UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VIPTELA, INC.
Petitioner

v.

FATPIPE NETWORKS INDIA LIMITED,
Patent Owner

Inter Partes Review Case No. 2017-______

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 6,775,235 UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100

84794665_1

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Cases

Statutes

Other Authorities

Regulations

PETITIONER'S EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 6,775,235 by Sanchaita Datta and Ragula Bhaskar entitled "Tools and Techniques for Directing Packets Over Disparate Networks" ("the '235 Patent")
1002	File History for U.S. Patent No. 6,775,235
1003	U.S. Patent No. 7,406,048 by Sanchaita Datta and Ragula Bhaskar entitled "Tools and Techniques for Directing Packets Over Disparate Networks" ("the '048 Patent")
1004	File History for U.S. Patent No. 7,406,048
1005	Declaration of Dr. Leonard J. Forys
1006	U.S. Patent No. 6,628,617 by Mark John Karol and Malathi Veeraraghavan entitled "Technique for Internetworking Traffic on Connectionless and Connection-Oriented Networks" ("Karol")
1007	W.R. Stevens, "TCP/IP Illustrated Volume 1, the Protocols," Addison-Wesley Professional Computing Series, 1994, ISBN-0-201-63346-9 ("Stevens").
1008	Complaint, D.I. 1 in 1:16- cv-00182-LPS in the District of Delaware
1009	U.S. Patent No. 6,748,439 by David R. Monachello et al. entitled "System and Method for Selecting Internet Service Providers from a Workstation that is Connected to a Local Area Network" ("Monachello")
1010	Petition for *Inter Partes* Review, IPR2016-00976, Paper No. 1 (April 29, 2016)
1011	William Stallings, "Data and Computer Communications," Prentice-Hall, 5th Edition, 1997, ISBN-81-203-1240-6, ("Stallings")
1012	Office Action dated 4/13/2012 for U.S. Application No. 10/034,197
1013	Office Action dated 2/2/2012 for U.S. Application No. 10/034,197
1014	FatPipe's Proposed Modifications to Claim Construction
1015	U.S. Patent No. 6,317,431 by Terence G. Hodgkinson and Alan W. O'Neill entitled "ATM Partial Cut-Through" ("Hodgkinson")
1016	Adaptive Private Networking Configuration Editor User's Guide, APNware Release 2.5 (FATPIPE-001374-1448)
1017	Decision, IPR2016-00976, Paper No. 7 (November 2, 2016)
1018	FatPipe's Infringement Contentions

Pursuant to 35 U.S.C. §§ 311-319 and 37 C.F.R. §§ 42.100 *et seq.*, Viptela, Inc. ("Petitioner") hereby respectfully requests *inter partes* review of claims 4, 5, 6-15, 19, and 22-24 ("Challenged Claims") of U.S. Patent No. 6,775,235 (Ex. 1001; "the '235 Patent"). There exists a reasonable likelihood that Petitioner will prevail with respect to at least one of the Challenged Claims, which are unpatentable over the prior art discussed herein.

I. MANDATORY NOTICES

Pursuant to 37 C.F.R. § 42.8, Petitioner provides the following disclosures:

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

Petitioner, Viptela, Inc., located at 1732 North First St., Suite 600, San Jose, California 95112, is the real party-in-interest for the instant petition.

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

The '235 Patent is currently involved in a pending lawsuit (the "District Court Litigation") involving Petitioner originally captioned *FatPipe, Inc. v. Viptela, Inc.*, United States District Court For the District Of Delaware, Case No. 1:16-CV-182. (Ex. 1008.)

FatPipe, Inc. is also asserting U.S. Patent No. 7,406,048 (Ex. 1003; "the '048 Patent") in the District Court Litigation against Petitioner. A separate IPR petition has been filed by Petitioner with respect to the '048 Patent. Petitioner requests that both Petitions be assigned to the same Board for administrative efficiency, as that patent is directed generally to the same subject matter.

The '235 Patent is also subject to a separate proceeding before the Board in IPR2016-00976, filed by Talari Networks, Inc. (the "'976 IPR"). *See* Petition for *Inter Partes* Review, IPR2016-00976, Paper No. 1 (April 29, 2016) (Ex. 1010). The Board recently instituted proceedings on claims 4, 5, 7-15, and 19 in the '976 IPR. *See* Decision, IPR2016-00976, Paper No. 7 (November 2, 2016) (Ex. 1017). This Petition is substantially identical to the Petition in the '976 IPR.[1]

C. Lead and Backup Counsel (37 C.F.R. § 42.8(b)(3) and 42.10(a))

Lead Counsel: Robert C. Hilton (Reg. No. 47,649) Email: rhilton@mcguirewoods.com Postal/Hand Delivery Address: MCGUIREWOODS LLP 2000 McKinney Ave., Suite 1400 Dallas, TX 75201 Tel.: (214) 932-6400 Fax.: (214) 932-6499	Backup Counsel: George B. Davis (Reg. No. 68,205) Email: gdavis@mcguirewoods.com Postal/Hand Delivery Address: MCGUIREWOODS LLP Gateway Plaza 800 East Canal Street Richmond, VA 23219 Tel.: (804) 775-1000 Fax.: (804) 775-2016

[1] In addition to the claims under review in the '976 IPR, this Petition also challenges claims 6 and 22-24 of the '235 Patent.

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

Service on Petitioner may be made by email, mail or hand delivery at the addresses shown above.

E. Payment of Fees (37 C.F.R. §§ 42.15(a) and 42.103(a))

The Office is authorized to charge the fees specified by 37 C.F.R. §§ 42.103(a) and 42.15(a) to Deposit Account No. 231951 as well as any additional fees that might be due in connection with this Petition.

F. Standing (37 C.F.R. § 42.104(a))

Petitioner certifies that the patent sought for review is eligible for *inter partes* review and that Petitioner is not barred or estopped from requesting an *inter partes* review challenging the patent claims on the grounds identified herein.

II. OVERVIEW OF CHALLENGE AND RELIEF REQUESTED

Pursuant to C.F.R. § 42.104(b), Petitioner requests *inter partes* review of the Challenged Claims on the grounds set forth below and requests that they be found unpatentable. Additional support for each ground is set forth in the Declaration of Dr. Leonard Forys (Ex. 1005).

A. Publications Relied Upon

Exhibit 1006 – U.S. Patent No. 6,628,617 to Karol et al. ("Karol") filed on March 3, 1999 and issued on September 30, 2003. Karol is prior art under at least 35 U.S.C. § 102(e).

Exhibit 1011 – Data and Computer Communications by William Stallings, Prentice-Hall, 5th Edition, 1997, ISBN-81-203-1240-6, ("Stallings"). Stallings is prior art under at least 35 U.S.C. § 102(b) because it was published in 1997. (Ex. 1011 at inside cover page.)

B. Grounds For Challenge

Petitioner requests cancellation of the Challenged Claims on the following grounds:

(i) Claims 4-11, 14, 19, and 22-24 are anticipated under 35 U.S.C. § 102 by Karol.

(ii) Claims 5, 6, 11-15, 19, and 22-24 are obvious under 35 U.S.C. § 103 based on Karol (Ex. 1006) in view of Stallings.

(iii) Claims 4-15, 19, and 22-24 are obvious under 35 U.S.C. § 103 based on Karol.

III. RELEVANT INFORMATION CONCERNING THE CONTESTED PATENT

A. Effective Filing Date of the '235 Patent

The '235 Patent references two provisional applications. Provisional application No. 60/259,269 was filed on December 29, 2000, and Provisional application No. 60/355,509 was filed on February 8, 2002. All of the asserted prior art precedes the earliest possible priority date – December 29, 2000.

B. The ’235 Patent (Ex. 1001)

1. Overview of the ’235 Patent

The ’235 Patent is directed “to computer network data transmission, and more particularly relates to tools and techniques for communications using disparate parallel networks....” (Ex. 1001 at 1:17-24, 1:56-60, 2:19-26.) The ’235 Patent teaches that it was well known in the prior art to: have a frame relay network configured in parallel with a disparate VPN or other Internet-based network (*see, e.g.*, Ex. 1001 at 5:24-27); use a disparate network for reliability/redundancy (*see, e.g.*, Ex. 1001 at 4:25-27 and FIG. 5); use a disparate network for load-balancing (*see, e.g.*, Ex. 1001 at 9:4-9); and that secure routing paths were used to route to “Internet-based communication solutions such as VPNs and Secure Sockets Layer (SSL).” (*See, e.g.*, Ex. 1001 at 4:5-10; *see also* Ex. 1005 at ¶¶ 47, 50-53, 59-61, 116-121.)

2. Prosecution History

The application leading to the ’235 Patent was filed on February 7, 2003, and is a continuation-in-part of application number 10/034,197 filed on December 28, 2001 (“the ’197 Application”). (Ex. 1001 at cover.) During prosecution of the application leading to the ’235 Patent, the first Office Action mailed February 25, 2004 rejected claims 1-4, 8-10, 23-26, 28, 29, and 32 as invalid over U.S. Patent No. 6,016,307 to Kaplan *et al.* (Ex. 1002 at 367-373.) The

Examiner allowed claims 11-22, 30, 31, and 33-35 which recited "per-packet selection" and/or "accessing the multiple parallel disparate networks using at least two known location address ranges." (Ex. 1002 at 373-377.) The rejected claims were canceled, and the remaining allowed claims were accepted. (Ex. 1002 at 384-392; *see also*, Ex. 1004.)

