an equivalent field, or approximately two years of experience working in the field of information technology and networking by November 16, 2005. Lack of professional experience can be substituted by additional education, and vice versa. EX1002, ¶54.

IX. SPECIFIC GROUNDS OF INVALIDITY

A. Ground 1: Mitchell Renders Obvious Claims 1, 7, 9-11, 13, 15-17, 19, 21, 23, And 25

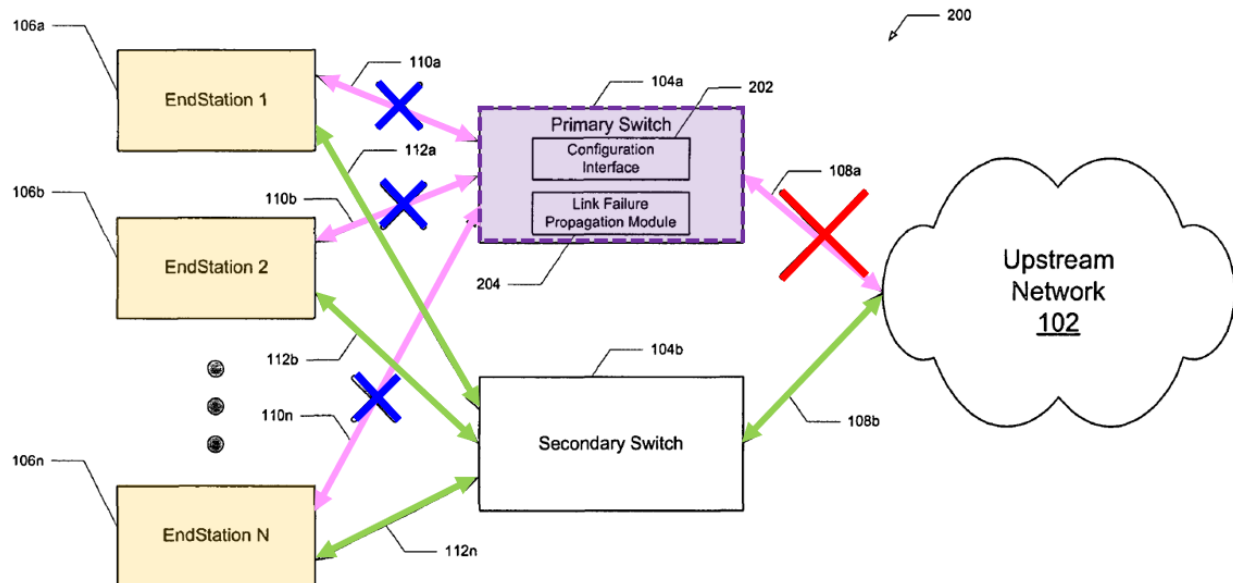
1. Overview Of Mitchell

Mitchell describes “a method and system for fast link failover” in a “communications network.” EX1005, Abstract. As shown below in Figure 4, a **failure** occurs in a communication service over a group of primary links (*e.g.*, a *link* between core router 404a and network switch 410a) is detected, and in response, network switch 410a propagates the failure downstream that *disables* (indicated by *blue X*’s) additional links in that *group of primary links*. EX1005, 7:34-55. The system then performs a quick failover to a backup communication service over a *set of secondary links* (*e.g.*, links between core router 404b, network switch 410b, secondary ethernet switch 412b, and endstations 414a-414n). EX1005, Abstract, 7:34-55. Mitchell explains that by doing so, “a link between a network element and a downstream portion of a communications network may be disabled within a period of time substantially less than or equal to 50 milliseconds of detecting a failure of another link....” EX1005, 3:58-63.



EX1005, FIG. 4. EX1002, ¶¶56-59.

To be clear, **failure** can occur anywhere in the *group of primary links*. For example, Figure 2 shows a **failure** that occurred in *link 108a* between *primary switch 104a* and upstream network 102, which then causes the *disabling* of the additional downstream *links* (indicated by blue X's). EX1005, 4:31-6:5.

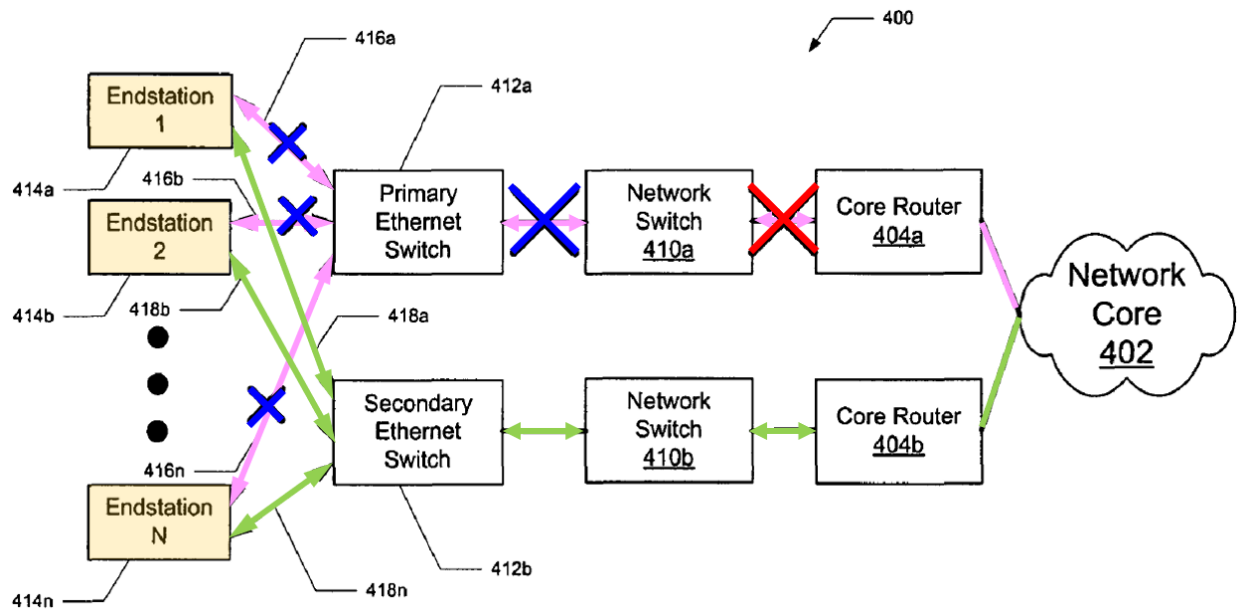


EX1005, FIG. 2. EX1002, ¶60.

2. Independent Claim 1

- i. [1pre] A method for handling a communication failure in a network, comprising:

To the extent limiting, Mitchell discloses [1pre]. Mitchell discloses a “network.” EX1005, Abstract. Specifically, Mitchell’s Figure 4 below depicts an exemplary communications network that handles a communication failure by disabling the downstream links. *See* Section IX.A.1 [Overview Of Mitchell].



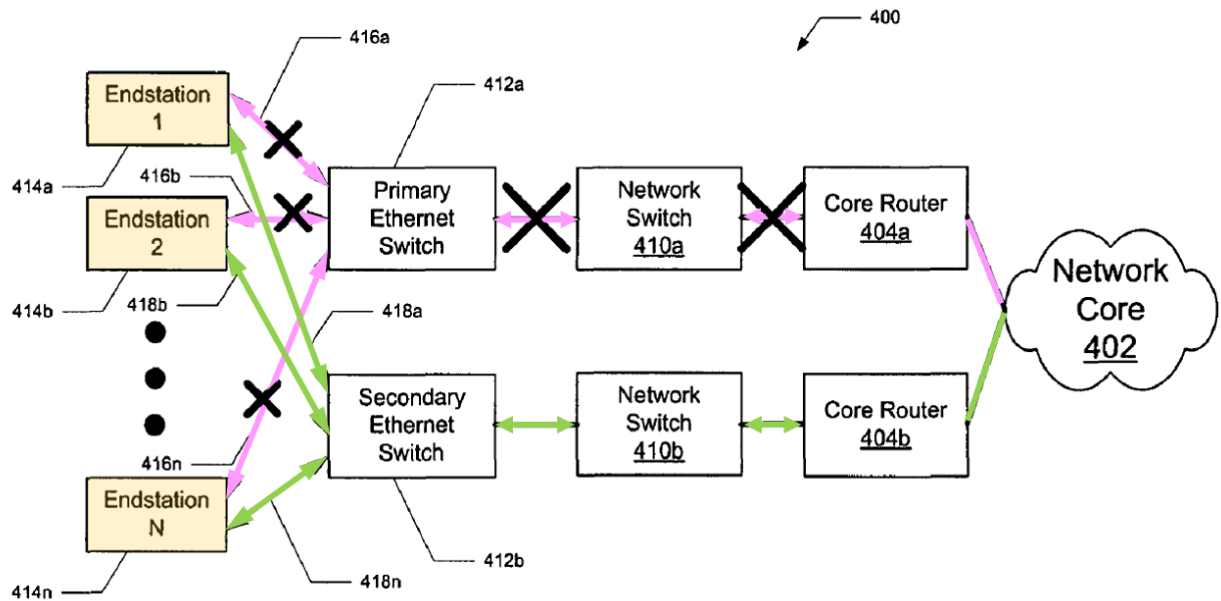
EX1005, FIG. 4. As shown, the network includes numerous network elements, such as network core 402, core routers 404a, 404b, network switches 410a, 410b, primary ethernet switch 412a, and secondary ethernet switch 412b, connected to multi-homed endstations 414a-414n. EX1005, 7:34-57. EX1002, ¶¶61-64.

- ii. [1a] provisioning different first and second instances of a **multi-point-to-multi-point (MP-MP)** communication service over respective **first [set of links]** and **second alternative sets of links** that connect a **plurality of endpoints** in the network,

Mitchell renders obvious [1a]. Mitchell discloses a multipoint-to-multipoint communication service. For example, Mitchell discloses **multi-homed endstations 414a-414n** connected to each other through “redundantly-linked network elements.” EX1005, 1:25-29 (“[R]edundantly-linked network elements are said to be ‘multi-homed’.”), 7:36-49. Data is transmitted between these **endstations**. See EX1005,

5:46-50 (“[D]ata is transmitted between one or more of *multi-homed endstations 106a-106n*....”), 6:26-36. Exemplary communication services taught by Mitchell include wireless local area network (LAN) services using IEEE 802.11x, Ethernet based services, and virtual communication services, such as virtual local area networks (VLANs) or virtual storage area networks (VSANs). EX1005, 4:15-30, 4:58-62, 5:35-37, 5:59-65, 6:37-44, 7:34-49. EX1002, ¶¶65-67.

Figure 4 of Mitchell (below) shows two different instances of a communication service that are provisioned over respective two different sets of links. In addition, the various core routers 404a/404b, network switches 410a/410b, and primary ethernet switches 412a/412b, a POSITA would have recognized network core 402 has certain network elements that are shared between the first and second instances described above. Specifically, in conjunction with Figure 1, Mitchell discloses that the upstream network 102 (which a POSITA would have recognized to be analogous to network core 402) includes “any of a number of network elements.” EX1005, 1:36-38. Some exemplary “network elements” include “switch, router, hub, gateway or other redistribution point.” EX1005, 1:20-25. Hence, a POSITA would have also recognized that network core 402 also has “a number of network elements.” EX1005, 1:36-38.



EX1005, FIG. 4. EX1002, ¶¶68-71.

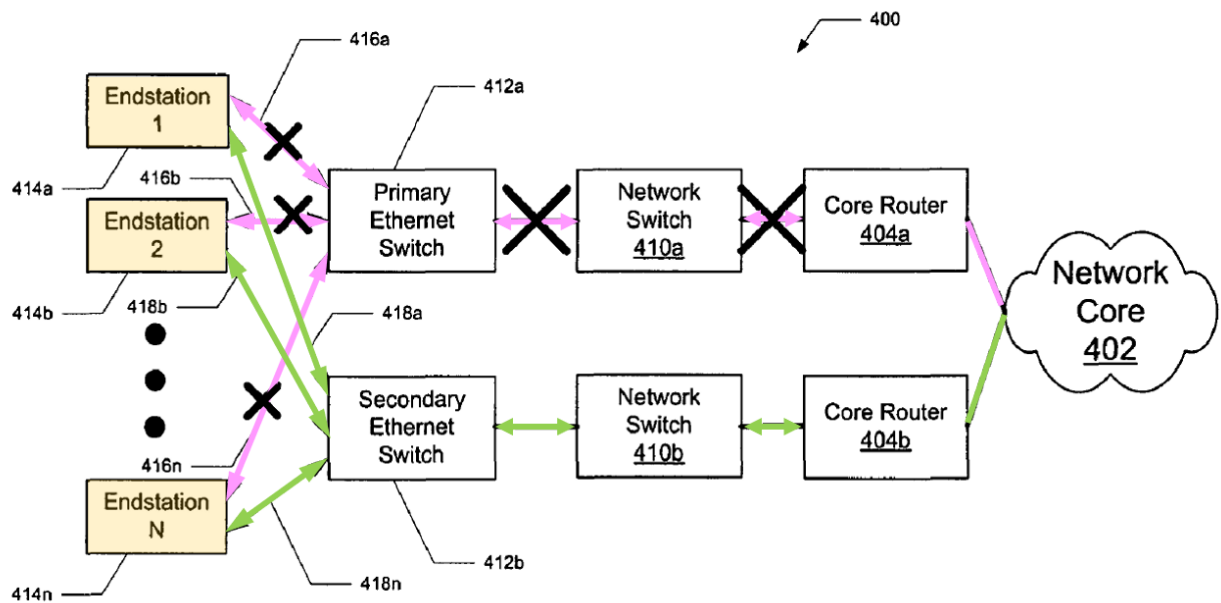
Hence, the first set of links includes *links 416a-416n* and the additional *links* between core router 404a, network switch 410a, primary ethernet switch 412a. These “*group of links*,” coupled with the network elements in network core 402, core router 404a, network switch 410a, primary ethernet switch 412a, provide a first instance of the MP-MP communication service between each of the different network elements. EX1005, 3:35-43, 5:46-55 (discussing transmission of data across the *multi-homed endstations*), 7:36-49. EX1002, ¶72.

The second set of links include *links 418a-418n* and the *other links* between core router 404b, network switch 410b, secondary ethernet switch 412b. These “*set of links*,” coupled with network elements in network core 402, core router 404b, network switch 410b, secondary ethernet switch 412b, form a part of a second

instance of the MP-MP communication service between each of the different network elements. *See* EX1005, FIG. 4; *see also id.*, 2:24-33 (describing failover to alternate, redundant links), 3:35-43, 5:46-55 (discussing transmission of data across the *multi-homed endstations*), 7:36-49. EX1002, ¶73.

iii. [1b] each of the sets traversing a plurality of network nodes, which provide physical layer resources for operating the links;

Mitchell discloses [1b]. Mitchell discloses that each of the sets of links (*e.g.*, the *group of links* and the *set of links*) traverse a plurality of network nodes. *See, e.g.*, EX1005, FIG. 4. Specifically, each of the *group of links* associated with the first instance traverse a plurality of network nodes, such as core router 404a, network switch 410a, and primary ethernet switch 412a. EX1005, 7:36-49. Similarly, each of the *set of links* associated with the second instance traverse a plurality of network nodes, such as core router 404b, secondary network switch 410b, and secondary Ethernet switch 412b. *Id.*



EX1005, FIG. 4. EX1002, ¶¶74-76.