C. Claim Construction

1. Level of Ordinary Skill in the Art

A person of ordinary skill in the art at the time of the filing date of the '235 Patent ("POSITA") would have had at least a Bachelor of Science in Computer Science, Computer Engineering, Electrical Engineering, or an equivalent field as well as at least two years of academic or industry experience in any type of networking field. (Ex. 1005 at ¶ 31.)

2. Patent Owner's Proposed Constructions

Petitioner submits that no construction is necessary and that all claim terms of the '235 Patent should be given their ordinary and customary meaning, as understood by a POSITA in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Petitioner does not concede that any Challenged Claim meets statutory standards for patent claiming. In the co-pending case of *Fatpipe, Inc. v. Talari Networks, Inc.*, 5:16-CV-54-BO (E.D.N.C.), PO proposed the following constructions (Ex. 1014):

Term	Patent Owner's Proposed Construction
"private network"	"a communication path that is unavailable to the general public"
"Internet based network"	"a communication path that is available on the public Internet"
"disparate networks"	"networks that are different in kind, *e.g.* a private network and an Internet based network"
"per-packet basis"	"packet by packet"
"per-session basis"	"session by session"
"packet path selector"	"module(s) that selects which path to send a given packet on"
"repeated instances of the selecting step make network path selections"	"more than one occurrence of selecting a network path"
"parallel network"	"at least two networks configured to allow alternate data paths"
"Session"	"an active communications connection, measured from beginning to end, between computers or applications over a network"

For this IPR, Petitioner submits that none of these terms need construction. To the extent the Board determines that any of these terms require construction for purposes of this IPR, a POSITA would understand PO's constructions to be within the broadest reasonable interpretation. (*See, e.g.*, Ex. 1005 at ¶¶ 72-81.) *See Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001) ("A patent may not, like a 'nose of wax,' be twisted one way to avoid anticipation and another to find infringement."). Any interpretation of claim terms here is not binding upon Petitioner in any litigation related to the '235 Patent. *See In re Zletz*, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

IV. SUMMARY OF PRIOR ART AND REFERENCES RELIED ON

None of the prior art discussed below was considered by the Patent Office during prosecution of the ’235 Patent. These prior art references are directed to the same field as the ’235 Patent (data networking) and operate using the same architecture as the ’235 Patent (routing to parallel disparate networks). (Ex. 1005 at ¶¶ 84, 86, 87.) No secondary considerations support a finding of nonobviousness.

A. Brief Summary of Karol (Ex. 1006)

Karol is prior art under at least 35 U.S.C. § 102(e). (*See supra* at § II(A).) Karol is directed towards parallel “internetworking of connectionless (*e.g.* Internet Protocol or “IP”) and connection oriented (*e.g.*, ATM, MPLS, RSVP) networks.” (*See, e.g.*, Ex. 1006 at 1:7-14, 1:19-20, Fig. 1; Ex. 1005 at ¶¶ 85-89, 91.)

To route data between the connection oriented and connectionless networks, Karol discloses a “gateway” that can operate in either serial or parallel modes. (Ex. 1006 at 3:58-66; Ex. 1005 at ¶ 91.) The gateway can make a routing selection between the connection oriented or connectionless network based on specific criteria, such as “maximizing efficiency.” (Ex. 1006 at 3:58-66; Ex. 1005 at ¶ 87.) For routing, Karol discloses routing tables in databases: the CL network uses the forwarding database, and the CO network uses the flow database. (*See, e.g.*, Ex. 1006 at 7:31-54 and FIG. 4; Ex. 1005 at ¶¶ 95-99.)

B. Brief Summary of Stallings (Ex. 1011)

Stallings is prior art under at least 35 U.S.C. § 102(b). (*See supra* at § II(A).) Stallings describes "ATM," "Frame Relay," "Packet Switching (Routing)," "Network Security," frame relay, IP protocol, among other data and computer communications topics. (*See, e.g.*, Ex. 1011 at 24-26; Ex. 1005 at ¶¶ 129-141.)

V. A REASONABLE LIKELIHOOD EXISTS THAT THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. Ground 1: Claims 4-11, 14, 19, and 22-24 of the '235 Patent (Ex. 1001) are anticipated by Karol (Ex. 1006)

Claim 4[a]: ***"A controller which controls access to multiple networks in a parallel network configuration, suitable networks comprising Internet-based networks and private networks from at least one more provider, in combination, the controller comprising:"***

Karol discloses "A controller" which controls access to multiple networks in a parallel configuration: the "CL-CO gateway" alone or in combination with one or more routers and/or switches controls access to either a "connectionless" (or "CL") network data path or to a "connection oriented" (or "CO") network data path that are configured in parallel. (*See* Ex. 1006 at 1:7-16, Fig. 1; Ex. 1005 at ¶¶ 157-160.) "The CL network is typically, although not necessarily, an IP network." (Ex. 1006 at 2:58-59; Ex. 1005 at ¶ 157.) In parallel with the CL network, the CO network is a private network that "can be an MPLS ..." or "telephony network...." (Ex. 1006 at 2:52-58; Ex. 1005 at ¶ 157.) PO has identified MPLS as a private, parallel, disparate network. (Ex. 1018 at Appendix I at p. 44; and Ex. 1005 at ¶¶

161-162.) Karol discloses the CL-CO "*parallel configuration* could occur, for example, if *two service providers*, one with an IP-router-based network and the other with a CO-switch-based network, offer enterprises 'long-distance' connectivity...." (emphasis added) (Ex. 1006 at 3:47-51; Ex. 1005 at ¶ 159.)

Thus, Karol discloses a "controller" (*e.g.*, either of the CL-CO gateway or the combination of the CL-CO gateway with one or more routers and/or switches) that "controls access to multiple networks in a parallel network configuration in combination" (*e.g.*, the CL or CO network) and multiple networks are chosen from "suitable networks comprising Internet-based networks and private networks from at least one more provider" (*e.g.*, the CL path is based on Internet protocol service from a first service provider and the CO path is based on ATM or MPLS protocol service from a second service provider). (Ex. 1005 at ¶ 160 and ¶¶ 161-163.)

Claim 4[b]: *"a site interface connecting the controller to a site;"*

Considering the "controller" to be the CL-CO gateway alone, then the "site" in Karol is either the routers/switches connected to the CL-CO gateway and/or the source 101 and/or destination 151 endpoints. (Ex. 1005 at ¶ 175; Ex. 1006 at 3:44-51, 4:36-44, 4:65-67, and Fig. 1.) The "site interface" in Karol is one or more of the input line cards 401 or a network connection – shown in Fig. 1 as an "interface" between source 101 and node 111. (Ex. 1005 at ¶¶ 172-176; Ex. 1006 at 3:44-51, 4:36-44, 4:65-67, 6:44-50 and Figs. 1 and 4.)

Considering the "controller" to be the CL-CO gateway in combination with one or more routers and/or switches, then the "site" in Karol is the source 101 and/or destination 151 endpoints. (Ex. 1005 at ¶ 175; Ex. 1006 at 3:44-51, 4:36-44, 4:65-67, and Fig. 1.) The "site interface" is a network connection. (Ex. 1005 at ¶¶ 172-176; Ex. 1006 at 3:44-51, 4:36-44, 4:65-67, 6:44-50 and Figs. 1 and 4.)

Claim 4[c]: ***"at least two network interfaces which send packets toward the networks; and"***

Karol discloses that at least two "output line cards 402" are utilized to "receive datagrams from either of" the "CO switch 410 or CL router/switch 420" and then "direct them to external networks" as further illustrated in and described with respect to FIG. 4 of Karol. (*See, e.g.* Ex. 1005 at ¶¶ 96-99, 173, 177; Ex. 1006 at 3:58-66, 4:45-65, 6:44-50, Figs. 1 and 4.) FIG. 4 discloses at least two such "output line cards" that send packets over network interfaces to the two respective CL and CO networks. (Ex. 1006 at 4:36-67, FIG. 1, and FIG. 4; Ex. 1005 at ¶ 178.) Alternatively, the combination of the CL-CO gateway and one or more routers and/or switches shown in FIG. 1 also depicts at least two "network interfaces" to both of the CL network and the CO network that are depicted as exemplary router "node 121" and exemplary CO switching element "node 161." (Ex. 1006 at 3:58-66, 4:45-65, and FIG. 1; Ex. 1005 at ¶¶ 158, 179.)

Thus, Karol discloses a "controller" (*e.g.*, the CL-CO gateway) with at least two "network interfaces" (*e.g.*, the output line cards coupling the CL router to the

CL network and the CO switch to the CO network), which "send packets toward" the "networks" (*e.g.*, the CL and CO networks). Alternatively, Karol discloses a "controller" (*e.g.*, the CL-CO gateway in combination with one or more routers and/or switches) having at least two "network interfaces" (*e.g.*, the network connections to respective CL and CO networks), which "send packets toward" the "networks" (*e.g.*, the CL and CO networks). (Ex. 1005 at ¶¶ 180-181.)

Claim 4[d]: ***"a packet path selector which selects between network interfaces on a per-packet basis according to at least: a destination of the packet, an optional presence of alternate paths to that destination, and at least one specified criterion for selecting between alternate paths when such alternate paths are present;"***

Karol discloses a "packet path selector" including at least a "gateway processor," a "CL router/switch," a "CO switch," a "packet buffer," a "protocol converter," and one or more "input line cards" that together determine if a particular packet (or "datagram," which is a term used by Karol interchangeably with the term "packet" (*e.g.*, Ex. 1006 at 5:23-25)) from a "source endpoint" should be forwarded to either the CL or CO network based on multiple criteria including whether the CO network has a valid connection for the particular packet as further illustrated in and described with respect to Figure 4 of Karol. (Ex. 1005 at ¶¶ 96-99, 183-189; Ex. 1006 at 6:31-50 and FIG. 4.)

The "packet-path" selector of Karol selects between network interfaces associated with a CO and CL network on a per packet basis: "datagrams received in input line cards 401 can be directed either to CO switch 410 or CL router/switch

420" so that "output line cards 402 can receive datagrams from either of the last mentioned elements and direct them to external networks." (Ex. 1005 at ¶¶ 96-99, 184-185; Ex. 1006 at 6:44-50 and FIG. 4.) To route the packets to a destination of the packet, Karol discloses a "forwarding database 432" within the gateway processor to determine if a particular packet matches a combination of "Destination IP address; Next hop router; Outgoing port (interface)" that would cause such a packet to be routed to the CL network or to be considered for routing over the CO network. (Ex. 1006 at 7:36-41; Ex. 1005 at ¶ 185.)

For packets that are candidates for the CO network, Karol also discloses that each such packet is compared at the gateway processor with the "flow database 433" to determine if a particular packet matches a desired combination of "(a) an outgoing port field, which indicates the port on which a datagram whose entries match a particular record's entries is forwarded; (b) if the outgoing port is 'invalid,' the next field 'forward or hold'[] entry indicates whether packet should be forwarded or held in packet buffer 440; (c) destination address; (d) source address; (e) source port; (f) destination port; (g) type of service; (h) protocol field; (i) TCP Flags; (j) outgoing port; (k) forward or hold flag, and (l) a mask which indicates which of the data entries is applicable to the particular record" in order to route such a packet to the CO network instead of the CL network depending on availability of a valid connection in the CO network for a flow associated with the particular packet. (Ex. 1006 at 7:42-54, 7:60-8:2; Ex. 1005 at ¶¶ 186, 187.)

Karol discloses routing selections between the CL and CO networks are based at least upon "bandwidth availability" that can be "dynamically allocated to flows on an as-needed basis" and can "divert[] connections away from congested links." (Ex. 1006 at 17:18-26 and 17:63-18:2; Ex. 1005 at ¶ 188.)

Thus, Karol discloses a "packet path selector" (*e.g.*, the structural elements depicted in FIG. 4 of Ex. 1005 at ¶ 184) that "selects between network interfaces on a per-packet basis" (*e.g.*, packet path selector compares information in each packet received at the CL-CO gateway to determine if the packet will be routed to the CL or CO network interface output line card) according to at least "a destination of the packet" (*e.g.*, gateway processor in the CL-CO gateway compares the destination address of each received packet to fields in both the forwarding and flow databases), "an optional presence of alternate paths to that destination" (*e.g.*, the gateway processor will only forward a particular packet to the CO network when a valid connection exists for the flow associated with the particular packet), and "at least one specified criterion for selecting between alternate paths when such alternate paths are present" (*e.g.*, based upon the needs of a particular flow or to avoid congested links). (Ex. 1005 at ¶¶ 189-191.)

Claim 4[e]: ***"wherein the controller receives a packet through the site interface and sends the packet through the network interface that was selected by the packet path selector."***

If the "controller" is the CL-CO gateway alone, Karol discloses that the CL-CO gateway receives packets through the "site interface" which is the "input line cards 401" and the packets "can be directed either to CO switch 410 or CL router/switch 420" to send the packets through the "network interface," which are the "output line cards 402 [that] can receive datagrams from either of the last mentioned elements and direct them to external networks." (Ex. 1005 at ¶¶ 96-99, 200; Ex. 1006 at 6:44-50 and FIG. 4.) If the "controller" is the CL-CO gateway in combination with one or more routers and switches, then the "controller" receives packets through the "network connection," and as described above, the packets are routed to the network interface (such as node 121 or 161). (*Id.*) Figure 5 discloses an exemplary process for determining the network path selection and actual forwarding to the CL or CO network interface. (Ex. 1005 at ¶¶ 100-103, 200, 201; Ex. 1006 at 8:56-9:36 and FIG. 5 and 6.) Thus, Karol's packet path selector (*e.g.*, depicted in FIG. 4) compares information in each packet received at the CL-CO gateway and then routes each packet either to the CL network interface output line card or to the CO network interface output line card according to the process described in FIG. 5. (Ex. 1005 at ¶¶ 200-202.)

Claim 5[a]: ***"A method for combining connections for access to multiple parallel disparate networks, the method comprising the steps of:"***

For the reasons noted in § V(A) at claim element 4[a], claim 5[a] is anticipated, and Karol discloses that the CO and CL networks are disparate in that the CL and CO networks are "two different, parallel routes" comprising, for example, an IP network in parallel with a MPLS or ATM network. (Ex. 1006 at 4:40-44; Ex. 1005 at ¶¶ 207, 208; *see also* Ex. 1005 at ¶¶ 85-99, 206-212.)

Claim 5[b]: ***"obtaining at least two known location address ranges which have associated networks;"***

Karol discloses this element through the use of routing tables that contain location addresses. For example, Karol discloses with respect to the CL network that the "datagram forwarding database 432" is "the database used in typical CL IP routers" that "stores the *next hop router address* and outgoing port number *corresponding to each destination address*" and thus the "fields in each record in this database would be: *Destination IP address*; *Next hop router*; Outgoing port (interface)." (emphasis added) (Ex. 1006 at 7:36-41; Ex. 1005 at ¶ 97, 224.) The flow database 433 provides the same function for the CO network. (Ex. 1006 at 7:42-54; Ex. 1005 at ¶¶ 98, 225.)

Karol also discloses methodologies for obtaining the routing table information, which include the location address ranges associated with the CL and CO network paths as shown above, such as "the *network provider* can *set user-specific routing tables at the CL-CO gateways*" so that "the *user-specific routing* then *determines* which users' *flows* are *sent to the CO network*" versus those that are routed to the CL network. (emphasis added) (Ex. 1006 at 16:3-9; Ex. 1005 at ¶¶ 108-112, 226.) Karol also discloses obtaining "updates" to such routing tables. (Ex. 1006 at 13:6-16, FIG. 8; Ex. 1005 at ¶¶ 108-112, 226.)

Thus, Karol discloses "at least two known location address ranges" (*e.g.*, the addresses stored in the routing tables for routing packets to the CL network and the addresses stored in the routing tables for routing packets to the CO network) that "have associated networks" (*e.g.*, the CL and CO networks respectively), and Karol discloses the step of "obtaining" such "known location address ranges" (*e.g.*, by user input to a network provider to set the addresses in the routing tables). (Ex. 1005 at ¶ 227, *see also* Ex. 1005 at ¶¶ 222-231.)

Claim 5[c]: *"obtaining topology information which specifies associated networks that provide, when working, connectivity between a current location and at least one destination location;"*

For both the CL and CO networks, Karol discloses routing tables with information about the specific route topology that a particular packet takes based on currently available parallel CO and CL paths from a source to a destination. (Ex. 1005 at ¶ 241.) For example, Karol discloses routing tables that are maintained at the CL-CO gateway comprising of various "databases" associated with the "gateway processor" including the "datagram forwarding database 432, a flow database 433, and a header translation database 434." (Ex. 1006 at 7:31-35; Ex. 1005 at ¶ 241.)

Karol discloses with respect to the CL network that the "datagram forwarding database 432" is "the database used in typical CL IP routers" that "stores the *next hop router address* and outgoing port number *corresponding to each destination address*" and thus the "fields in each record in this database would be: *Destination IP address*; *Next hop router*; Outgoing port (interface)." (emphasis added) (Ex. 1006 at 7:36-41; Ex. 1005 at ¶ 242.) Similarly, Karol discloses with respect to the CO network that "flow database 433" is used to "determine how to handle packets from flows requiring a connection-oriented service", wherein "[t]ypical fields in each record in this database include: (a) an *outgoing port field*, which indicates the port on which a datagram whose entries match a particular record's entries is forwarded; (b) *if the outgoing port is* "*invalid*," the next field "forward or hold" entry indicates whether packet should be forwarded or held in packet buffer 440; (c) *destination address*; ...." (emphasis added) (Ex. 1006 at 7:42-54; Ex. 1005 at ¶ 242.) Karol further discloses that the "header translation database 434" is also updated when the "integrated routing table" that obtains the "resources of the CO network" to include at least "*CO* packet header field values or *circuit identifiers*." (emphasis added) (Ex. 1006 at 7:55-59, 13:6-16; Ex. 1005 at ¶ 242.) Karol also discloses obtaining routing table information (as discussed above). (Ex. 1005 at ¶¶ 243-245.)