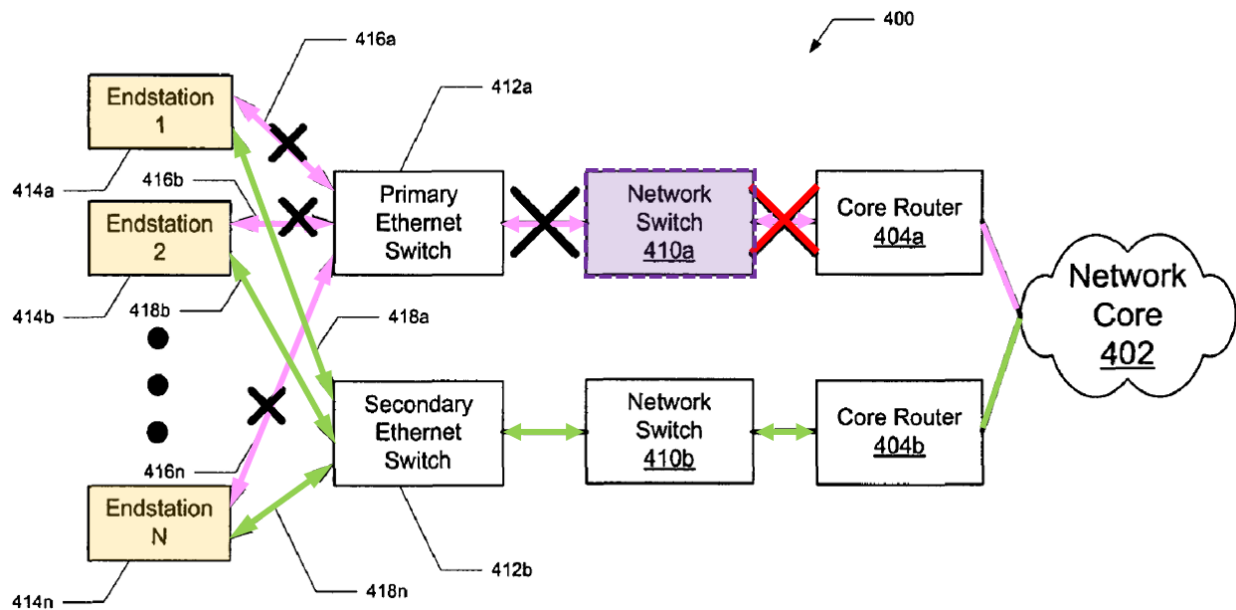
Mitchell also discloses that these *group of links* and the *set of links* provide physical layer resources for operating the links. For example, Mitchell discloses that the failure of a link may be “due to failure of the physical link hardware, a primary network interface card, or primary switch 104a.” EX1005, 5:50-52. Further, Mitchell discloses that the physical layer resources include ports on the nodes for operating the links. EX1005, 5:56-6:5 (“a physical layer protocol circuit or ‘PHY’ associated with one or more ports and/or links is disabled using an administrative command, causing all ports and/or links associated with the PHY to become disabled.”). EX1002, ¶77.

- iv. [1c] providing the communication service to the **endpoints** over the **first set of links** using the first instance;

Mitchell discloses [1c]. As explained in Section IX.A.2.ii. [1a], Mitchell provides the communication service to *multi-homed endstations 414a-414n* over the first set of links (*i.e.*, the *group of links*) using the first instance using the first instance made up of the “*group of links*” and the network elements in network core 402, core router 404a, network switch 410a, primary ethernet switch 412a. *See, e.g.*, EX1005, 7:36-49, 4:15-62, 5:34-65, 6:26-44. EX1002, ¶¶78-79.

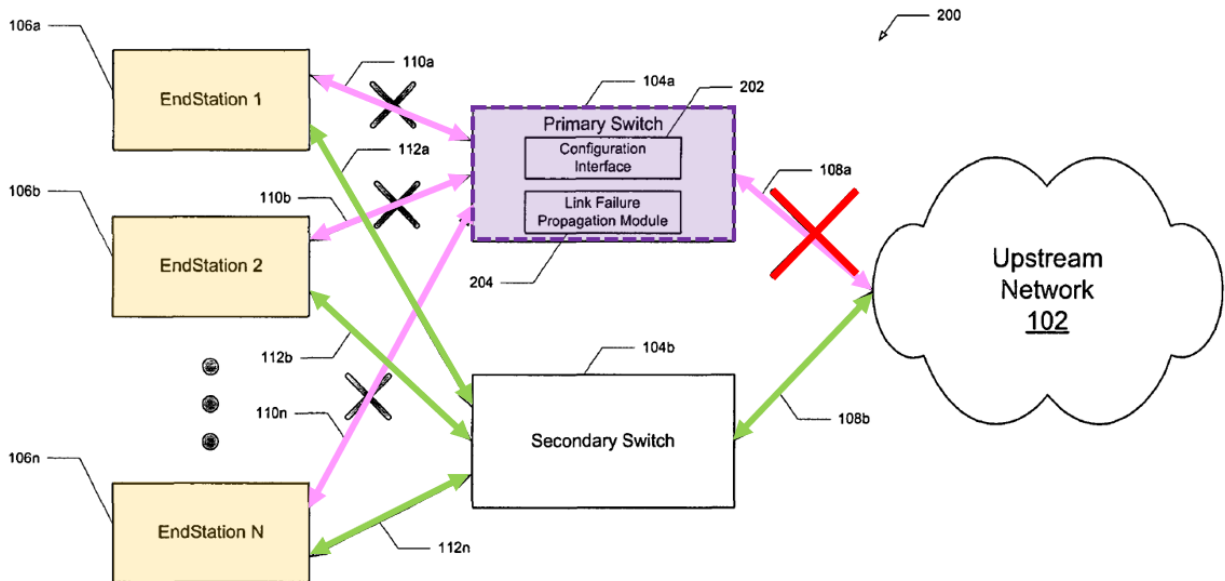
- v. [1d] upon detecting a **failure** in the **first set of links** by a **detecting node** of the plurality of network nodes:

Mitchell renders obvious [1d]. Mitchell discloses detecting a **failure** in the *first set of links*. Specifically, Mitchell discloses “a method ... in which a **failure** of *a first link* between a network element and an upstream portion of a communications network *is detected*.” EX1005, Abstract; *see also id.*, 7:49-53 (“Using one or more embodiments of the present invention, a failure such as that illustrated on a link ... may be propagated downstream to one or more of endstations 414.”). Specifically, with respect to Figure 4, Mitchell discloses the *network switch 410a* detecting a **failure** at the link between the core router 404a and *network switch 410a*. EX1005, 7:36-55.



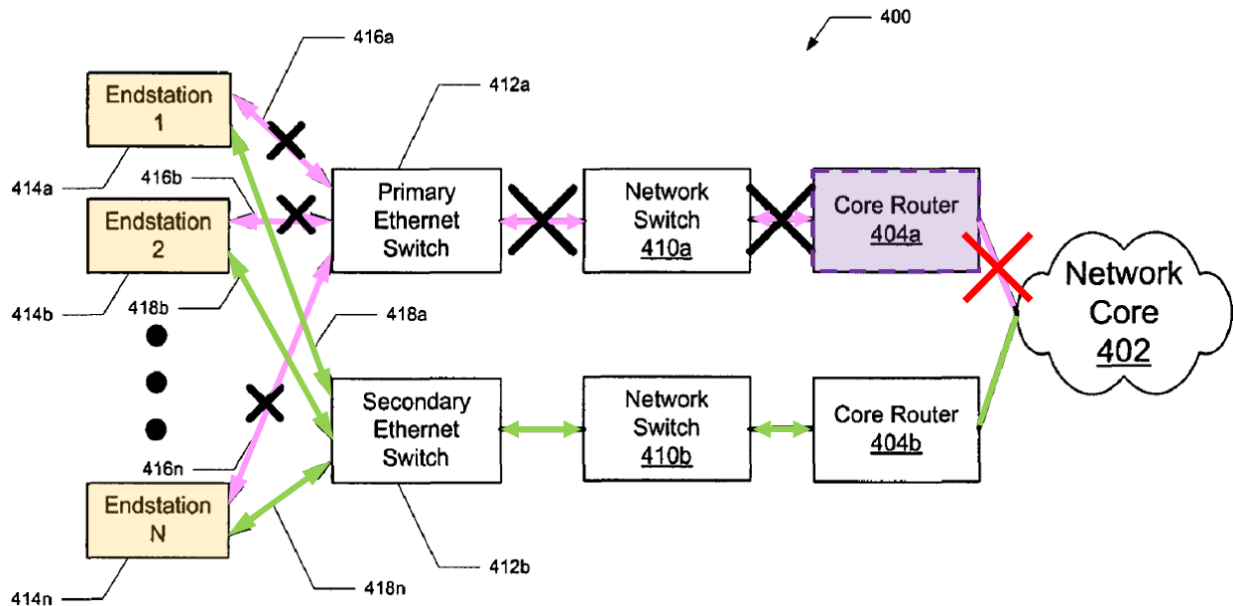
EX1005, FIG. 4. EX1002, ¶¶80-82.

But Mitchell teaches that a **failure** can be detected in any one of the links. For example, Figure 2 of Mitchell shows that a **failure** in *link 108a* between the primary switch 104a and the upstream network 102 can be detected. See EX1005, 5:13-29, 5:50-55 (“Following a **failure** of primary upstream *link 108a* ... link failure propagation module 204 of primary switch 104a is used to detect the failure....”).



EX1005, FIG. 2. EX1002, ¶83.

Accordingly, based on the combination of the embodiments shown in Figures 2 and 4, a POSITA would have readily understood that just as *primary switch 104a* in Figure 2 is used to detect a **failure**, it would have been possible for the *core router 404a* in Figure 4 to detect a **failure** in the *link* between the *core router 404a* and the network core 402.



EX1005, FIG. 4. EX1002, ¶84.

For example, Mitchell makes clear that Figure 4 is simply another example where a failure can be detected at a slightly different link location. EX1005, 5:16-24 (“While configuration interface 202 and link failure propagation module 204 have been illustrated in FIG. 2 as included within *primary switch 104a*, in an alternative embodiment of the present invention one or more of configuration interface 202 and link failure propagation module 204 *may [sic] be stored at or executed from* a switch or *other network element* within data processing system 200 which is directly or indirectly coupled to one or more of endstations 106a-106n.”). And Mitchell further makes clear that a failure can be detected upstream (*i.e.*, towards the network core 402) relative to the detecting node. EX1005, 3:35-43 (“According to one embodiment of the present invention, a method is provided in

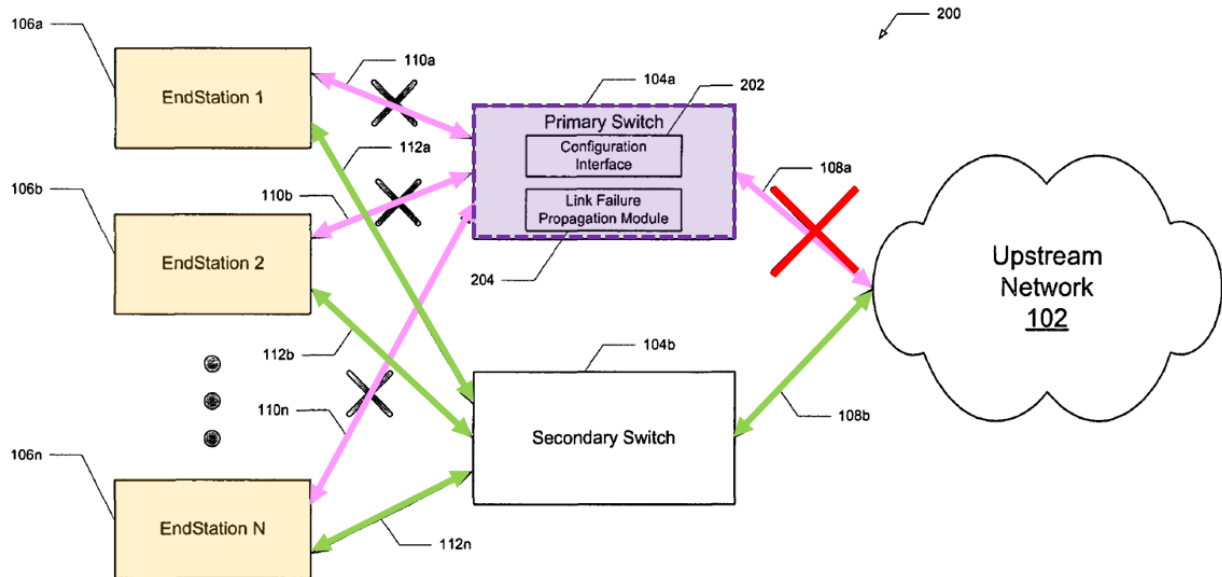
which a failure of a first link between a network element and an upstream portion of a communications network is detected....”), 2:43-47, 3:9-12. EX1002, ¶¶85-86.

And a POSITA would have readily recognized that any one of the network elements, including *core router 404a*, would have been capable of detecting a **failure** in the links. EX1005, 2:33-42, 3:35-43, 5:46-55, 7:3-15 (“If a determination is made that link failure propagation is enabled on a system associated with the illustrated process embodiment, a loop is entered in which *a failure of any upstream link of the associated network element* [e.g., *core router 404a*] is detected (process block 306).”), 1:19-25 (“For example, redundant network links or connections are frequently used to couple a single network element or node, (e.g., ... a switch, router ... or other redistribution point) to one or more communications networks....”). EX1002, ¶¶87-88.

Hence, a POSITA would have made such a modification based on the different embodiments of Mitchell because it would have provided a more flexible communications network that can readily respond to failure at any one of the links. And a POSITA would have had a reasonable expectation of making the modification because Mitchell itself teaches that failure detection and failure propagation can be carried out from any one of the network elements. *See* EX1005, 5:16-24. EX1002, ¶89.