Thus, Karol describes the step of "obtaining topology information" (*e.g.*, when a network provider sets user-specified routing preferences or when the system obtains and propagates updated routing table information) that "specifies associated networks" (*e.g.*, the routing tables at the CL-CO gateway include entries specific to the CL network and to the CO network respectively) wherein such "information" indicates whether or not "connectivity between a current location and at least one destination location" is "working" for each "associated network" (*e.g.*, the CL network table updates the "next hop router" address for a particular "destination address" when an update arrives and similarly updates for the CO network if an "output port" associated with a "CO circuit identifier" is currently "invalid"). (Ex. 1005 at ¶¶ 246-248.)

Claim 5[d]: ***"receiving at the current location a packet which identifies a particular destination location by specifying a destination address for the destination location;"***

In addition to the reasons noted in § V(A) at claim 5[b], Karol anticipates claim 5[d] because the destination address in each datagram received at the input line card of the CL-CO gateway is compared to either the forwarding or flow database to determine the particular destination location based on the destination address. (Ex. 1006 at 7:31-54; Ex. 1005 at ¶ 263, *see also* Ex. 1005 at ¶¶ 259-262, 264-265.)

Claim 5[e]: ***"determining whether the destination address lies within a known location address range;"***

For the reasons noted in § V(A) at claim 5[b], claim 5[e] is anticipated. In addition, Karol discloses "determining whether the destination address lies within a known location address range" (*e.g.*, by comparing the destination IP address in each packet received at the CL-CO gateway to entries in the databases to determine if the destination address lies within the routing tables that include a known location address range for the destination location). (Ex. 1005 at ¶ 269, *see also* Ex. 1005 at ¶¶ 266-268, 270-271.)

Claim 5[f]: ***"selecting a network path from among paths to disparate associated networks, said networks being in parallel at the current location, each of said networks specified in the topology information as capable of providing connectivity between the current location and the destination location;"***

As discussed in § V(A) at claims 4[d] and 5[a], Karol discloses that the CL-CO gateway alone or in combination with one or more routers and/or switches "select[s] a network path from among paths to disparate associated networks, said networks being in parallel at the current location." (*See also*, Ex. 1006 at Fig. 1, 1:7-16, 2:65-67, 3:47-51, 4:36-67; Ex. 1005 at ¶¶ 276-281.)

Karol discloses "each of said networks specified in the topology information as capable of providing connectivity between the current location and the destination location" as discussed in § V(A) at claims 4[d], 5[b], and 5[c], which describes Karol's disclosure of routing tables in the CL-CO gateway that maintain databases that indicate current validity of the CL path and the CO path to connect packets from the source endpoint to the destination endpoint. (*See also*, Ex. 1005 at ¶¶ 276-281; Ex. 1006 at 7:36-54, *see also* Ex. 1005 at ¶¶ 282-286.)

Claim 5[g]: ***"forwarding the packet on the selected network path."***

For the reasons noted in § V(A) at claim 4[e], claim 5[g] is anticipated. (*See also* Ex. 1005 at ¶¶ 287-291.)

Claim 6: ***"The method of claim 5, further comprising the step of modifying the packet destination address to lie within a known location address range associated with the selected network before the forwarding step."***

Karol discloses the step of modifying the packet destination address to lie within a known location address range associated with the selected network before the forwarding step. In discussing FIG. 4, Karol explains that when traversing between networks, a protocol conversion is necessary: "[p]rotocol converter 450 is a typically a software implemented process in which the user payload is extracted from an IP datagram, and converted to the CO format, so that it can be carried directly on connections in the CO network." (Ex. 1006 at 7:14-17.) This conversion process includes converting the headers containing the address information. Karol discloses "[s]ince AAL5 performs transport-layer functions, the TCP header can also be converted to an ML5 header in a switched (rather than provisioned) ATM network. In other words, TCP/IP headers are converted into ML5 /ATM headers." (Ex. 1006 at 7:14-17; *see also* Ex. 1005 at ¶¶ 292-294.) The results of this conversion are at least partly stored in a "header translation database

434" that "indicates the incoming CL packet header field values and the corresponding CO packet header field values or circuit identifiers, based on whether CO switch **410** is packet-switched or circuit-switched, respectively." (Ex. 1006 at 7:55-59; Ex. 1005 at ¶ 294.)

Furthermore, Karol explains that a connection oriented service contains a "flow database 432" which "stores information used to determine how to handle packets from flows requiring a connection-oriented service." (Ex. 1006 at 7:42-44; Ex. 1005 at ¶ 295.) This information includes destination addresses which would, of necessity, be within the address ranges associated with the connection oriented service to be meaningful. (Ex. 1006 at 7:50.) The above described protocol conversion would necessarily be done before forwarding packets over the connection oriented network. (Ex. 1005 at ¶ 295.)

Karol also discloses that where a message is sent from an endpoint connected to node 914 to an endpoint connected to node 917, gateway 962 can modify the message to add a "source route node 914 to node 913 to node 915 to node 917" and transmit the datagram to node 914. (Ex. 1006 at 11:27-46; Figure 9.) Nodes 914, 913, and 915 will then route the datagram according to the source route which gateway 962 added to the datagram. (*Id.*; *see also* Ex. 1005 at ¶¶ 296-298.)

Claim 7: *"The method of claim 5, wherein the forwarding step forwards the packet toward the Internet when the packet's destination address does not lie within any known location address range."*

Karol discloses the forwarding step as discussed, for example, at claim 5[g]. Karol further discloses a default path through the Internet. For example, "the *default path* expected by CL network 901 *provides a path from the CL-CO gateways* 960-962 *through CL network* 901 to the *destination*." (emphasis added) (Ex. 1006 at 15:31-39; Ex. 1005 at ¶ 312.) When a packet's destination does not lie within any known location address range (*e.g.*, if the comparison of the packet destination address with network addresses maintained at the CL-CO gateway does not produce a match) then "the forwarding step forwards the packet toward the Internet" (*e.g.*, by routing to the default path that causes the packet to be forwarded over the CL IP network). (Ex. 1005 at ¶ 313, *see also* Ex. 1005 at ¶¶ 310-312.)

Claim 8: *"The method of claim 5, wherein the destination address identifies a destination location to which only a single associated network provides connectivity from the current location, and the forwarding step forwards the packet to that single associated network."*

Karol discloses the "CL-CO gateway," alone or in combination with one or more routers and/or switches, receives datagrams (or "packets") and "decide[s] whether a datagram flow should be handled via the CO network or not." (Ex. 1006 at 15:31-33; Ex. 1005 at ¶ 325.) In FIG. 4, packet path selection is based at least upon comparison of the packet destination address with network addresses maintained at the CL-CO gateway. (Ex. 1006 at 7:36-41; Ex. 1005 at ¶¶ 95-99, 326, 327.) Karol describes the process flow (in FIG. 5): CL packets are sent to CL router/switch 420; it is determined if the packet should be routed on the CO network, and if the packet has a destination address different from that of any valid network address associated with the CO network, then the packet is directed to the CL network as shown in steps 517, 519, and 523. (Ex. 1006 at Fig. 5, 9:22-24; Ex. 1005 at ¶ 327.) Thus, Karol discloses that "the destination address identifies a destination location to which only a single associated network provides connectivity from the current location" (*e.g.*, if the comparison of the packet destination address with network addresses maintained at the CL-CO gateway does not produce a match any address served by the CO network – only the CL network can be used to route such a packet) then "the forwarding step forwards the packet to that single associated network" (*e.g.*, by routing to the CL network based upon Internet protocol whenever the destination address does not correspond to network addresses then served by the CO network). (*See also* Ex. 1005 at ¶¶ 323-328.)

Claim 9: *"The method of claim 5, wherein repeated instances of the selecting step make network path selections on a packet-by-packet basis."*

In addition to the reasons noted in § V(A) at claim 5, claim 9 is anticipated by Karol as Karol discloses that repeated instances of the "selecting step" can be on a "packet-by-packet basis" because "the processes performed in CL-CO gateways that enable the internetworking of connectionless IP networks and CO networks" can process individual "IP ***packets*** that arrive at CL-CO gateways."

(emphasis added.) (Ex. 1006 at 7:60-8:2; Ex. 1005 at ¶¶ 333-334, *see also* Ex. 1005 at ¶¶ 330-332.) Specifically, each packet received at the CL-CO gateway has a comparison of the packet destination address with network addresses maintained at the CL-CO gateway that is independent of the previous packet received. (Ex. 1006 at 7:36-41; Ex. 1005 at ¶¶ 335-336.)

Claim 10: ***"The method of claim 5, wherein repeated instances of the selecting step make network path selections on a per session basis."***

In addition to the reasons noted in § V(A) at claim 5, claim 10 is anticipated by Karol because Karol discloses that some data flows correspond to sessions that utilize either TCP or UDP. (Ex. 1006 at 10:25-39, 10:51-11:26, Fig. 6; Ex. 1005 at ¶ 343, *see also* Ex. 1005 at ¶¶ 341-342.) Karol explains that certain packets carrying either TCP or UDP segments within certain sessions are appropriate for a flow to the CO network, while others are better directed to the CL network. (Ex. 1006 at 10:51-11:26, Fig. 6; Ex. 1005 at ¶¶ 343-345.) Karol's packet path selector repeatedly compares each packet received at the CL-CO gateway to determine if the packet corresponds to a session to be directed to the CO or CL network. (*Id.*)

Claim 11: ***"The method of claim 5, wherein the selecting step selects the network path at least in part on the basis of a dynamic load-balancing criterion."***

In addition to the reasons noted in § V(A) at claim 5, claim 11 is anticipated by Karol as Karol discloses that "the advantage [of the invention disclosed in Karol] to a user is that the user can ask for and receive a guaranteed quality of service for a specific flow" and "[t]he advantage to a service provider is that *bandwidth utilization* in a packet-switched CO network is better than in a CL network with precomputed routes since bandwidth can be *dynamically allocated to flows on an as-needed basis*." (emphasis added) (Ex. 1006 at 17:18-26; Ex. 1005 at ¶ 349.) In particular, Karol notes that "*dynamically adjusting link weights in the routing protocol can also be extended to include diverting connections away from congested links*" or "[i]n other words, *link weights can be adjusted to reflect bandwidth availability*." (emphasis added) (Ex. 1006 at 17:63-18:2; Ex. 1005 at ¶ 349, *see also* Ex. 1005 at ¶¶ 350-351.)

Thus, Karol discloses the "selecting step" that makes "network path selections" (*e.g.*, as described in Ex. 1005 at ¶¶ 276-284, 350), and further that such step be made "at least in part on the basis of a dynamic load-balancing criterion" (*e.g.*, the flows at CL-CO gateway that get routed to the CL or CO network are dynamically allocated in an as-needed basis to dynamically divert away from congested links based upon a bandwidth availability criterion). (Ex. 1005 at ¶ 350, *see also* Ex. 1005 at ¶¶ 349, 351.)

Claim 14: *"The method of claim 5, wherein the selecting step selects the network path at least in part on the basis of a reliability criterion."*

In addition to the reasons noted in § V(A) at claim 5, claim 14 is anticipated by Karol as Karol discloses that a user can "receive a guaranteed quality of service for a specific flow" and that "bandwidth can be dynamically allocated." (Ex. 1006 at 17:18-26, 17:63-18:2; Ex. 1005 at ¶ 400, *see also* Ex. 1005 at ¶¶ 398-399.) Thus, Karol discloses a network path (CL or CO) is selected based upon ensuring reliability for such flows by guaranteeing a level of quality of service that meets bandwidth needs, and diverts from congested links. (Ex. 1005 at ¶¶ 399-400.)

Claim 19[a]: ***"A method for combining connections for access to parallel networks, the method comprising the steps of:"***

For the reasons noted in § V(A) at claim 4[a], claim 19[a] is anticipated. (*See also* Ex. 1005 at ¶¶ 430-437.)

Claim 19[b]: ***"sending a packet to a site interface of a controller, the controller comprising the site interface which receives packets, at least two network interfaces to parallel networks, and a packet path selector which selects between the network interfaces on a per-session basis to promote load-balancing;"***

In addition to the reasons noted in § V(A) at claims 4[a-d] and 11, Karol discloses a "controller" (CL-CO gateway) that determines whether a particular packet belongs to a flow directed to the CO network or the CL network because some flows correspond to sessions or applications such as "web access, telnet, file transfer, electronic mail, etc." that utilize the TCP transport layer while others such as "Internet telephony and other multimedia traffic" may use the "RTP (Real Time Protocol)" that "has been defined to use UDP" transport layer. (Ex. 1006 at 10:25-39, Fig. 6; Ex. 1005 at ¶ 456, *see also* Ex. 1005 at ¶¶ 446-458.) This path selection for parallel CL and CO networks provides load balancing: "The advantage to a service provider is that *bandwidth utilization* in a packet-switched CO network is better than in a CL network with precomputed routes since bandwidth can be *dynamically allocated to flows on an as-needed basis*." (emphasis added) (Ex. 1006 at 17:18-26, 17:63-18:2; Ex. 1005 at ¶ 458.)

Thus, Karol discloses a "controller" (CL-CO gateway) that is connected to a "site" (*e.g.*, local network routers/switches and/or source/destination endpoints) via a "site interface" (*e.g.*, one or more of the input line cards and/or a network connection) and the step of "sending a packet" to such a "site interface" (*e.g.*, the source endpoint sends a packet to the CL-CO gateway for routing to the destination endpoint). (Ex. 1005 at ¶ 458.) Karol further discloses a "controller" (*e.g.*, the CL-CO gateway) that has at least two "network interfaces" (*e.g.*, the output line cards respectively coupling the CL router to the CL network and the CO switch to the CO network), which are interfaces to "parallel networks" (*e.g.*, the CL and CO networks). (Ex. 1005 at ¶ 458.) Karol also discloses a "packet path selector" (Ex. 1006 at Fig. 4, Ex. 1005 at ¶ 452) that "selects between network interfaces on a per-session basis" (*e.g.*, each packet received at the CL-CO gateway has a comparison of the packet destination address with network addresses maintained at the CL-CO gateway and additionally a determination if the packet corresponds to a session to be directed to the CO network) wherein such packet path selection is "to promote load-balancing" (*e.g.*, the flows at CL-CO gateway that get routed to the

CL or CO network are dynamically allocated in an as-needed basis to dynamically divert away from congested links based upon a bandwidth availability criterion).

Claim 19[c]: ***"and forwarding the packet-through the network interface selected [by the] packet path selector;"***

For the reasons noted in § V(A) at claim 4[e], claim 19[c] is anticipated. (*See also* Ex. 1005 at ¶¶ 473-477.)

Claim 19[d]: ***"wherein the step of sending a packet to the controller site interface is repeated as multiple packets are sent, and the controller sends different packets of a given message to different parallel networks."***

In addition to the reasons noted in § V(A) at claim 19[b], Karol discloses that when an IP datagram arrives at the CL-CO gateway "a determination is made by gateway processor 430 in step 503 [of FIG. 5] as to whether the flow should be handled via the CO network or not." (Ex. 1006 at 8:56-62, Fig. 5; Ex. 1006 at ¶ 480.) Thus, some datagrams are sent over the CO network and others are sent over the CL network. Karol also discloses in Figure 6 that as multiple UDP datagrams are sent, the CL-CO gateway sends some UDP datagrams over the CO network and other UDP datagrams over the CL network. (Ex. 1006 at 10:51-67, Fig. 6; Ex. 1005 at ¶¶ 481-482.)

Karol discloses "the step of sending a packet to the controller site interface is repeated as multiple packets are sent" (*e.g.*, sessions such as Internet telephony involve multiple packets sent to the input line card of the CL-CO gateway from a particular source endpoint (Ex. 1006 at 6:44-50, FIG. 4; Ex. 1005 at ¶ 479)) and that "the controller sends different packets of a given message to different parallel networks" (*e.g.*, some datagrams carrying UDP segments within a message from the same source endpoint to the same destination endpoint are routed to the CL network while other datagrams carrying UDP segments within the same message from the same source endpoint to the same destination endpoint are routed to the CO network (Ex. 1006 at 10:25-39, 10:51-11:26, and FIG. 6)). (Ex. 1005 at ¶ 479, *see also* Ex. 1005 at ¶¶ 480-483.)

Claim 22: Preamble

For the reasons noted in § V(A) at claim 5[a], the preamble of claim 22 is anticipated. (*See also* Ex. 1005 at ¶ 489.) Furthermore, Karol describes how the "each CL-CO gateway includes ***hardware and software modules*** that typically comprise (a) interfaces to the CO network, (b) interfaces to the CL network (c) a moderately sized packet buffer for temporarily storing packets waiting for CO network setup or turnaround; (d) a database for storing forwarding, flow control, header translation and other information, and (e) a processor containing logic for controlling the gateway packet handling operations." (Ex. 1006 at 2:20-28 (emphasis added).) (*See also* Ex. 1005 at ¶ 489.)

Claim 22 [elements]:

For the reasons noted in § V(A) at claims 5[b]-5[f], 6, and 5[g], the elements of claim 22 are anticipated. (*See also* Ex. 1005 at ¶¶ 490-496.)

Claim 23:

For the reasons noted in § V(A) at claim 11, claim 23 is anticipated. (*See also* Ex. 1005 at ¶ 497.)

Claim 24:

For the reasons noted in § V(A) at claim 9, claim 24 is anticipated. (*See also* Ex. 1005 at ¶ 498.)

B. Ground 2: Claims 5, 6, 11-15, 19, 22, and 23 of the '235 Patent are obvious over Karol (Ex. 1006) in view of Stallings (Ex. 1011)

Claim 5: As explained in § V(A) Karol anticipates claim 5. In the event the Board finds claim elements 5[b], 5[c], or 5[e] not expressly disclosed in Karol, they are rendered obvious over Karol in view of Stallings, as discussed below.