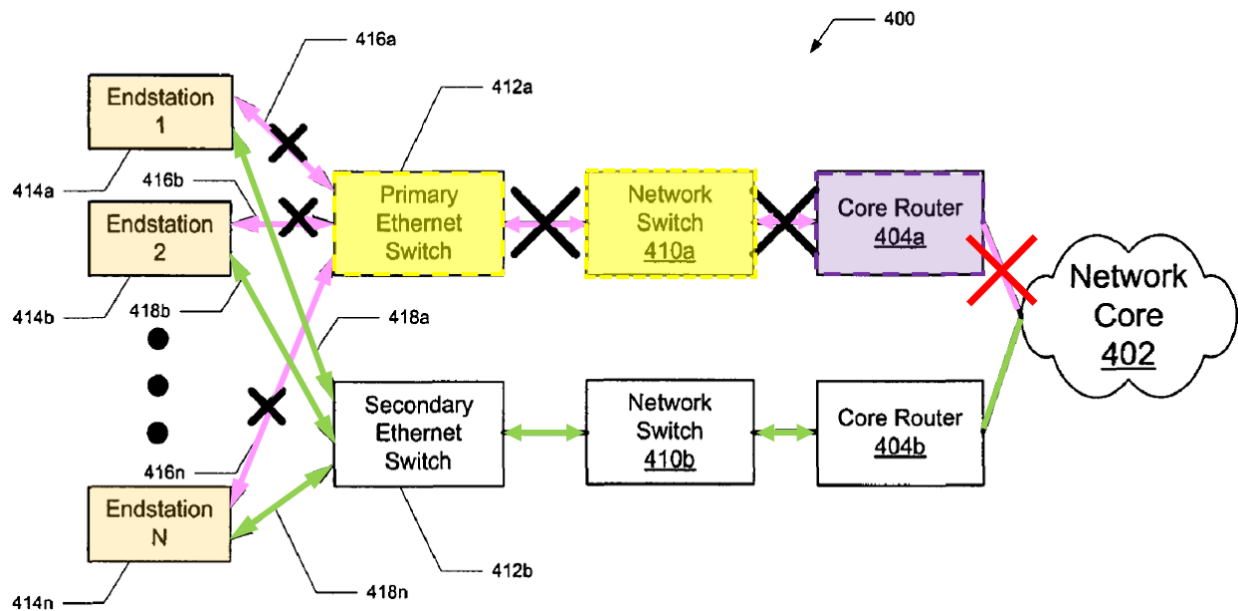
- vi. [1e] propagating failure information by the **detecting node** to **each node of the other nodes** of the plurality of network nodes traversed by **the first set of links**;
- [1f] for **each node of the other nodes** of the plurality of network nodes traversed by **the first set of links**;
- [1g] receiving the failure information; and

Mitchell renders obvious limitations [1e]-[1g]. Mitchell discloses that upon detection of a failure in the link, the link failure information is propagated downstream by the **detecting node**. EX1005, 4:10-15 (“As the link state or link *failure information is propagated downstream...*”), 2:23-33 (explaining “connectivity (e.g., data link layer connectivity) information is propagated”). Mitchell achieves this link failure information propagation by utilizing a link failure propagation module that detects the link failure. EX1005, 5:50-55 (“Following a failure of primary upstream link 108a ..., link failure propagation module 204 of primary switch 104a is used to detect the failure and responsively disable one or more of primary downstream links 110a-110n.”).



EX1005, FIG. 2. EX1002, ¶¶90-93.

And as discussed above, a POSITA would have readily recognized that the *core router 404a* may also be equipped with a link failure propagation module to allow the *core router 404a* to propagate the failure information to each of **network switch 410a** and **primary ethernet switch 412a** that are traversed by the *group of links*. See EX1005, 7:49-53 (“a failure such as that illustrated on a link between primary network switch 410a and core router 404a may be propagated downstream to one or more of endstations 414.”), 4:10-15 (“As the link state of link failure information is propagated downstream...”), 7:25-29, 5:14-29.



EX1005, FIG. 4. EX1002, ¶94.

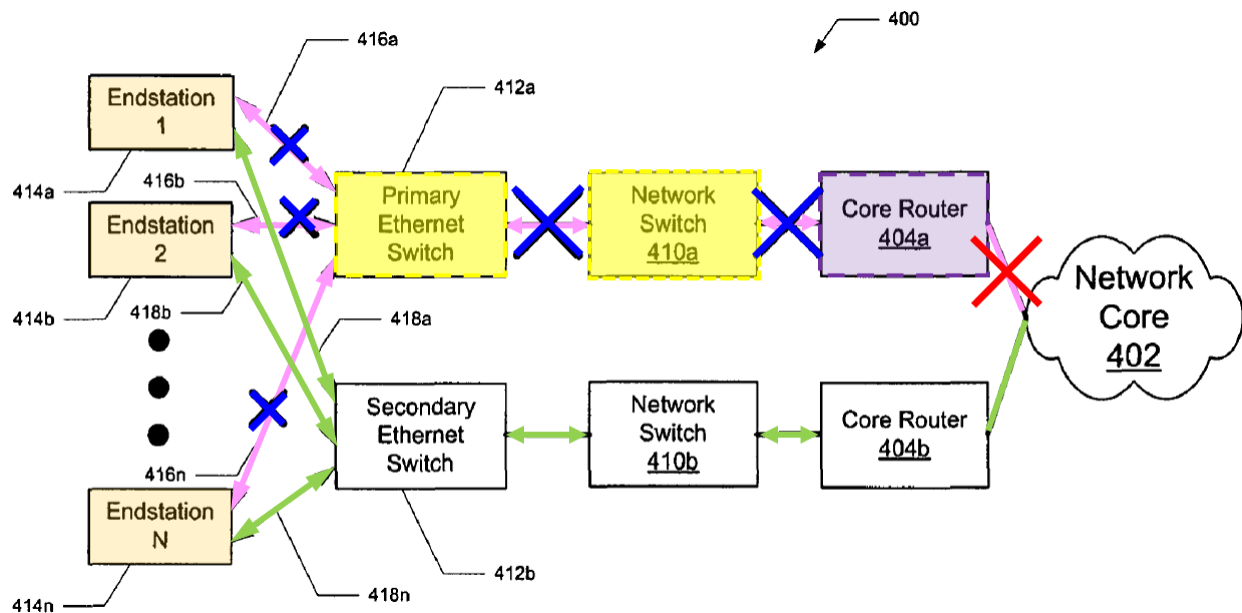
Mitchell further discloses that “[w]here link failure propagation is to be performed ... one or more downstream links of a network element associated with the illustrated process embodiment are disabled (process block 312).” EX1005, 7:25-29. In other words, Mitchell discloses that each of the downstream network elements (*i.e.*, network switch 410a and primary ethernet switch 412a) receive the propagated failure information. EX1005, Abstract; *see also id.*, 2:24-33 (“Using one or more embodiments of the present invention, network connectivity (e.g., data link layer connectivity) information is propagated, thereby enabling downstream network elements not immediately adjacent to the site of a link failure or directly coupled to a network element experiencing link failure to failover to alternate, redundant links such that the state of one or more connections or communications

channels with the upstream portion(s) of a communications network may be preserved and the connection(s)/channel(s) may be maintained.”), 7:25-29, 7:36-53.

EX1002, ¶¶95-96.

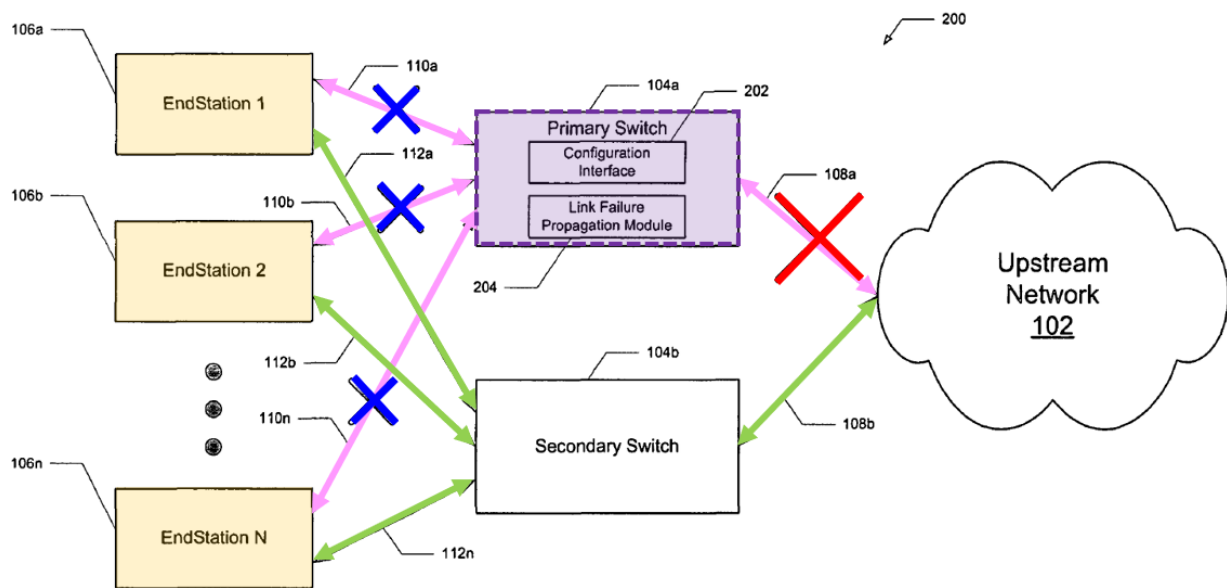
- vii. [1h] **deactivating a physical layer of the first set of links connected thereto, thereby causing a loss of connectivity in the first set of links; and**

Mitchell renders obvious limitation [1h]. Specifically, a POSITA would have recognized that for each of the *core router 404a*, *network switch 410a* and *primary ethernet switch 412a*, the physical layer of the links connected downstream of these network elements are **deactivated**, which causes a loss of connectivity in the “*group of links*.”



EX1005, FIG. 4. EX1002, ¶¶97-98.

For example, although not explicitly described with respect to Figure 4, Mitchell discloses (with respect to Figure 2) that upon propagation of the failure information to the downstream nodes, “*all downstream links or ports of primary switch 104a are disabled in response to the detection of a failure of primary upstream link 108a.*” EX1005, 5:56-67.



EX1005, FIG. 2. EX1002, ¶99.

Specifically, Mitchell describes that “a physical layer protocol circuit or ‘PHY’ associated with one or more ports and/or links is disabled using an administrative command, causing all ports and/or links associated with the PHY to become disabled.” EX1005, 5:67-6:5; see also Figure 3, 7:3-33 (“Where link failure propagation is to be performed automatically ... one or more downstream links of a network element associated with the illustrated process embodiment are *disabled*”).

(process block 312).”). And “[o]nce a port and/or link (e.g., one or more of downstream links 110) is disabled,” Mitchell teaches “deactivating a network interface associated with the failed *primary downstream link*.” EX1005, 6:26-31. In other words, it causes a loss of connectivity in the “*group of links*.” Hence, Mitchell renders obvious limitation [1h]. EX1002, ¶¶100-101.

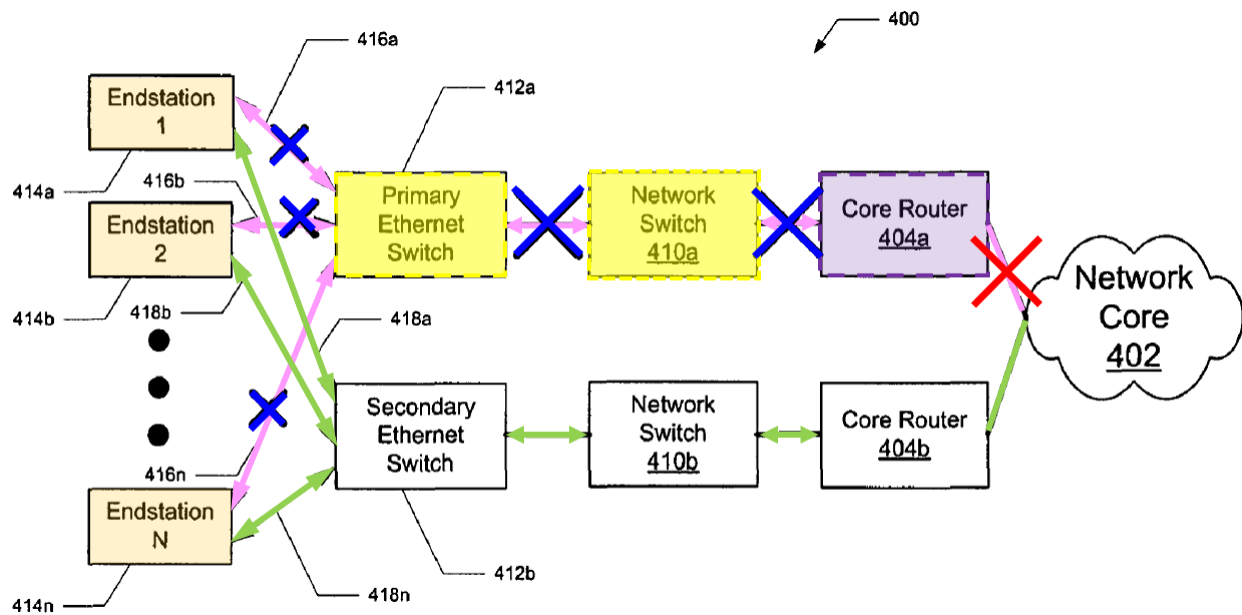
- viii. [1i] responsively to sensing the loss of connectivity, resuming the communication service over the second instance by automatically transferring communication among the endpoints to the second set of links.**

Mitchell discloses limitation [1i]. Mitchell discloses that in response to the physical layer circuits being disabled, a failover occurs to resume the communication service over the secondary *set of links*. See e.g., EX1005, 6:26-36 (“Once a port and/or link (e.g., one or more of downstream links 110) is disabled, an associated *multi-homed endstation* may failover to a corresponding *secondary downstream link 112* by activating a network interface associated with the *secondary downstream link*...”), 2:23-42 (explaining that “network connectivity (e.g., data link layer connectivity) information is propagated, thereby enabling downstream network elements not immediately adjacent to the site of a link failure or directly coupled to a network element experiencing link failure to *failover to alternate, redundant links*.”). Indeed, Mitchell explains that “downstream network elements with *the capability to switch to alternate (e.g., redundant) links* may do so,

preserving higher-level communication channels between the downstream and upstream portions of the communications networks and providing seamless failover.” EX1005, 4:10-15. EX1002, ¶¶102-104.

Mitchell further explains that the failover process can be carried out automatically. *See* EX1005, 5:30-38 (“According to one embodiment, configuration interface 202 is configured to ... specify[] ... how link failure propagation is to be performed (e.g., *automatically* or on demand, ...”), 7:7-10 (“[A] determination is made whether link failure propagation is to be performed on-demand or *automatically*...), 7:25-29. EX1002, ¶105.

And upon failover to the secondary *set of links* in Figure 4, the communication service can be resumed among the *endpoints*. *See* EX1005, 2:23-33 (discussing “enabling ... failover to alternate, redundant links such that the state of one or more connections or communications channels with the upstream portion(s) of a communications network may be preserved and the connection(s)/channel(s) may be maintained.”).



EX1005, FIG. 4. EX1002, ¶¶104-105.

3. Independent Claim 16

Petitioner reserves the right to challenge claim 16 and its dependents under 35 U.S.C. § 112 in other proceedings. As one example, claim 16 requires “network nodes ... [16e] to propagate a first message notifying all other nodes in the network that are traversed by the first set of links upon detecting the local failure; and [16f] to receive a second message from another node indicating a remote failure in the first set of links.” The claim is defective under § 112 as it may be subject to different inconsistent interpretations, such as whether all or only some of the network nodes must perform both functions and how the terms “first message” [16e], “second message” [16f], “all other nodes” [16e], “another node” [16f], and “that node” [16g] should be interpreted. As another example, claim 17 requires the “first network node

... to send **a third message** indicating the failure to a **second network node**,” but subsequently requires “*a third network node* ... to deactivate the physical layer resources responsively to accepting **the third message**.” EX1002, ¶106.

Nevertheless, based on the prosecution history, Petitioner interprets claim 16 accordingly. As explained in Section VI.B [Prosecution History], during prosecution and after the first rejection that included an indefiniteness rejection of claim 24 (corresponding to issued claim 17), Applicant amended claims 23-24¹ (corresponding to issued claims 16-17) to overcome the rejection. EX1004, 160-164. As support for these amendments that led to issued claims 16 and 17, Applicant relied on the following portion of the specification:

The claimed features recited in claims 1, 13, and 23 [corresponding to issued claim 16] as “propagating ... failure information to each of the other nodes of the plurality of network nodes”; and “upon receiving the second message, to

¹ Applicant stated that “[c]laim[] ... 24 ... [is] unchanged,” EX1004, 163, only to state later in the same Office Action Response that “Applicant is amending claim 24 by deleting the phrase ‘another network node’ and reciting ‘a first network node’, ‘a second network node’, and a ‘third network node’ to distinctly point out the subject matter claimed.” *Id.*, 164. EX1002, ¶107.

cause a loss of connectivity in the first set of links” are disclosed in paragraph [0030] and Figure 3, block 76....

EX1004, 163. EX1002, ¶¶107-108.

In addition, Applicant argued that the prior art references

fail to show or suggest at least the following features in amended independent claims 1, 13, and 23 [corresponding to issued claim 16]: propagating failure information by a detecting node to each node of the other nodes of the plurality of network nodes traversed by a first set of links; and receiving the failure information at a node and deactivating a physical layer of the first set of links connected thereto, thereby causing a loss of connectivity in the first set of links.

EX1004, 165. To overcome a rejection under 35 U.S.C. § 112, Applicant again amended claim 24 (issued claim 17). EX1004, 250 (“The Office Action states the limitation ‘the message’ in line 4 of claim 24 lacks sufficient antecedent basis. The Applicants have amended claim 24 to distinguish a third message from the first message and second message of base claim 23.”). EX1002, ¶¶109-110.

Accordingly, for the purposes of this IPR, while claim 16 and its dependents (including claim 17) suffer from various 35 U.S.C. § 112 issues, the Petition treats claims 16 and 17 to be similar in scope to independent claim 1. Specifically, Petitioner treats “first message” [16e], “second message” [16f], and “third message”

[17] as a failure information that is propagated by the detecting node (*i.e.*, “first network node” [17]) to each node of the other nodes. Similarly, the Petition treats “all other nodes” [16e], “another node” [16f], “that node” [16g], “second network node” [17] and “third network node” [17] as additional nodes that receive failure information from the detecting node (*i.e.*, “first network node” [17]). EX1002, ¶111.

i. [16pre] A communication network serving a plurality of endpoints, the network comprising:

To the extent limiting, Mitchell discloses [16pre]. See Sections IX.A.2.i [1pre], IX.A.2.ii [1a], IX.A.2.iii [1b], and IX.A.2.iv [1c]. EX1002, ¶¶112-113.

ii. [16a] a plurality of links, comprising at least first and second alternative sets of links that interconnect the endpoints via the network; and

Mitchell discloses [16a]. See Sections IX.A.2.ii [1a], IX.A.2.iii [1b], and IX.A.2.iv [1c]. EX1002, ¶¶114-115.

iii. [16b] network nodes, which are traversed by the first and second sets of links and are arranged: to provide physical layer resources for operating the links;

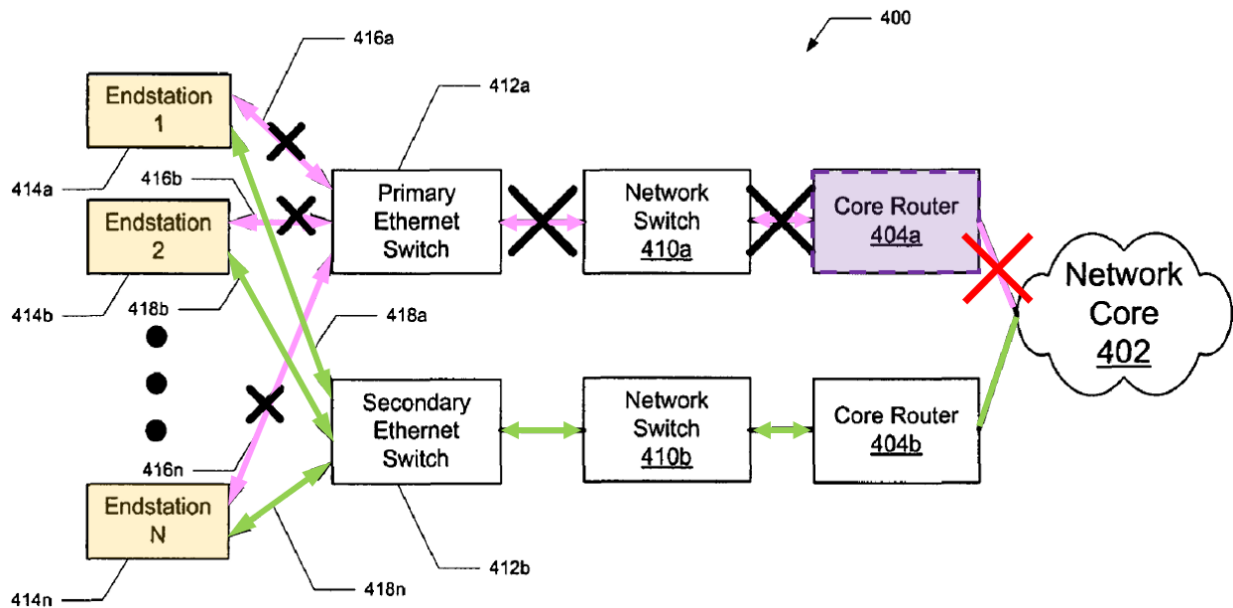
Mitchell discloses [16b]. See Section IX.A.2.iii [1b]. EX1002, ¶¶116-117.

iv. [16c] to provide a communication service to the endpoints over the first set of links using a first instance of the communication service;

Mitchell discloses [16c]. See Sections IX.A.2.ii [1a], IX.A.2.iii [1b], and IX.A.2.iv [1c]. EX1002, ¶¶118-119.

v. [16d] to detect a local **failure** in the **first set of links**;

Mitchell renders obvious [16d]. *See* Section IX.A.2.v [1d]. Specifically, the **failure** in the **link** between **core router 404a** and network core 402 is a local **failure** detected by **core router 404a**, because Mitchell makes clear that the failure is detected locally upstream (*i.e.*, towards the network core 402 for the case in which the **core router 404a** detects the failure) relative to the detecting node. EX1005, 3:35-43 (“According to one embodiment of the present invention, a method is provided in which a failure of a first link between a network element and an upstream portion of a communications network is detected...”), 2:43-47, 3:9-12.



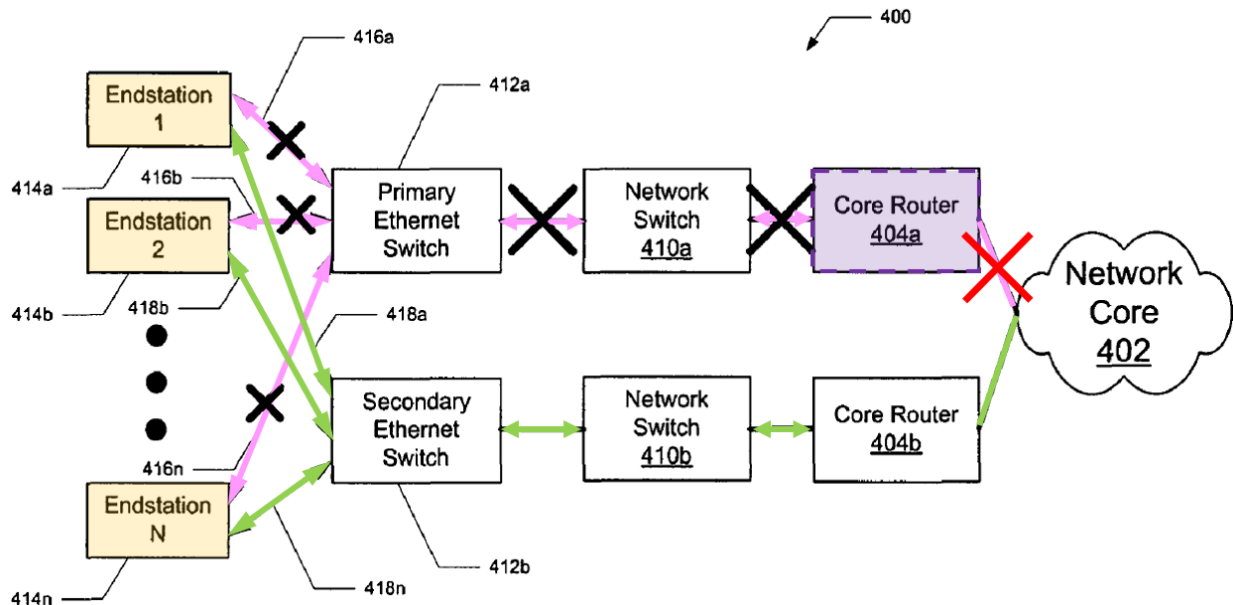
EX1002, ¶¶120-122.

vi. [16e] to propagate a first message notifying all other nodes in the network that are traversed by the **first set of links** upon detecting the local **failure**; and

[16f] to receive a second message from another node indicating a remote **failure** in the **first set of links**; and

Mitchell renders obvious [16e] and [16f]. See Section IX.A.2.vi [1e, 1f, 1g].

Specifically, upon detecting the local **failure**, the **core router 404a** can propagate downstream the failure information, at which point the network switch 410a will send the failure information message down to primary ethernet switch 412a that indicates a remote failure at the **link** between **core router 404a** and the network core 402.



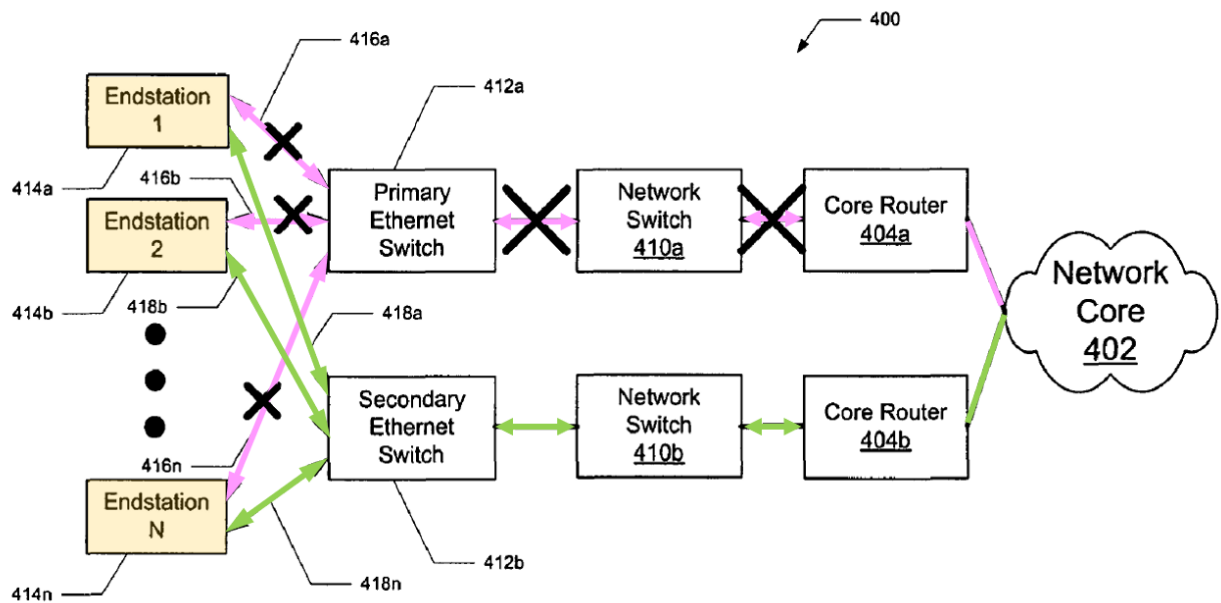
EX1002, ¶¶123-125.

- vii. [16g] responsively to receiving the second message indicating the remote **failure**, to **deactivate** the physical layer resources of each node to links in the **first set of links** connected to that node upon receiving the second message, to cause a loss of connectivity in the **first set of links** and

Mitchell renders obvious [16g]. See Section IX.A.2.vi [1e, 1f, 1g] and IX.A.2.vii [1h]. Specifically, after the primary ethernet switch 412a receives the failure information that indicates a remote failure at the **link** between **core router 404a** and the network core 402, the physical layer of the links connected downstream of these network elements are **deactivated** (e.g., **disabled**), which causes a loss of connectivity in the “**group of links**.” EX1002, ¶¶126-127.

- viii. [16h] thus cause an automatic transfer of communication among the **endpoints** to the **second set of links**, and to resume the communication service over the **second set of links** using a second instance of the communication service different from the first instance.

Mitchell discloses [16h]. See Sections IX.A.2.viii [1i] and IX.A.2.vii[1h]. The failover causes an automatic transfer to the **set of links** such that the collection of the network elements in network core 402, core router 404b, network switch 410b, secondary ethernet switch 412b coupled together by the **set of links** are now used instead of the first instance of the network elements in network core 402, core router 404a, network switch 410a, primary ethernet switch 412a coupled together by the **group of links**. EX1005, 7:36-49.



EX1005, FIG. 4. EX1002, ¶¶128-130.

4. Dependent Claim 17

[17] The network according to claim 16, wherein a **first network node** is arranged to detect the **failure** and to send a third message indicating the **failure** to a **second network node**, and wherein a **third network node**, which provides the physical layer resources to links in the first set, is arranged to **deactivate** the physical layer resources responsively to accepting the third message.

Mitchell discloses [17]. See Sections IX.A.2.v [1d], IX.A.2.vi [1e]-[1g], and IX.A.2.vii [1h]. EX1002, ¶¶131-132.

5. Dependent Claims 7, 13, 19, And 23

[7] The method according to claim 1, wherein the one or more of the links in the **first set of links** comprise wire links, and wherein said deactivating the physical layer resources comprises disabling respective carrier signals of the wire links.

[13] The method according to claim 1, wherein a link in **the first set of links** includes a wire link, and wherein deactivating the physical layer includes disabling a carrier signal of the wire link.

[19] The network according to claim 16, wherein the one or more of the links in **the first set of links** comprise wire links, and wherein the network nodes are arranged to deactivate the physical layer resources by disabling respective carrier signals of the wire links.

[23] The communication network of claim 16, wherein a link in **the first set of links** includes a wire link, and wherein deactivating the physical layer resources includes disabling a carrier signal of the wire link.

Mitchell renders obvious [7], [13], [19], and [23]. Mitchell teaches that “**links 108, 110, and 112** have been illustrated as *direct connections* between network elements.” EX1005, 4:45-62. A POSITA would have readily recognized that a direct connection includes wire links.² Indeed, Mitchell distinguishes direct (*i.e.*, wired) connections to “wireless (e.g., using electro-magnetic, optical, infrared and/or acoustic signals or transmission media)” connections. EX1005, 4:45-62; *see also id.*, 1:46-60. Thus, a POSITA would have also understood that the “**group of links**” are also wired direct connections. EX1002, ¶¶133-137.

² *See, e.g.*, EX1013, 5:56-67 (“[C]ommunication media includes wired media, such as a wired network or direct-wired connection....”). EX1002, ¶136.

And these wired connections carry a carrier signal/wave to effectuate communication. *See, e.g.*, EX1013, 5:56-67 (“Communications media typically includes ... a modulated data signal, such as a carrier wave or other transport mechanism.... [C]ommunication media includes wired media, such as a wired network or direct-wired connection...”). These carrier signals are disabled when Mitchell carries out disabling of “a physical layer protocol circuit or ‘PHY’ associated with one or more ports and/or *links* ... *causing all ports and/or links associated with the PHY to become disabled.*” EX1005, 5:56-6:5; *see also* EX1014, 2:56-3:14 (describing disabling a wired telephone line in response to a carrier signal detecting an inactive line state). EX1002, ¶138.