Claim 5[b]:

Stallings discloses that every IP datagram (or packet) comprises at least a 32 bit source address and a 32 bit destination address wherein each address comprises at least a network identifier and a host (or end system) identifier. (Ex. 1011 at 535, 544-545; Ex. 1005 at ¶ 233.) Stallings further discloses that IP routers maintain "routing tables" that can route packets to one of multiple network interfaces based upon the network identifier (or "network portion of the IP address" that corresponds to the range of end-system addresses associated with a particular route) to which the destination address in a given packet is compared. (Ex. 1011 at 535-536, 539, and 549; Ex. 1005 at ¶ 233.) Per Stallings, each "constituent network" as identified by its "network identifier" is a "subnetwork" that comprises all of the range of host (or end system) identifiers within the subset range of possible destination or source addresses. (Ex. 1011 at 528; Ex. 1005 at ¶ 233.) Stallings provides the example that "when a router goes down, all of its neighbors will send out a status report, allowing other routers and stations to update their routing tables." (Ex. 1011 at 539; Ex. 1005 at ¶ 234.) It would have been obvious to a POSITA to implement the teachings of Stallings with Karol. (Ex. 1005 at ¶ 240.) In particular, it would be obvious to use the routing tables disclosed in Stallings that can route packets to one of multiple network interfaces based upon the range of end-system addresses to route data on Karol's parallel multiple networks which rely on routing addresses. (Ex. 1005 at ¶¶ 235, 238.) Thus, the combination of Karol and Stallings discloses this claim element.

A POSITA would have combined Karol in view of Stallings as described above for several reasons. First, using the routing tables disclosed in Stallings with Karol would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. *KSR v. Teleflex*, 550 U.S. 398, 417 (2007); MPEP § 2143; Ex. 1005 at ¶¶ 236, 238. A POSITA would have recognized that implementing the routing tables disclosed in Stallings with the method in Karol would enable Karol to "obtain[] at least two known location address ranges which have associated networks" and therefore send data over multiple parallel networks. (Ex. 1005 at ¶¶ 229-237, 239.) A POSITA would understand no other alternative to routing data in common usage for IP protocol based networking, other than via the above disclosure. (Ex. 1005 at ¶ 236.) A POSITA would look to combine Stallings because Karol cites to Stallings to describe attributes of Karol's gateway to parallel data routes. (Ex. 1006 at 12:59-64; Ex. 1005 at ¶¶ 235, 239.) Karol also describes network addressing in routers over multiple parallel routes, and Stallings describes additional routing characteristics of network addresses as well as methods to obtain such network addresses. (Ex. 1005 at ¶ 239.) And a POSITA would have been motivated because the combination would have predictable results. (Ex. 1005 at ¶ 236.)

Second, the combination of Karol and Stallings was obvious to try. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶¶ 229-237, 239. The need in the art was the ability to route to multiple network locations based on the IP protocol. (Ex. 1005 at ¶ 236.) No other alternative than the routing structure in Karol and Stallings was in common usage for IP protocol. (*Id.*) Thus, a POSITA would have pursued the combination with a high likelihood of success. (*Id.*)

Claim 5[c]:

Stallings discloses dynamic routing tables having topology information that indicates the connectivity between a current location and at least one destination, which are "flexible in responding to both error and congestion conditions" such that "*when a router goes down*, all of its neighbors will *send out a status report*, *allowing other routers* and stations to *update their routing tables*." (emphasis added) (Ex. 1011 at 539; Ex. 1005 at ¶ 251.)

A POSITA would have combined the routing tables of Stallings with Karol for several reasons. First, using the "dynamic" routing tables disclosed in Stallings with Karol would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶¶ 254, 256. A POSITA would have recognized that implementing the "dynamic" routing tables disclosed in Stallings with the method in Karol would enable Karol to "obtain[] topology information which specifies associated networks that provide, when working, connectivity between a current location and at least one destination location" and therefore be able to determine specific networks to which data can be sent. (Ex. 1005 at ¶ 251-256, 258.) A POSITA understood that there were few, if any, other alternatives in common usage for obtaining such topology information with IP protocol based networking. (Ex. 1005 at ¶ 254.) A POSITA would look to combine Stallings because Karol cites to Stallings to describe attributes of Karol's gateway to parallel data routes. (Ex. 1006 at 12:59-64; Ex. 1005 at ¶ 257.) Karol also describes network addressing in routers over multiple parallel routes, and Stallings describes additional routing characteristics of network addresses as well as methods to obtain such network addresses. (Ex. 1005 at ¶ 257.) And a POSITA would have been motivated because the combination would have predictable results. (Ex. 1005 at ¶¶ 254-256.)

Second, the combination of Karol and Stallings was obvious to try. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶¶ 251-256, 258. The need in the art was the ability to obtain network topology information to route to multiple network locations based on the IP protocol. (Ex. 1005 at ¶ 254.) There were few, if any, other alternatives in common usage for obtaining such topology information with IP protocol based networking. (Ex. 1005 at ¶ 254.) Thus, a POSITA would have pursued the combination with a high likelihood of success. (*Id.*, *see also* Ex. 1005 at ¶ 256.)

Claim 5[e]:

For the reasons noted in § V(B) at claim 5[b], claim 5[e] is rendered obvious by Karol in view of Stallings. (*See also* Ex. 1005 at ¶¶ 271-275.)

Claim 6:

Stallings discloses that every IP datagram (or packet) comprises at least a 32 bit source address and a 32 bit destination address wherein each address comprises at least a network identifier and a host (or end system) identifier. (Ex. 1011 at 535, 544-545; Ex. 1005 at ¶ 303.) Stallings discloses that a packet destined for destination (B) may be transmitted through subnetwork 1 to router X. (Ex. 1011 at 535.) The router X analyzes the IP header to determine the ultimate destination of the data and then determines that the data must pass through router Y before reaching the destination. (*Id.* at 536; Ex. 1005 at ¶ 303.) Router X then constructs a new packet by appending an X.25 header, ***containing the address of router Y***, to the IP data unit, and transmits it on to router Y. (Ex. 1011 at 536-537.) It would be obvious to use the process disclosed in Stallings for appending the address of another router in a subnetwork to a data packet in order to modify that address to route data on Karol's parallel multiple networks which rely on routing addresses. (Ex. 1005 at ¶¶ 304, 305.) Thus, the combination of Karol and Stallings discloses this claim element.

A POSITA would have combined Karol in view of Stallings as described above for several reasons. First, using the address modification disclosed in Stallings with Karol would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶¶ 305, 307. A POSITA would have recognized that implementing the address modification disclosed in Stallings with the method in Karol would enable Karol to transmit a packet to the selected network. (Ex. 1005 at ¶¶ 305-308.) A POSITA would understand no other alternative to routing data in common usage for IP protocol based networking, other than via the above disclosure. (Ex. 1005 at ¶ 305.) A POSITA would look to combine Stallings because Karol cites to Stallings to describe attributes of Karol's gateway to parallel data routes. (Ex. 1006 at 12:59-64; Ex. 1005 at ¶¶ 304, 308.) Karol also describes network addressing in routers over multiple parallel routes, and Stallings describes additional routing characteristics of network addresses as well as methods to obtain such network addresses. (Ex. 1005 at ¶ 308.) And a POSITA would have been motivated because the combination would have predictable results. (Ex. 1005 at ¶ 236.)

Second, the combination of Karol and Stallings was obvious to try. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶¶ 229-237, 239. The need in the art was the ability to route to multiple network locations based on the IP protocol. (Ex. 1005 at ¶ 305.) No other alternative than the routing structure in Karol and Stallings was in common usage for IP protocol. (Id.) Thus, a POSITA would have pursued the combination with a high likelihood of success. (Id.)

Claim 11:

Stallings describes "Routing is generally accomplished by maintaining a routing table" and though the "*routing table may be* static or *dynamic*," a "*dynamic table is more flexible in responding to* both error and *congestion conditions*."

(emphasis added) (Ex. 1011 at 539; Ex. 1005 at ¶ 356.) Stallings describes that a router "must avoid portions of the network that have failed and ***should avoid portions of the network that are congested***" and that "[i]n order to make such ***dynamic routing decisions***, routers exchange routing information using a special routing protocol" to compute routes based on a "user-configurable" function of "delay, data rate, dollar cost, or other factors" and thus "is ***able to equalize loads over multiple*** equal-cost ***paths***." (Ex. 1011 at 557; Ex. 1005 at ¶ 357.) Stallings describes dynamic load balancing, and the combination of Karol and Stallings renders obvious claim 11. (Ex. 1005 at ¶ 361.)

A POSITA would have combined Karol in view of Stallings in the manner described above for several reasons. First, using the load-balancing criterion disclosed in Stallings with Karol would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶¶ 359, 361. A POSITA would have recognized that implementing the load-balancing disclosed in Stallings with the method in Karol would enable Karol to avoid congested links or equalize loads over multiple paths. (Ex. 1005 at ¶ 362.) In addition, a POSITA would look to combine Stallings because Karol cites to Stallings to describe attributes of Karol's gateway to parallel data routes. (Ex. 1006 at 12:59-64; Ex. 1005 at ¶ 358.)

Karol also discloses network utilization, and Stallings discloses network congestion. (Ex. 1005 at ¶¶ 350, 356.) A POSITA would have been motivated because the combination would have predictable results. (Ex. 1005 at ¶ 359.)

Second, the combination of Karol and Stallings was obvious to try. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶¶ 356-362. The need in the art was the ability to equalize loads on the network and reduce congestion. (Ex. 1005 at ¶¶ 353, 354-356.) Few other specific routing criterion were in common usage with IP protocol networking. (Ex. 1005 at ¶ 359.) A POSITA would have pursued the combination with a high likelihood of success. (*Id.*)

Claim 12: *"The method of claim 11, wherein repeated instances of the selecting step select between network paths at least in part on the basis of a dynamic load-balancing criterion which tends to balance line loads by distributing packets between lines."*

Stallings teaches "[r]outing is generally accomplished by maintaining a routing table" and that though the "*routing table may be* static or *dynamic*," a "*dynamic table is more flexible in responding to* both error and *congestion conditions*." (emphasis added) (Ex. 1011 at 539; Ex. 1005 at ¶ 356.)