6. Dependent Claims 9, 15, And 25

[9] The method according to claim 1, wherein the one or more of the links in the *first set of links* comprise a logical link, and wherein said *deactivating* the physical layer resources comprises releasing an association of the logical link with the first instance of the communication service.

[15] The method according to claim 1, wherein a link in the *first set of links* includes a logical link, and wherein *deactivating* the physical layer includes releasing an association of the logical link with the first instance of the communication service.

[25] The network according to claim 16, wherein a link in the *first set of links* includes a logical link, and wherein *deactivating* the physical layer resources includes releasing an association of the logical link with the first instance of the communication service.

Mitchell renders obvious [9], [15], and [25]. At the outset, the '637 Patent explains that a virtual LAN (VLAN) is an example of a logical link. *See* EX1001, 9:53-55 (“Remote failure propagation can be carried out in such cases by locally shutting down the logical link (in the present example the VLAN)...”). EX1002, ¶¶139-141.

Mitchell discloses that the *group of links* and *set of links* can include “logical” links. Mitchell makes clear that the term “link” can include one or more “logical” links as well. EX1005, 4:26-29 (“[T]he term ‘link’ is intended to indicate a data link layer connection and may include one or more *logical sub-links* (e.g., an ‘Ether-Channel’ or ‘Port-Channel[’])...”). Specifically, Mitchell’s links can be configured as a logical VLAN link. *See, e.g.*, EX1005, 6:37-41 (“Using one embodiment of the present invention, a network element (e.g., a datalink layer-capable Ethernet switch) is configured to track the state of a virtual network (e.g., a *VLAN* or VSAN) on all identified upstream interfaces (e.g., links, ports, interface cards, or the like).”). EX1002, ¶142.

Mitchell further teaches that *deactivating* (e.g., *disabling*) the physical layer resources can include releasing association with the logical VLAN link with the “*group of links*,” coupled with the network elements core router 404a, network switch 410a, primary ethernet switch 412a. *See* EX1005, 5:62-65 (“[I]n another embodiment, only those downstream links or ports associated with a virtual network

such as a *VLAN* or VSAN which was predetermined or identified using configuration interface 202 are disabled.”), 3:35-43 (“[A] method is provided in which a failure of a first link between a network element and an upstream portion of a communications network is detected and a second link (e.g., *a group of links which are logically related to the first link*) between the network element and a downstream portion of the communications network is responsively *disabled* to maintain a communications channel between the downstream and upstream portions of the communications network.”). EX1002, ¶143.

7. Dependent Claims 10 And 21

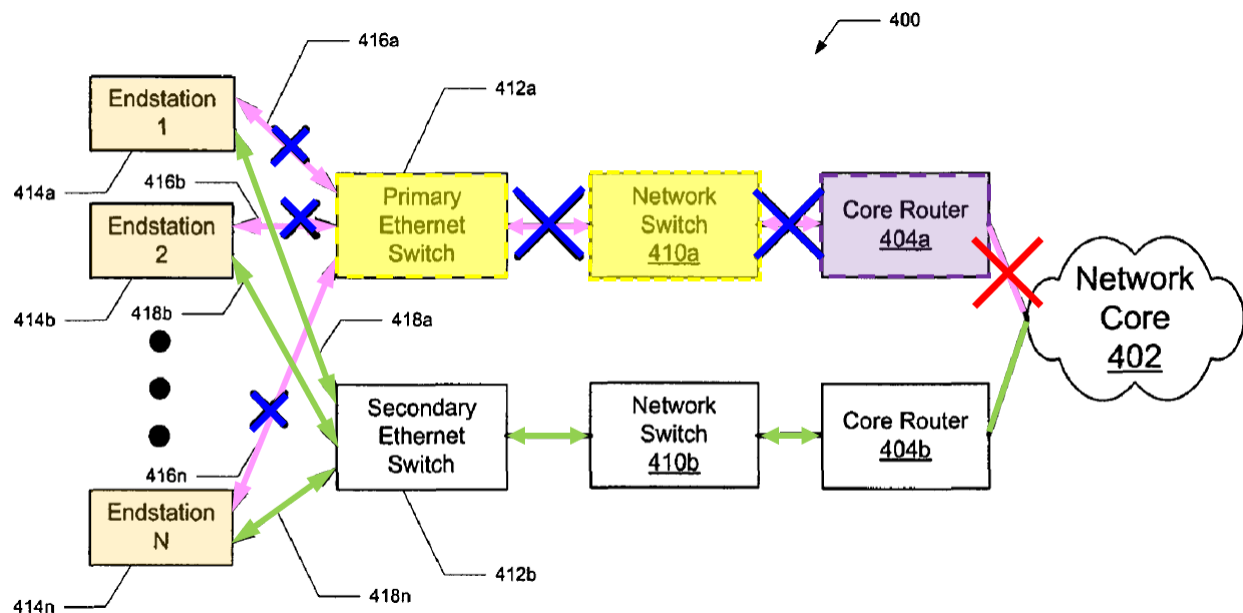
[10] The method according to claim 1, wherein a link of the **first set of links** is a critical link, and wherein said deactivating the physical layer is performed only when the **failure** occurs in the critical link.

[21] The network according to claim 16, wherein a subset of the links in the **first set of links** are classified as critical links, and wherein the network nodes are arranged to deactivate the physical layer resources only when the **failure** occurs in one of the critical links.

Mitchell discloses [10] and [21]. At the outset, the ’637 Patent states that a “critical link is defined as a link whose failure triggers a switch-over to the backup topology.” EX1001, 7:46-56. The ’637 Patent contrasts these critical links against non-critical links, by noting that “[f]ailure of a non-critical link is considered

tolerable, and does not initiate such a change.” EX1001, 7:54-56. EX1002, ¶¶144-146.

Mitchell discloses both critical and non-critical links. For example, as explained in Sections IX.A.2.v [1d], IX.A.2.vi [1e]-[1g], IX.A.2.vii [1h], and IX.A.2.viii [1i], Mitchell discloses that the *link* between *core router 404a* and network core 402 is a critical link, because a *failure* in that *link* triggers an automatic failover to the secondary *set of links*. EX1005, 5:30-38, 5:46-6:5, 6:26-36 (“Once a port and/or link ... is disabled, an associated multi-homed endstation may failover to a corresponding secondary downstream link ... by activating a network interface associated with the secondary downstream link and deactivating a network interface associated with the failed primary downstream link.”), EX1005, 7:7-10, 7:25-55, FIGS. 2, 4.



EX1005, FIG. 4. EX1002, ¶¶147-148.

In contrast, Mitchell also discloses non-critical links that does not result in deactivation of the physical layer or trigger a failover to the backup topology. EX1005, 6:6-25 (“...*a failure of one or more of the primary upstream links need not cause any of downstream links 110 to be immediately disabled. ...*”), 6:26-36, 7:10-15, FIGS. 2, 4. Hence, Mitchell discloses the added limitations of [10] and [21]. EX1002, ¶¶149-150.

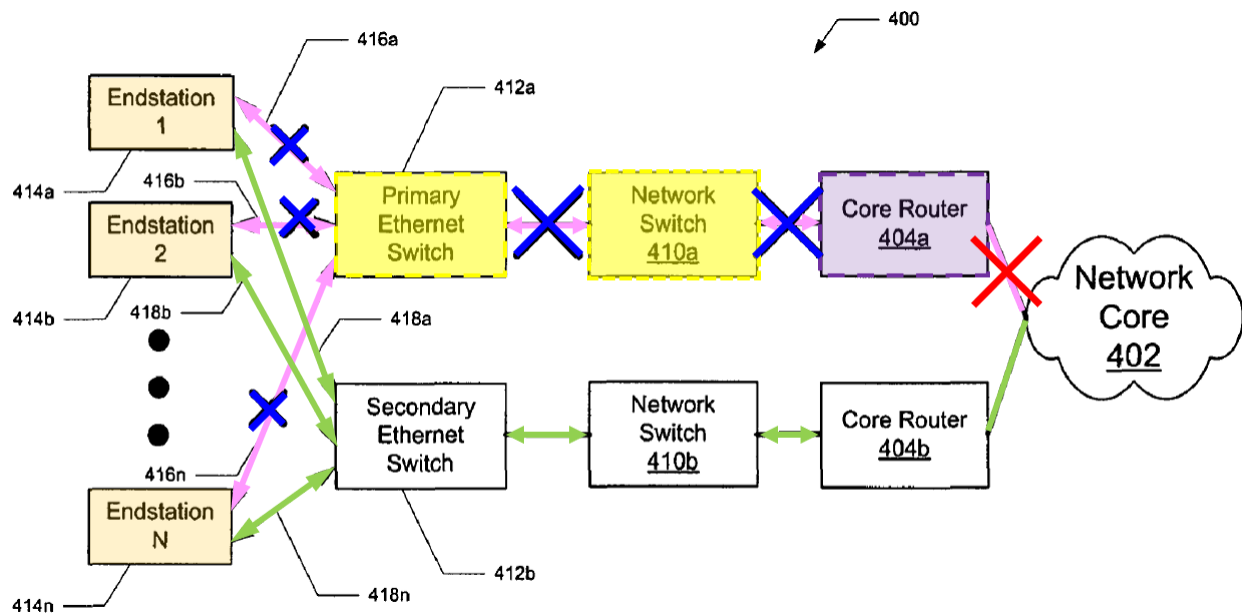
8. Dependent Claim 11

[11] The method according to claim 1, wherein said provisioning different first and second instances of a multipoint-to-multipoint communication service over respective **first** and **second** alternative sets of links comprises sharing respective allocations of network resources reserved for communicating over the **first** and **second** sets of links.

Mitchell discloses the added limitations of [11]. At the outset, the ’637 Patent exemplifies how sharing allocations of network resources can be carried out: “Since in most cases traffic actually flows in only one of the two topologies at any given time, it is possible to share bandwidth and other resource allocations between the two topologies.” EX1001, 10:39-47. In other words, the ’637 Patent makes clear that sharing of resource allocations between **VPLS1** and **VPLS2** is possible because traffic flows in either **VPLS1** or **VPLS2** at any given time. EX1002, ¶¶151-153.

Mitchell discloses that the failover can occur while “preserving higher-level communication channels between the downstream and upstream portions of the communications networks [to] provid[e] a seamless failover.” EX1005, 4:10-15. In other words, just as the ’637 Patent share allocations of network resources by seamlessly failing over from *VPLS1* to *VPLS2*, Mitchell discloses the same seamless failover as it fails over from the primary *group of links* to the secondary *set of links*. And specifically, the allocations of resources, such as the network elements³ inside the network core 402, are shared as it fails over from the primary *group of links* to the secondary *set of links*. See EX1005, 1:46-60, 2:31-44, 6:6-36. EX1002, ¶154.

³ The ’637 Patent incorporates by reference “U.S. patent application Ser. No. 11/305,485, entitled ‘Resource Sharing among Network Tunnels,’ filed Dec. 15, 2005, which is assigned to the assignee of the present patent application.” EX1001, 10:48-53. This appears to be a typographical error since U.S. Patent Application No. 11/305,486 is titled ‘Resource Sharing among Network Tunnels,’ was filed December 15, 2005, was originally assigned to Orckit Corrigent Ltd., and is now U.S. Patent No. 7,463,580 to Agmon *et al.* (“Agmon”) (EX1015). Agmon explains that the “term ‘resource’ means *any resource* associated with a network element.” EX1015, 5:12-21. EX1002, ¶¶155-156.



EX1005, FIG. 4. EX1002, ¶157.

In addition, Mitchell uses these network elements to provide network connections (e.g., traversing a network core, LAN, WAN, or MAN) to its endstations. See EX1005, 1:46-60 (“In operation, *data is transmitted between multi-homed endstations 106 and upstream communications network portion 102* using primary links 110a-110n, primary switch 104a, and primary link 108a. Following a failure ... *[d]ata is then transmitted between the multi-homed endstation which has failed over and upstream communications network portion 102* via an associated secondary link 112, a secondary switch 104b, and a secondary link 108b.”), 5:46-50, 6:26-36, 7:36-49. Thus, Mitchell discloses sharing allocations of network resources of an upstream communications network between a primary

group of links and secondary *set of links* through network elements in network core 402. EX1002, ¶¶158-159.

B. Ground 2: Mitchell And Bhate Render Obvious Claims 2, 6, 12, 18, And 22

1. Dependent Claim 2

[2] The method according to claim 1, wherein the network comprises a ring network.

Mitchell and Bhate render obvious [2]. Mitchell is silent as to whether the network includes a ring network. However, ring networks were well-known in the art, and it would have been obvious to include a ring network in Mitchell’s system. For instance, Bhate discloses a ring network (*e.g.*, a USPR [unidirectional path switched ring] network) that provides communication traffic “in two different directions along a working path and a protection path between a source node and a destination node.” EX1006, 4:33-64. Figure 3 of Bhate (below), shows the ring network (*e.g.*, USPR network 300).

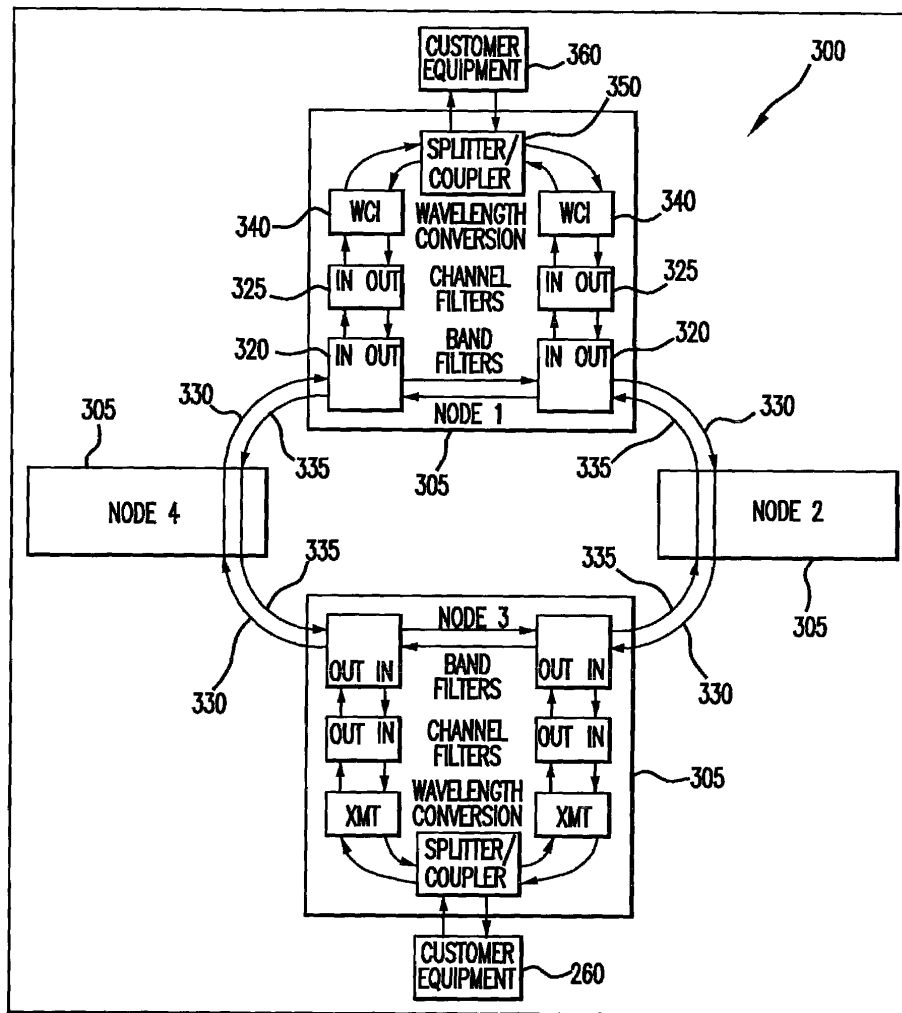


FIG. 3

EX1006, FIG. 3. As shown, Bhate includes four network nodes that traverse the ring network 300. EX1006, 4:33-48. EX1002, ¶¶160-162.

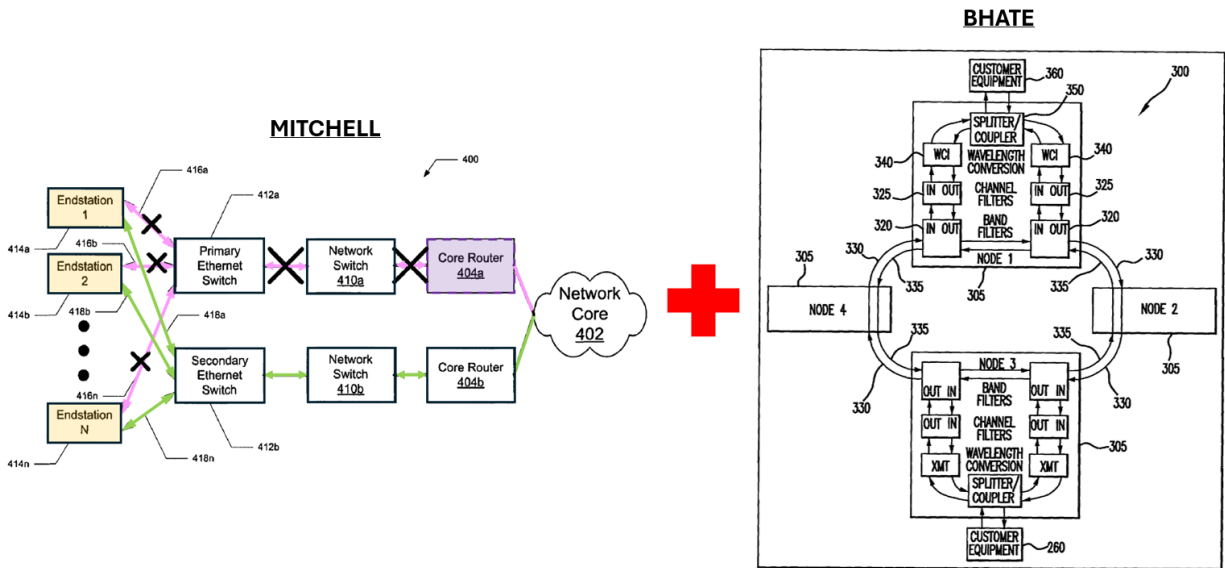
The nodes described in Bhate function just like the network elements in Mitchell. For example, Mitchell itself utilizes the terms “network elements” and “nodes” interchangeably and some examples of a suitable node include switches and routers. EX1005, 1:19-25 (“For example, redundant network links or connections

are frequently used to couple a single **network element or node**, (e.g., a client, server, or other host data processing system, a communications network appliance, or a **switch, router**, hub, gateway or other redistribution point) to one or more communications networks or portions thereof (e.g., network segments).”). EX1002, ¶163.

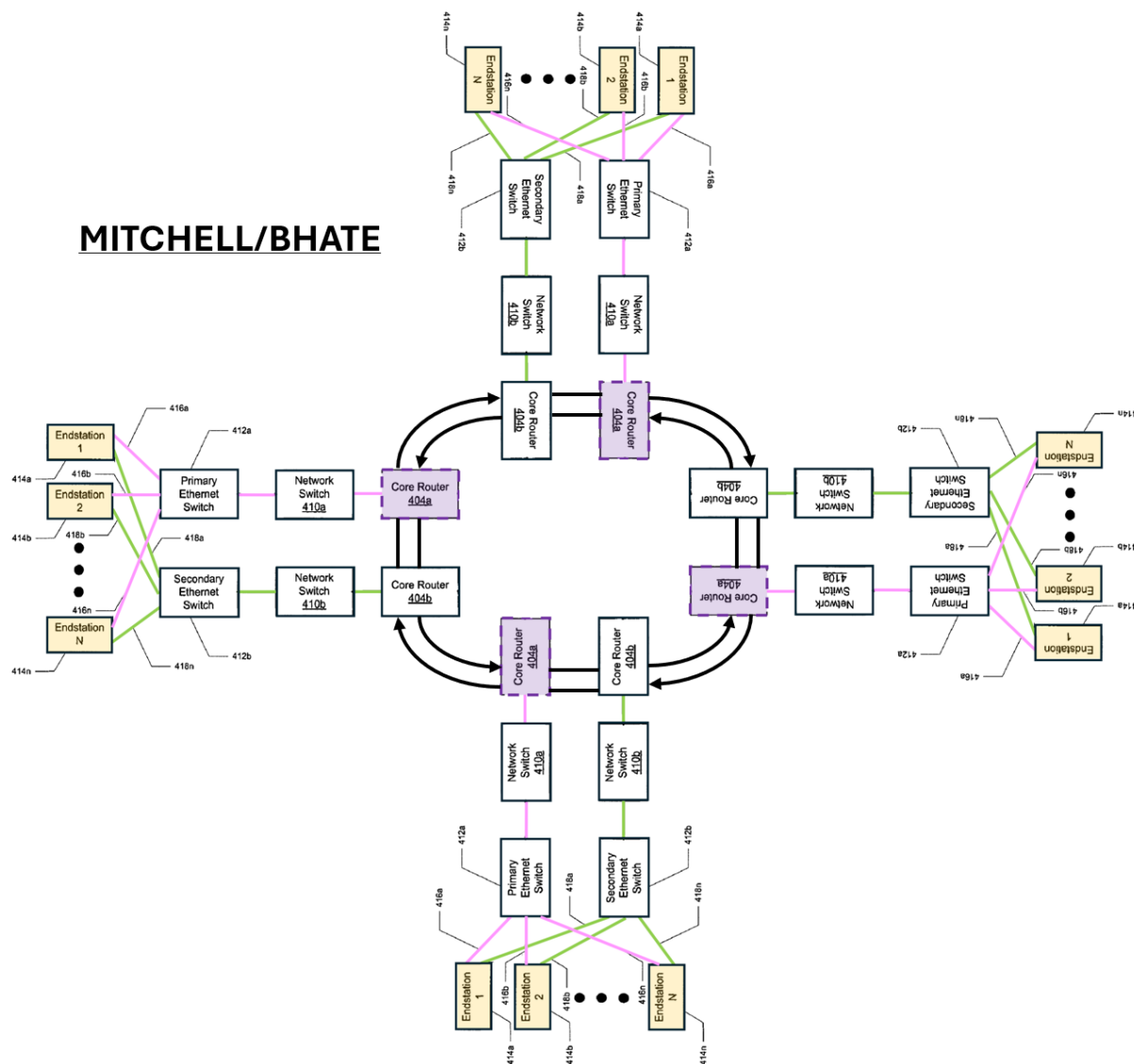
And both Mitchell’s network elements/nodes and Bhate’s nodes function similarly. For example, both Mitchell and Bhate disclose that the network elements/nodes can detect a link failure. *See e.g.*, EX1005, 5:50-55 (“Following a failure of primary upstream link 108a (e.g., due to failure of the physical link hardware, a network interface card, or primary switch 104a) link failure propagation module 204 of primary switch 104a is used to detect the failure and responsively disable one or more of primary downstream links 110a-110n.”); EX1006, 2:59-3:2 (“As indicated in FIG. 2B, responsive to detecting a fault (e.g., a loss of signal) at the line side of an intervening passthrough or regeneration node 215, a corresponding laser transmitter used to propagate the signal further downstream is turned off 220.”). As another example, both Mitchell and Bhate disclose that, in response to detecting the failure, the respective network elements/nodes propagate failure information to downstream nodes. EX1005, 4:10-20 (“As the link state or link failure information is propagated downstream, downstream network elements with the capability to switch to alternate (e.g., redundant) links may do so, preserving

higher-level communication channels between the downstream and upstream portions of the communications networks and providing seamless failover.”), 5:50-55; EX1006, 2:59-3:2, 4:25-32 (“As an illustrative example, if a node is configured to provide SONET service, conventional SONET AIS alarms for loss of signal (LOS), loss of frame (LOF), BER, or signal fail may be transmitted downstream in response to a fault whereas for a service lacking an AIS protocol the node may turn off a laser transmitter to propagate fault information towards the destination node.”). EX1002, ¶¶164-165.

Thus, a POSITA would have understood that the network elements/nodes disclosed in Mitchell and Bhate, respectively, are similar devices that are capable of providing connections in a communications network, detecting a failure in an upstream link, and responsively propagating failure information to other downstream network elements/nodes. Further, a POSITA would have readily recognized that Mitchell’s network elements (*e.g.*, core routers 404) could be substituted for Bhate’s nodes 1-4 (*e.g.*, nodes 335) because the network elements/nodes include these similarities.



EX1005, FIG. 4; EX1006, FIG. 3. As shown below, it would have been obvious to place Mitchell's network elements (*e.g.*, core routers 404) onto the ring network 300 of Bhate, in lieu of Bhate's nodes 1-4 (*e.g.*, nodes 335).



EX1002, ¶¶166-168.

A POSITA would have been able to make such a modification with a reasonable expectation of success. Placing Mitchell's core routers onto a ring network in lieu of Bhate's nodes amounts to substituting one network element for another that provides nearly identical functions. Accordingly, a POSITA would have been able to make the substitution as it replaces one well-known network

element with another well-known element to achieve a predictable result of providing a network over a ring topology. EX1002, ¶169.

There are also additional similarities that a POSITA would have readily recognized as additional reasons for combining Mitchell with Bhate. For example, a POSITA would have readily recognized that, like Mitchell, Bhate discloses forwarding (*e.g.*, propagating) failure information. *See, e.g.*, EX1005, 2:23-33 (“Using one or more embodiments of the present invention, network connectivity (*e.g.*, data link layer connectivity) information is propagated....”), 4:10-15 (“As the link state or link failure information is propagated downstream....”); EX1006, Abstract (“[T]he the fault information is forwarded to the destination node....”), 2:26-32 (“The present invention generally comprises ... forwarding fault information....”). Bhate similarly detects a link failure and forwards failure information over a ring network. *See, e.g.*, EX1005, 2:23-33 (“Using one or more embodiments of the present invention, **network connectivity** (*e.g.*, **data link layer connectivity**) **information is propagated**, thereby enabling **downstream network elements** not immediately adjacent to the site of a link failure or directly coupled to a network element experiencing link failure to failover to alternate, redundant links such that the state of **one or more connections or communications channels** with the upstream portion(s) **of a communications network** may be preserved and **the connection(s)/channel(s)** may be maintained.”), 4:10-15 (“As the link state or **link**

failure information is propagated downstream, downstream network elements with the capability to switch to alternate (e.g., redundant) links may do so, preserving *higher-level communication channels* between the downstream and upstream portions of *the communications networks* and providing seamless failover.”), 4:33-39 (“As previously described with respect to FIG. 1, *data processing system 200* of the illustrated embodiment of FIG. 2 includes *an upstream communications network portion 102*, a primary switch 104a, a secondary switch 104b, and a number of redundantly-linked network elements (e.g., multi-homed endstations 106a, 106b ... 106n).); EX1006, Abstract, 2:36-3:2, 3:20-35, 4:33-64, FIGS. 2A-2D, 7. Thus, a POSITA would have understood that Mitchell and Bhate are combinable because they relate to link failure recovery. A POSITA would have also recognized that both Mitchell and Bhate provide redundant network topology. *See, e.g.*, EX1005, 4:15-30, 4:58-62, 5:46-65, 6:37-44, 7:34-49; EX1006, 1:15-37. Moreover, a POSITA would have readily recognized that adding Mitchell’s fast link failover technique to Bhate’s redundant ring networks would continue to provide overall network resiliency. EX1002, ¶¶170-171.

And a POSITA would have been motivated to place Mitchell’s core routers onto a ring network, because a POSITA would have recognized that there were additional benefits associated with placing network elements/nodes on a ring network. For example, as discussed in Sections IX.A.1 [Overview Of Mitchell] and

IX.A.2 [Independent Claim 1], Mitchell provides a multipoint network that seeks to improve data accessibility and reliability in a communications network. *See e.g.*, EX1005, 1:11-18. Thus, a POSITA would have readily recognized the additional benefits associated with placing network elements/nodes on a ring network would also improve data accessibility and reliability in a communications network. For example, it was well-known that ring networks are used to provide improved data accessibility and reliability (*e.g.*, through efficient bandwidth utilization). EX1012, [0010]-[0012]. Indeed, using ring networks may improve data accessibility and reliability by increasing traffic efficiency and decreasing network congestion. EX1012, [0040]. Thus, a POSITA would have been motivated to place Mitchell's core routers onto a ring network, such as Bhate's ring network 300, because doing so would yield additional benefits of improving data accessibility and reliability in the communications network. EX1002, ¶¶172-174.

2. Dependent Claims 6, 12, 18, And 22

[6] The method according to claim 1, wherein the one or more of the links in the first set of links comprise optical links, and wherein said deactivating the physical layer resources comprises disabling respective laser sources of the optical links.

[12] The method according to claim 1, wherein a link in the first set of links includes an optical link, and wherein deactivating the physical layer includes disabling a laser source of the optical link.

[18] The network according to claim 16, wherein the one or more of the links in **the first set of links** comprise optical links, and wherein the network nodes comprise respective laser sources for driving the optical links and are arranged to deactivate the physical layer resources by disabling the laser sources.

[22] The communication network of claim 16, wherein a link in **the first set of links** includes an optical link, and wherein deactivating the physical layer resources includes disabling a laser source of the optical link.

Mitchell in combination with Bhate render obvious the additional limitation of [6], [12], [18], and [22]. Mitchell discloses the **group of links** can include **optical links**. EX1005, 4:51-58 (“[A]ny of **links 108, 110, and 112** may be wireless (e.g., using electro-magnetic, **optical**, infrared and/or acoustic signals or transmission media).”). While Mitchell does not explicitly disclose whether those optical links include laser sources for driving the optical links or how such optical links can be disabled, this was well known. EX1002, ¶¶175-177.

For example, Bhate discloses that an optical transmitter “includes a laser to generate optical signals at a line wavelength.” EX1006, 5:21-23. Bhate discloses that optical signals are used to transmit network communications. EX1006, 5:24-41. Thus, a POSITA would have known that the **optical links** are driven by a laser source. EX1002, ¶178.