Stallings further describes that a router "must avoid portions of the network that have failed and *should avoid portions of the network that are congested*" and that "[i]n order to make such *dynamic routing decisions*, routers exchange routing information using a special routing protocol" with one example being "Open Shortest Path First (OSPF) Protocol." (emphasis added) (Ex. 1011 at 549, 550, and

556; Ex. 1005 at ¶ 374.) Stallings describes OSPF in terms of a "*link state routing algorithm*" wherein "Each router maintains descriptions of the state of its local links to subnetworks, and *from time to time transmits updated state information* to all of the routers of which it is aware" such that OSPF computes routes based on a "user-configurable" function of "delay, data rate, dollar cost, or other factors" and thus "is *able to equalize loads over multiple* equal-cost *paths*." (emphasis added.) (Ex. 1005 at ¶ 374.)

For the same reasons discussed *supra*, Section V(B) at claim 11, a POSITA would have combined Karol in view of Stallings. (Ex. 1005 at ¶ 380, *see also* Ex. 1005 at ¶¶ 373-379.) A POSITA understood that no specific *dynamic load-balancing criterion* alternatives that "tend to *not* balance line loads" were in common usage with IP protocol based networking such as described in Karol – instead only those techniques that do "tend to balance line loads," such as those described by Stallings, were in common usage. (emphasis added.) (Ex. 1005 at ¶ 376.) PO's infringement contentions describe load-balancing the same as Karol, describing "strategies that redirect data traffic to the best available path." (Ex. 1018 at Appendix I at 73.) A POSITA would have pursued the combination with a high likelihood of success. (Ex. 1005 at ¶ 376.)

Claim 13: *"The method of claim 11, wherein repeated instances of the selecting step select between network paths at least in part on the basis of a dynamic load-*

balancing criterion which tends to balance network loads by distributing packets between disparate networks."

For the reasons noted in § V(B) at claim 12, this claim is also obvious. (*See also* Ex. 1005 at ¶¶ 385-396.)

Claim 14:

Stallings describes a reliability criterion: the "Internet Control Message Protocol" (or "ICMP") that "*provides feedback about problems in the communication environment*" and can be used to determine if a "*datagram cannot reach its destination*" or to update a router that it can "send traffic on a shorter route." (emphasis added) (Ex. 1011 at 546-549; Ex. 1005 at ¶ 411.) Thus, the combination of Karol and Stallings discloses the elements of this claim. (*See, e.g.* Ex. 1005 at ¶ 417.)

A POSITA would have combined Karol in view of Stallings in the manner described above for several reasons. First, using the ICMP and routing tables disclosed in Stallings with Karol would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶¶ 415-417. A POSITA would have recognized that implementing the ICMP and routing tables disclosed in Stallings with the method in Karol would enable Karol to select a network path at least in part on the basis of a reliability criterion. (Ex. 1005 at ¶ 413.) In addition, a

POSITA would look to combine Stallings because Karol cites to Stallings to describe attributes of Karol's gateway to parallel data routes. (Ex. 1006 at 12:59-64; Ex. 1005 at ¶ 412.) Karol and Stallings also disclose selecting a network path dynamically based upon either or both of avoiding congested links or avoiding portions of the network that have failed. (Ex. 1005 at ¶ 416.) A POSITA would have been motivated because the combination would have predictable results. (Ex. 1005 at ¶ 413.)

Second, the combination of Karol and Stallings was obvious to try. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶¶ 409-413. The need in the art was to select a network path at least in part on the basis of a reliability criterion. (Ex. 1005 at ¶¶ 409-413.) A POSITA knew of few specific routing criterion in common usage with IP protocol networking. (Ex. 1005 at ¶ 409.) Thus, a POSITA would have pursued the combination with a high likelihood of success. (*Id.*)

Claim 15: ***"The method of claim 5, wherein the selecting step selects the network path at least in part on the basis of a security criterion."***

Karol discloses routing tables, and Stallings teaches a security criterion: "*[r]outing tables may also be used to support* other internetworking *services such as those governing security*." (emphasis added) (Ex. 1011 at 539; Ex. 1005 at ¶ 422.) Stallings discloses where "*individual networks* might be classified to *handle data up to a given security classification*" and thus the "*routing mechanism must assure that data of a given security level are not allowed to pass through networks* *not cleared to handle such data*." (emphasis added) (Ex. 1011 at 539; Ex. 1005 at ¶ 422.) Stallings illustrates an exemplary corporate WAN whereby a "*virtual private network* via tunnel mode" is used over the Internet via a "*security gateway*" to each "internal network" for each corporate site location. (emphasis added) (Ex. 1011 at 661-662 and Fig. 18.23; Ex. 1005 at ¶ 423.)

A POSITA would have combined Karol in view of Stallings in the manner described above for several reasons. First, the disclosure in Stallings regarding routing based on security criteria with Karol would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶¶ 421-429. A POSITA would have recognized that implementing the security criteria and routing tables disclosed in Stallings with the method in Karol would enable Karol to select a network path at least in part on the basis of a security criterion. (Ex. 1005 at ¶ 428.) A POSITA would look to combine Stallings because Karol cites to Stallings to describe attributes of Karol's gateway to parallel data routes. (Ex. 1006 at 12:59-64; Ex. 1005 at ¶ 428.) Karol and Stallings disclose selecting a network path dynamically based upon either or both of avoiding congested links or avoiding links with an inadequate security level. (Ex. 1005 at ¶ 428.) A POSITA would have been motivated because the combination would have predictable results. (Ex. 1005 at ¶ 427.)

Second, the combination of Karol and Stallings was obvious to try. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶¶ 425, 427. The need in the art was to select a network path at least in part on the basis of a security criterion. (Ex. 1005 at ¶¶ 421-425.) A POSITA knew of few other specific routing criterion in common usage with IP-networking and would have pursued the combination with a high likelihood of success. (Ex. 1005 at ¶ 425.)

Claim 19[a-d]:

In the event the Board finds claim element 19[b] not expressly disclosed in Karol, it is rendered obvious over Karol in view of Stallings, for the same reasons set forth in § V(B) at claim 11. (*See also* Ex. 1005 at ¶¶ 461-468, 470-472.)

Claim 22:

In the event the Board finds claim 22 not expressly disclosed in Karol, the elements are rendered obvious over Karol in view of Stallings, for the same reasons set forth in § V(B) with respect to claims 5[b], 5[c], 5[e], and 6, respectively.

Claim 23:

In the event the Board finds claim 23 not expressly disclosed in Karol, it is rendered obvious over Karol in view of Stallings, for the same reasons set forth in § V(B) at claim 11.

C. Ground 3: Claims 4-15, 19, and 22-24 of the '235 Patent (Ex. 1001) are obvious over Karol (Ex. 1006)

Claim 4[a]:

If the term "private network" should mean "a frame relay or point-to-point network," for example, then a POSITA reading Karol with the knowledge of a POSITA would understand it to include a frame relay or point-to-point network for several reasons. (Ex. 1005 at ¶¶ 164, 166, 167.)

Using a frame relay or point-to-point network would have amounted to nothing more than the simple substitution of one known element for another to obtain predictable results. (Ex. 1005 at ¶¶ 164-171; Ex. 1015.) Karol discloses that the CO network can be represented as a "non-broadcast network" that includes "point-to-point links" and that the CO network can be a "telephony network." (Ex. 1006 at 2:52-58, 13:55-67; Ex. 1005 at ¶ 165.) The '235 Patent discloses in reference to "private networks" that are "disparate" from networks based upon Internet protocol that such networks may be "a point-to-point network, such as a T1 or T3 connection." (Ex. 1001 at 1:59-60; Ex. 1005 at ¶ 166.) Thus, a POSITA would understand that Karol's disclosure that the CO network can be a "telephony network" teaches that the CO network is a "private network" at least because the '235 Patent admits that "a point-to-point network" can be a "T1 or T3 connection," both of which are well known to a POSITA to be examples of Karol's "point-to-point links" within a "telephony network." (Ex. 1005 at ¶ 167.) A POSITA would consider a "frame relay" network to be a well known example of a connection oriented or CO network, and would have found substituting for an MPLS or ATM exemplary CO network with a known frame relay exemplary CO network to be yield predictable results. (Ex. 1005 at ¶¶ 143, 168.) The '235 Patent admits a POSITA would have known about routing packets across multiple parallel networks wherein a first network is Internet-based and a second network that is frame relay based. (Ex. 1005 at ¶¶ 115, 116, 169.)