Bhate further discloses deactivating the **optical links** by “turning off a laser transmitted used to propagate the signal towards its destination.” EX1006, 2:36-42

(“For example, in response to a node detecting a fault condition at a tributary interface or a line interface, the node turns off a corresponding laser transmitter used to propagate the signal towards its destination.”), 2:50-3:2, 3:19-35, Abstract; *see also id.*, 4:33-57, 5:42-52 (discussing controllers to shut down a laser transmitter 520), FIG. 5, 550. Bhate further discloses that the “controller 550 is configured to detect faults and turn off an appropriate laser transmitter to propagate the fault information downstream, e.g., towards the destination node.” EX1006, 5:42-44. According to Bhate, controller 550 drives the signal (*e.g.*, shuts off a laser of transmitter 520) in response to determining a loss of signal (LOS) condition. EX1002, ¶¶179-180.

A POSITA would have been motivated to combine the teachings of Bhate with Mitchell and would have done so with a reasonable expectation of success because driving the optical link with a laser source and deactivating an optical link by disabling an optical laser merely involves using a known technique of turning on and off a laser to drive or disable an optical link. *See, e.g.*, EX1005, 4:51-58; EX1006, Abstract, 2:26-35. EX1002, ¶¶181-182.

C. Ground 3: Mitchell And Raahemi Render Obvious Claims 3 And 4

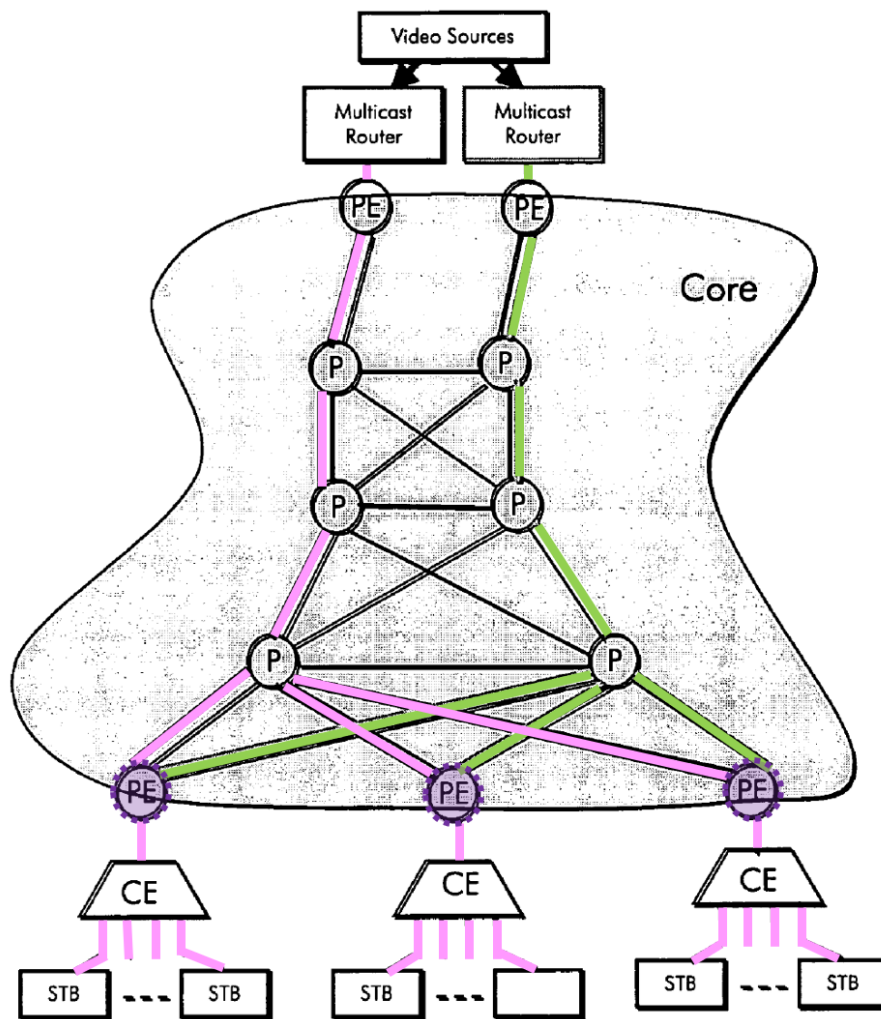
1. Dependent Claim 3

[3] The method according to claim 1, wherein the communication service comprises a virtual private local area network service (VPLS), and wherein the first and second instances comprise first and second VPLS instances.

Mitchell in combination with Raahemi render obvious [3]. Mitchell does not explicitly disclose that the communication service comprises a VPLS. However, providing a VPLS communication service in communication networks was well-known. For example, Raahemi explains that as early as 2005, VPLS was “already being used by service providers to aggregate services for delivery to residential and enterprise customers.” EX1007, [0002]. One well-known benefit of a VPLS service is that it “allows multiple sites to be connected in a single bridged domain over a provider managed IP/MPLS network” such that “[a]ll customer sites in VPLS instance appear to be on the same LAN regardless of their location.” EX1007, [0003]. EX1002, ¶¶183-185.

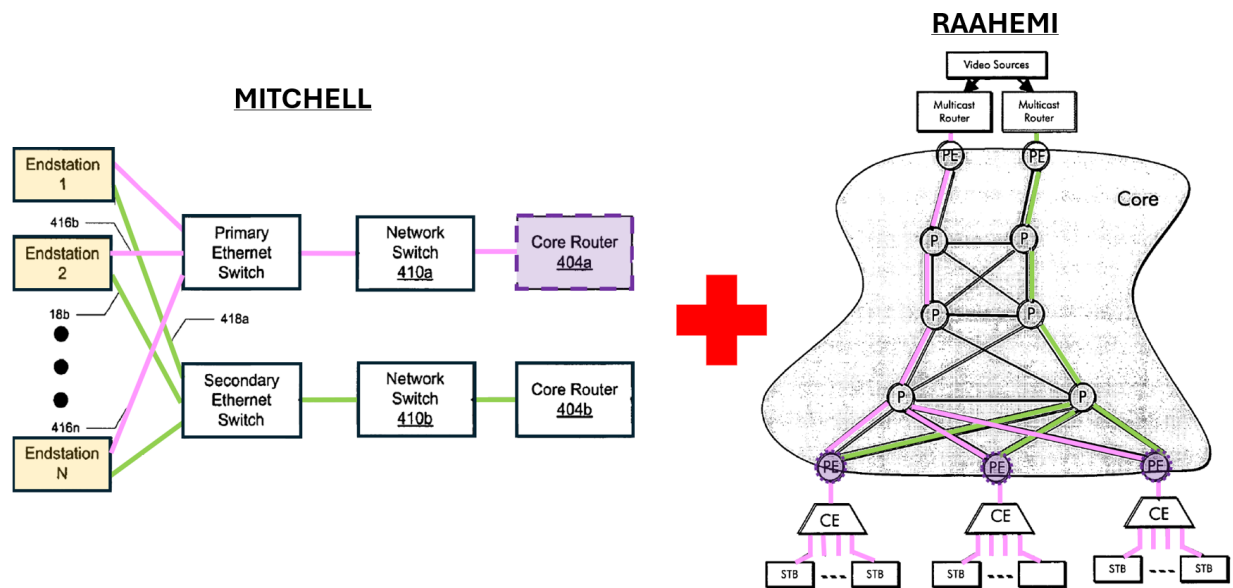
An example of a VPLS network, that provides a multimedia broadcast service, is shown below. As shown, the “network is comprised of a video source attached to a multicast router, the Provider Edge (PE) routers, the core routers (P), the Customer Equipment (CE) or aggregation devices, and the Set-top Boxes (STB) that are attached to customer TV sets.” EX1007, [0026]. Further illustrated below are two

different and disjoint VPLS instances: a *working tree* (left) and a *backup tree* (right). EX1007, [0046] (“[I]n the specific application of this invention, that is ***broadcasting digital multimedia over VPLS***, load balancing on the two trees (***the working tree and the backup tree***) during the normal operation is discussed.”), [0049] (“During the service initialization stage the Network Management System (NMS) pre-computes 2 disjoint Steiner Trees as shown in FIG. 2.”). Raahemi explains that having these two VPLS instances is beneficial because destination PE routers can be serviced by either of the two VPLS instances in case of a fault. EX1007, Abstract, [0046]-[0049].



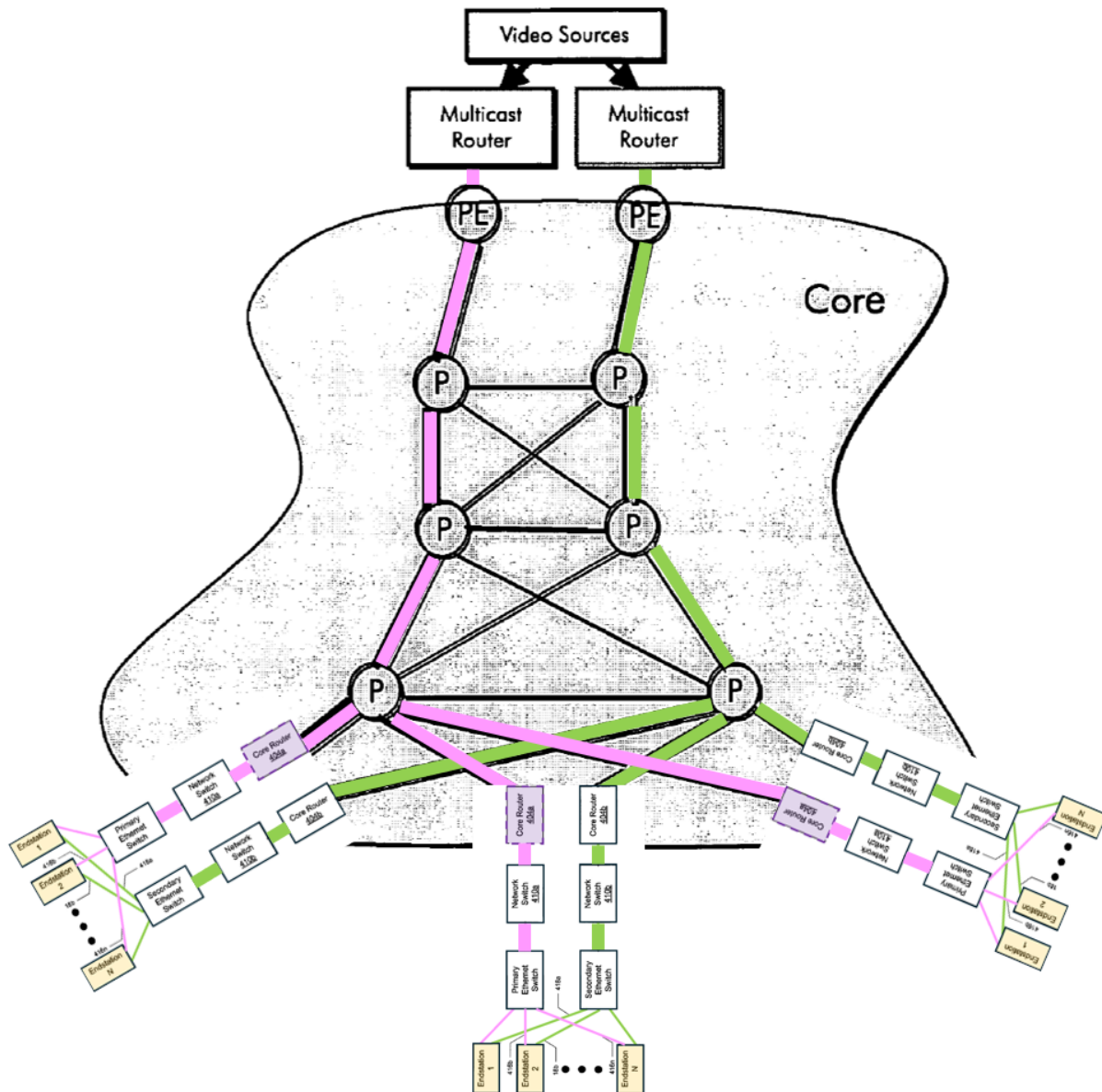
EX1007, FIG. 2. EX1002, ¶¶186-189.

It would have been obvious to combine Mitchell and Raahemi (Mitchell/Raahemi), for example, to allow Mitchell's system to provide VPLS instances in the manner described below because it would allow all of its customers to "appear to be on the same LAN regardless of their location." EX1007, [0003].



EX1005, FIG. 4; EX1007, FIG. 2. Specifically, as illustrated below, Mitchell's communication service can be implemented similar to Mitchell's VPLS service by allowing Mitchell's core routers to serve similar functions as Raahemi's PE routers.

EX1002, ¶¶190-192.

MITCHELL/RAAHEMI

For example, just like Raahemi's PE routers are shown as being located at the edge of the communication network, Mitchell discloses that network elements, such as routers, may be used to provide redundant network links at the edge of a communication network. EX1005, 1:19-29 ("For example, redundant network links

or connections are frequently used to couple a single ***network element or node***, (e.g., a client, server, or other host data processing system, a communications network appliance, or a ***switch, router***, hub, gateway or other redistribution point) to one or more communications networks or portions thereof (e.g., network segments).”). Thus, a POSITA would have recognized that placing Mitchell’s core routers at edge of a communication network would have merely been a substitution of known prior art routers according to known network communication methods to yield the predictable results of a communication service that provides two different VPLS instances that provide similar redundancies that allow failover to occur. EX1002, ¶193.

Moreover, implementing Mitchell’s system according to Raahemi’s VPLS service would have allowed a POSITA to maintain the failover methodologies described in both Mitchell and Raahemi. The modified Mitchell/Raahemi VPLS service would have provided users with the desirable failover system described in both Mitchell and Raahemi and a POSITA would have been further motivated to combine the system without loss of this desirable functionality. Indeed, a POSITA would have expected that the combination leads to predictable results of a system that has a fast link failover with faster recovery times. For example, Mitchell discloses that its fast link failover system may improve recovery times from several minutes to less than 50 milliseconds. EX1005, 2:8-12, 3:58-63. Likewise, Raahemi

describes outperform existing systems with a recovery time of less than 50 milliseconds. EX1007, [0058]. Thus, a POSITA would have recognized with a reasonable expectation of success that the combination of Mitchell and Raahemi would have led to a resulting system that maintains its desired fast link failover with the added benefit of providing a redundant VPLS service over the network. EX1002, ¶¶194-197.

2. Dependent Claim 4

[4] The method according to claim 1, wherein the communication service comprises a bridging service.

Mitchell in combination with Raahemi renders obvious [4]. The '637 Patent incorporates by reference U.S. Publication 2006/0109802 (“Zelig”) (EX1011). *See* EX1001, 1:46-57. Zelig explains that VPLS is a service that is also known as a transparent LAN service—TLS—and provides a “bridge-like service.” EX1011, [0007]. In other words, a POSITA would have understood that a VPLS is one type of a well-known bridging service. EX1002, ¶¶198-199.

As discussed in Section IX.C.1 [3], it would have been obvious to set up a VPLS service over Mitchell’s system in combination with the teachings of Raahemi. Raahemi discloses that VPLS service “is a layer 2 multipoint Virtual Private Network (VPN) that allows multiple sites *to be connected in a single bridged domain* over a provider managed IP/MPLS network.” EX1007, [0003]. Further,

Raahemi describes that its communication services include other bridging services, such as *split horizon bridging*, which is utilized to implement rules that prevent the formation of undesirable loops. EX1007, Abstract (“In the event of a fault, the services on the faulty tree are switched to the other tree using split horizon bridging.”), [0006], [0014], [0046]-[0048], [0050], [0057]. EX1002, ¶¶200-202.

D. Ground 4: Mitchell And Huai Render Obvious Claim 5

1. Dependent Claim 5

[5] The method according to claim 1, wherein said propagating failure information comprises advertising the failure using an Opaque Link State Advertisement (LSA) message of an Open Shortest Path First (OSPF) protocol.

Mitchell in combination with Huai render obvious [5]. Mitchell does not explicitly disclose using an Opaque LSA message of an OSPF protocol. However, this was well-known. For example, Huai discloses using Open Shortest Path First (OSPF) protocol. EX1008, 1:66-2:6 (“*It is well known* for routers of messages (in a packet-switched network) *to communicate* with one another *in accordance with the Open Shortest Path First (‘OSPF’) protocol....*). Huai explains that OSPF messages include information about network elements and their connections, which is called the network topology. EX1008, 2:8-11. Further, Huai describes OSPF messages called link state advertisements (LSAs) that are used to maintain and

update databases that contain information about the network topology. *See* EX1008, 2:8-16. EX1002, ¶¶203-205.

Huai further discloses propagating failure information in a network using an OSPF flooding mechanism. EX1008, Abstract, 2:32-3:2. Huai discloses that OSPF databases are updated using link state updates (*e.g.*, via opaque LSA's) when a link failure occurs by propagating the failure using the flooding mechanism. EX1008, 13:8-39. Huai further discloses that the updated packet 800, depicted in Figure 8 (below), includes an OSPF link state update packet that further includes a single opaque LSA. EX1008, 8:44-52.

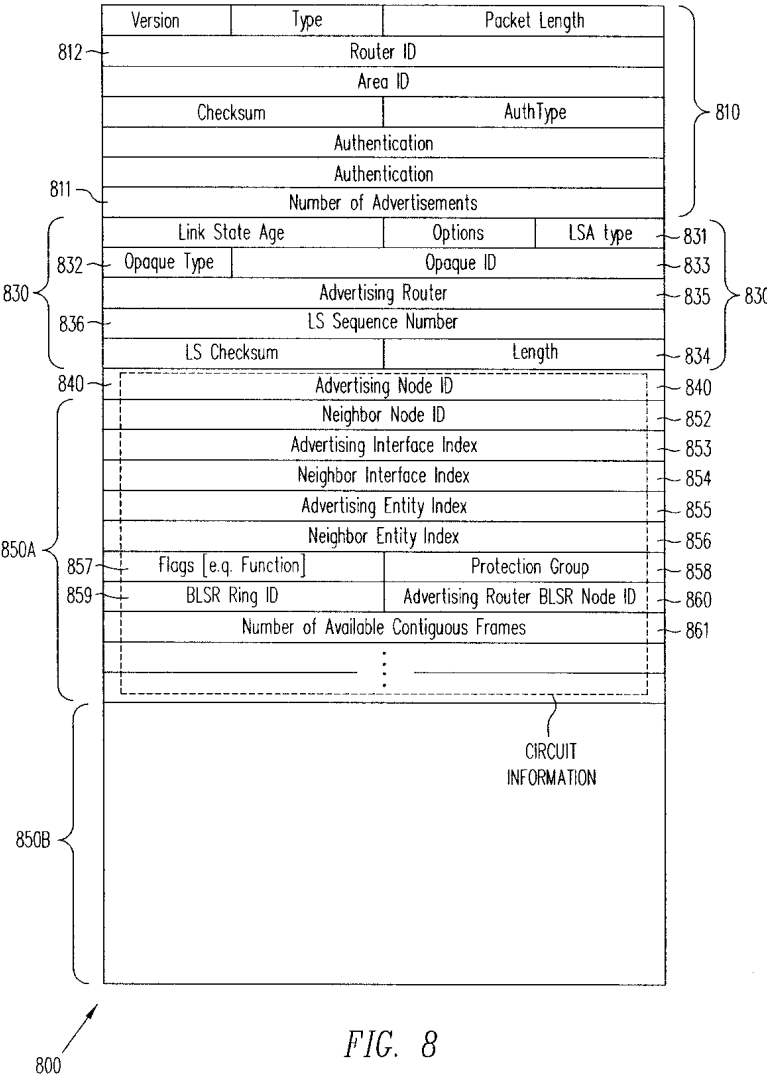


FIG. 8

EX1008, FIG. 8. Packet 800 shows a standard LSA header 810 and standard opaque LSA header 830. EX1008, 8:53-9:16. EX1002, ¶¶206-209.

It would have been obvious to combine Mitchell with Huai because utilizing well-known messaging techniques, such as the Opaque LSA message of an OSPF protocol, in Mitchell's system merely amounts to a combination of prior art elements according to known methods to yield the predictable result of informing

interconnected network neighbors of changes in the network topology. A POSITA would have readily recognized that propagating circuit information, including failure information, with opaque LSAs according to the OSPF protocol would merely involve using a known messaging technique to operate a similar network in a predictably similar way. In doing so, the POSITA would have understood that Huai's failure information propagation using opaque LSAs would only require applying a known communication protocol to a known network element to yield the predictable result of a network that propagates failure information using a well-known messaging protocol. Hence, a POSITA would have been able to make the combination with a reasonable expectation of success. EX1002, ¶¶210-212.

E. Ground 5: Mitchell And Yamauchi Render Obvious Claims 8, 14, 20, And 24

1. Dependent Claims 8, 14, 20, And 24

[8] The method according to claim 1, wherein the one or more of the links in the first set of links use a physical layer auto-negotiation protocol, and wherein said deactivating the physical layer resources comprises introducing an auto-negotiation error into the auto-negotiation protocol.

[14] The method according to claim 1, wherein a link in the first set of links includes a link which uses a physical layer auto-negotiation protocol, and wherein deactivating the physical layer includes introducing an auto-negotiation error into the auto-negotiation protocol.

[20] The network according to claim 16, wherein the one or more of the links in the first set of links use a physical layer auto-negotiation protocol, and wherein the network nodes are arranged to deactivate the physical layer resources by introducing an auto-negotiation error into the auto-negotiation protocol.

[24] The communication network of claim 16, wherein a link in the first set of links includes a link which uses a physical layer auto-negotiation protocol, and wherein deactivating the physical layer resources includes introducing an auto-negotiation error into the auto-negotiation protocol.

Mitchell in combination with Yamauchi render obvious [8], [14], [20], and [24]. Mitchell does not explicitly teach an auto-negotiation protocol that introduces an auto-negotiation error to deactivate the physical layer. However, such techniques were well-known. For instance, Yamauchi discloses an auto-negotiation monitoring system that detects a link failure. EX1009, Abstract. When a link failure is detected, Yamauchi brings “a link of the port down and outputs an auto-negotiation code.” *Id.* Additionally, when a downstream network element receives the auto-negotiation code, the downstream node notifies another network element “that ‘[t]he switch detects a failure and the link is down.’, as an alarm.” *Id.*; *see also id.*, [0029], [0031], [0037], [0046]-[0047], [0055]. EX1002, ¶¶213-215.

It would have been obvious to combine Mitchell with Yamauchi because utilizing well-known techniques, such as an auto-negotiation protocol that introduces an auto-negotiation error to deactivate the physical layer, in Mitchell’s

system merely amounts to a combination of prior art elements according to known methods to yield the predictable result of how to disable a physical layer. It is merely one well-known implementation of a technique to deactivate the physical layer and a POSITA would have readily recognized that using such an auto-negotiation protocol would merely involve using a known technique to obtain predictable results. In doing so, the POSITA would have understood that Yamauchi's auto-negotiation protocol that introduces an auto-negotiation error would only require applying a known communication protocol to a known network element ready for improvement by automating the disabling of the physical layer to yield the predictable results. Hence, a POSITA would have been able to make the combination with a reasonable expectation of success. EX1002, ¶¶216-218.

F. Ground 6: Mitchell And McGee Render Obvious Claims 9, 15, And 25

1. Dependent Claims 9, 15, And 25

[9] The method according to claim 1, wherein the one or more of the links in the first set of links comprise a logical link, and wherein said deactivating the physical layer resources comprises releasing an association of the logical link with the first instance of the communication service.

[15] The method according to claim 1, wherein a link in the first set of links includes a logical link, and wherein deactivating the physical layer includes releasing an association of the logical link with the first instance of the communication service.

[25] The network according to claim 16, wherein a link in the **first set of links** includes a logical link, and wherein **deactivating** the physical layer resources includes releasing an association of the logical link with the first instance of the communication service.

Mitchell in combination with McGee renders obvious [9], [15], and [25]. To the extent Patent Owner argues that there is no express disclosure of “releasing” an association of a logical link in response to a deactivating a physical layer resource in Mitchell, that was well-known in the art, as evidenced by McGee. EX1002, ¶¶219-220.

Specifically, McGee describes the similar VLAN logical links described by Mitchell. EX1010, [0006] (“LANs may also be *segmented into logical sub-networks called virtual LANs (VLANs)*, ...”), [0039], [0045] (“In the network of FIG. 2B, however, *the network is segmented into virtual LANs or VLANs*”), [0046], FIG. 2B; EX1005, 5:59-65 (“[I]n another embodiment, only those downstream links or ports associated with a virtual network *such as a VLAN* or VSAN which was predetermined or identified using configuration interface 202 are disabled.”). EX1002, ¶221.

McGee discloses that when deactivating a physical link in response to detecting a link failure, these logical VLAN links can also be released. EX1010, [0109] (“Those of skill in the art will recognize an additional benefit to an embodiment of *system 100 that includes support for VLANs such as that illustrated*

in FIG. 2B.... Whenever application 600 either assigns to or recaptures resources from a team, the application 600 can instruct the teaming driver to *either bind to or release from the team of drivers the driver associated with that resource*. In addition, *the resource must be either coupled to or decoupled from the VLANs to which that team is coupled.*”). In other words, McGee merely provides additional details of how logical VLAN channels can be decoupled or released when the physical layer is deactivated. EX1002, ¶222.

At a minimum, it would have been obvious to try to modify Mitchell’s system with McGee’s resource allocation application 600 to allow releasing of the logical VLAN links because there are a finite number of ways to release an association of a logical link. Moreover, a POSITA would have been motivated to modify Mitchell with McGee’s application system 600 because doing so would prevent underutilization of network resources, thereby increasing network efficiencies. EX1010, [0018], [0079] (“Based on the current network usage, as well as the status of the available and allocated resources, an embodiment of the application 600 dynamically adjusts resource allocation....”), [0111] (“Load balancing teams can be managed to receive additional resources from a pool when saturated and to give up underutilized resources to the pool. And given that this additional release of logical link can be carried out using simple allocation application, a POSITA would have

been able to make the combination with a reasonable expectation of success. EX1002, ¶¶223-224.

X. DISCRETIONARY DENIAL IS NOT WARRANTED

A. *Fintiv* Factors Favor Institution

The six *Fintiv* factors considered for 35 U.S.C. § 314 favor institution. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (Mar. 20, 2020) (precedential).

1. No Evidence Regarding A Stay

No motion to stay has been filed, so this factor is neutral. *Sand Revolution II LLC v. Continental Intermodal Group – Trucking LLC*, IPR2019-01393, Paper 24, 7 (June 16, 2020) (informative); *see also Dish Network L.L.C. v. Broadband iTV, Inc.*, IPR2020-01359, Paper 15, 11 (Feb. 12, 2021) (“It would be improper to speculate, at this stage, what the Texas court might do regarding a motion to stay....”).

2. Parallel Proceeding Trial Date

The Docket Control Order sets December 4, 2024, as the date for the claim construction hearing, and June 2, 2025, as the trial date. EX1016, 1, 4. While trial is currently scheduled to begin in June 2025, “scheduled trial dates are often subject to change.” *In re Apple Inc.*, 979 F.3d 1332, 1344, n.5 (Fed. Cir. 2020). The expected date for a FWD is December 2025.

Petitioner has worked expeditiously to prepare and file this petition less than two months after receiving Patent Owner’s infringement contentions based on the ’637 Patent on April 8, 2024. EX1018. Under *Fintiv*, Petitioner’s prompt filing “weigh[s] against exercising the authority to deny institution.” *Fintiv*, Paper 11, 11 (“If the evidence shows that the petitioner filed the petition expeditiously, such as promptly after becoming aware of the claims being asserted, this fact has weighed against exercising the authority to deny institution under NHK”). This factor favors institution.

3. Investment In Parallel Proceeding

The co-pending litigation is still in its early stages. *See, e.g.*, EX1017. The investment in it has been minimal. Fact discovery and expert discovery are not set to close until January 13, 2025 and February 18, 2025, respectively. EX1016, 3. Claim construction briefing has not started. EX1016, 5. The Markman hearing date is set for December 4, 2024. EX1016, 4. Thus, this factor weighs against discretionary denial. *PEAG LLC v. Varta Microbattery GmbH*, IPR2020-01214, Paper 8, 17 (Jan. 6, 2021).

4. Overlapping Issues With the Parallel Proceeding

Petitioner stipulates that if the IPR is instituted, Petitioner will not pursue the same ground in the district court litigation. *Sand*, 7 (informative). This factor favors institution.

5. Identity of Parties

Petitioner is a defendant in the litigation. This factor should not be a basis for denying institution.

6. Other Circumstances, Including the Merits

“[T]he PTAB will not deny institution...under *Fintiv* (i) when a petition presents compelling evidence of unpatentability.” EX1019, 9. Here, the evidence of unpatentability is compelling, and thus the PTAB should not deny institution under *Fintiv*. This factor favors institution.

B. *Advanced Bionics* Factors Favor Institution

The Board uses a two-prong test to determine whether it will deny institution under 35 U.S.C. § 325(d): (1) whether the same or substantially the same art or arguments were previously presented to the Office; and (2) if first part is satisfied, whether the Office erred in a manner material to the patentability of challenged claims. See *Advanced Bionics LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 (precedential).

At the outset, Mitchell, Bhate, Raahemi, Huai, Yamauchi, and McGee were never considered during prosecution of the '637 Patent and do not meet the first prong of *Advanced Bionics*. Therefore, discretionary denial under 35 U.S.C. § 325(d) is inappropriate.

C. *General Plastics* Factors Favor Institution

The '637 Patent has never been challenged in an IPR proceeding. Therefore, none of the *General Plastic* factors apply to this Petition and favor institution.

XI. CONCLUSION

Petitioner respectfully requests the Board to institute the IPR and cancel all challenged claims.

Dated: May 30, 2024

Respectfully submitted,

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

Pursuant to 37 C.F.R. § 42.24(d), Petitioner hereby certifies, in accordance with and in reliance on the word count provided by the word-processing system used to prepare this Petition, that the number of words in this paper is 11,686. Pursuant to 37 C.F.R. § 42.24(d), this word count excludes the table of contents, table of authorities, mandatory notices under § 42.8, certificate of service, certificate of word count, appendix of exhibits, and any claim listing.

Dated: May 30, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that a complete copy of the foregoing materials:

- Petition for Inter Partes Review Under 35 U.S.C. § 312 and 37 C.F.R. § 42.104 of U.S. Patent No. 8,199,637;
- Exhibit List;
- Exhibits 1001-1019;
- Word Count Certification Under 37 CFR § 42.24(d); and
- Petitioner's Power of Attorney

was caused to be served on counsel of record for Patent Owner by filing this document through P-TACTS and by sending this document via Federal Express Priority Overnight shipping, which is at least as fast and reliable as U.S. Priority Mail Express, to counsel of record for Patent Owner at the correspondence address indicated in Patent Center:

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