Claim 4[b]:

A POSITA reading Karol would understand, as noted in § V(A) at claim 4[b], that a "site" in Karol could be either the routers/switches connected to the CL-CO gateway and/or the source 101 and/or destination 151 endpoints, if the CL-CO gateway alone is the "controller," and the "site interface" would be one or more of the input line cards 401 or a network connection. (Ex. 1005 at ¶ 175.) If the "controller" is the CL-CO gateway in combination with one or more routers and/or switches, then the "site" in Karol is the source 101 and/or destination 151 endpoints, and the "site interface" is a network connection. (*Id.*)

Claim 4[c]:

A POSITA reading Karol would understand, as noted in § V(A) at claim 4[c], that the output line cards coupling the CL router to the CL network and the CO switch to the CO network are "at least two network interfaces" that send packets toward the "networks" (*e.g.*, the CL and CO networks), if the "controller" is the CL-CO gateway alone. (Ex. 1005 at ¶ 180.) A POSITA would understand from Karol that if the "controller" is the CL-CO gateway in combination with one or more routers and/or switches, then the "network interfaces" are the network connections to respective CL and CO networks, which "send packets toward" the "networks" (*e.g.*, the CL and CO networks). (*Id.*)

Claim 4[d]:

To the extent that this claim element requires that the term "per-packet basis" mean "for each packet, the packet path selector selects between network interfaces regardless of the session with which the packet is associated," for example, then a POSITA reading Karol with the knowledge of a POSITA would understand that Karol could operate in a manner such that "for each packet, the packet path selector selects between network interfaces regardless of the session with which the packet is associated." (Ex. 1005 at ¶ 193.) Modifying Karol as discussed above would have amounted to nothing more than the simple substitution of one known element for another to obtain predictable results. (Ex.

1005 at ¶¶ 194-198.) The '235 Patent discloses that a POSITA would have known about routing packets across multiple parallel networks, and also would have known that the prior art discloses routing decisions that are independent of the particular flows or sessions of particular packets. (Ex. 1001 at 4:15-23; Ex. 1005 at ¶¶ 115-116, 194-195.) Because Karol discloses that a routing selection to the CL or CO network can be made at a CL-CO gateway using a gateway processor and a flow database that includes a "source address" or origin for each packet, a POSITA would have found substituting the packet-by-packet path selection process that considers multiple criteria including associated flows as explicitly disclosed in Karol with a much simpler and known packet path selection process that considers only source address regardless of the session to yield a highly successful and predictable result. (Ex. 1005 at ¶ 196.)

Claim 4[e]:

A POSITA reading Karol would understand, as noted in § V(A) at claim 4[e], that if the "controller" is the CL-CO gateway alone, then the CL-CO gateway receives datagrams (or "packets") through the "site interface" which is the "input line cards 401" and the packets "can be directed either to CO switch 410 or CL router/switch 420" to send the packets through the "network interface," which are the "output line cards 402 [that] can receive datagrams from either of the last mentioned elements and direct them to external networks." (Ex. 1005 at ¶ 200.) A

POSITA would understand from Karol that if the "controller" is the CL-CO gateway in combination with one or more routers and switches, then the "controller" receives packets through the "network connection," and the packets are routed to the network interface (such as node 121 or 161). (*Id.*)

Claim 5[a]:

For the reasons noted in § V(A) at claim 5[a] and § V(C) at claim 4[a], Karol in combination with the knowledge of a POSITA renders all the elements of claim 5[a] obvious. (Ex. 1005 at ¶ 221.) To the extent "disparate networks" should mean that at least one of the "alternate data paths" be over "a frame relay or point-to-point network," it would be obvious to a POSITA to extrapolate such a meaning from Karol for the reasons noted in § V(C) at claim 4[a]. (Ex. 1005 at ¶¶ 214-221.)

Claim 5[b]:

To the extent claim element 5[b] is not anticipated by Karol, a POSITA would have combined Karol and the knowledge of a POSITA to understand that Karol discloses "obtaining at least two known location address ranges which have associated networks" for several reasons. (Ex. 1005 at ¶¶ 229-237.) Using two known location address ranges which have associated networks would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. (Ex. 1005 at ¶¶ 232, 234, 236.) A

POSITA would have recognized that Karol discloses "obtaining at least two known location address ranges which have associated networks" because such disclosure would enable Karol to send data over multiple parallel networks. (Ex. 1005 at ¶¶ 229-237.) Furthermore, the '235 Patent describes these "known location address ranges" as simply destination addresses that are associated with particular routing paths to particular destinations such that "a location reachable through two networks has two addresses," and thus, the '235 Patent simply discloses that a packet "destination address is compared to the known location address ranges" in order to "see whether the destination location is a known location." (Ex. 1001 at 13:52-53 and 14:24-30; Ex. 1005 at ¶¶ 230-231.) Associating a particular routing path to a destination address was common knowledge to a POSITA. (Ex. 1005 at ¶¶ 232-233 *citing* W.R. Stevens, "TCP/IP Illustrated Volume 1, The Protocols (Ex. 1007).) Obtaining such routing table information via "user-specific router tables" such as described for the CL-CO gateway in Karol was also common knowledge to a POSITA. (Ex. 1005 at ¶ 234.)

Claim 5[c]:

To the extent claim element 5[c] is not anticipated by Karol, a POSITA would have combined Karol and the knowledge of a POSITA to understand that Karol discloses "obtaining topology information which specifies associated networks that provide, when working, connectivity between a current location and at least one destination location" for several reasons. (Ex. 1005 at ¶¶ 249-254.) First, "obtaining topology information" would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. Ex. 1005 at ¶¶ 249, 251, 255. A POSITA would have recognized that Karol discloses "obtaining topology information" that would enable Karol to determine specific networks to which data can be sent. (Ex. 1005 at ¶ 250-255.) There were few alternatives in common usage for obtaining such topology information with IP protocol based networking. (Ex. 1005 at ¶ 254.)

Claim 5[d]:

A POSITA reading Karol would understand, as noted in § V(A) at claim 5[d], that a packet received at the current location identifies a particular destination location by specifying a destination address for the destination location because Karol discloses that each packet is compared to the forwarding or flow database to determine the destination path associated with the packet's destination address. (Ex. 1005 at ¶¶ 259-263, 265.)

Claim 5[e]:

A POSITA reading Karol understands, as noted in § V(A) at claim 5[e] and § V(C) claim 5[b] that Karol discloses "determining whether the destination address lies within a known location address range." (Ex. 1005 at ¶¶ 271-272.)

Claim 5[f]:

A POSITA reading Karol would understand, as noted in § V(A) at claims 4 and 5[f], that Karol's CL-CO gateway (alone or in combination with one or more routers and/or switches) "select[s] a network path from among paths to disparate associated networks, said networks being in parallel at the current location" because Karol discloses that the CL-CO gateway selects from either the CL or CO parallel disparate networks. (Ex. 1005 at ¶¶ 283, 285-286.) A POSITA would understand that the CL-CO gateway maintains routing table databases indicating current validity ("connectivity") of the CL and CO paths—which teaches "each of said networks specified in the topology information as capable of providing connectivity between the current location and the destination location." (*Id.*)

Claim 5[g]:

A POSITA reading Karol would understand, as noted in § V(A) at claim 5[g], that this element is met by Karol's disclosure in Fig. 4 that compares information in each packet received at the CL-CO gateway and then routes each packet either to the CL network interface output line card or the CO network interface output line card as described in Fig. 5. (Ex. 1005 at ¶¶ 287, 289.).

Claim 6:

For the same reasons noted in § V(A) at claim 6, Karol discloses all the elements of claim 6. Furthermore, modifying a packet destination address to lie within a known location address range of another router in a network was common knowledge to a POSITA. (Ex. 1005 at ¶¶ 301-306; Ex. 1009.)

A POSITA would have combined Karol and the knowledge of a POSITA to understand that Karol discloses "modifying the packet destination address to lie within a known location address range associated with the selected network before the forwarding step" for several reasons. (Ex. 1005 at ¶¶ 301-306.) This type of modification would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. *KSR*, 550 U.S. at 417; MPEP § 2143; Ex. 1005 at ¶ 305. A POSITA would have understood that Karol discloses a number of different paths (comprising multiple routers and gateways) to reach the same destination address because this is consistent with the operation of IP routing protocol. (Ex. 1005 at ¶¶ 299, 301-306.) A POSITA knew few alternatives in common usage for IP-based networking such as described in Karol, and the combination would yield a predictable result. (Ex. 1005 at ¶ 305.)

Claim 7:

Karol discloses all the elements of claim 7. (*Supra* § V(A) at claim 7.) Furthermore, routing a packet over a "default path" to the Internet was common knowledge to a POSITA. (Ex. 1005 at ¶¶ 317-321; Ex. 1009.)

A POSITA would have combined Karol and the knowledge of a POSITA to understand that Karol discloses "forward[ing] the packet toward the Internet when the packet's destination address does not lie within any known location address range" for several reasons. (Ex. 1005 at ¶¶ 315-321.) Forwarding a packet toward the Internet when the destination address does not lie within any known location address range would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. Ex. 1005 at ¶ 321. A POSITA would have understood that Karol discloses a "default path" to the Internet to send packets whose destination address is unknown because this is consistent with the operation of IP routing protocol, which is to forward packets until the destination address can be resolved. (Ex. 1005 at ¶¶ 315-321.) A POSITA knew few alternatives in common usage for IP-based networking such as described in Karol, and the combination would yield a predictable result. (Ex. 1005 at ¶ 321.)

Claim 8:

A POSITA reading Karol would understand, as noted in § V(A) at claim 8, that Karol's disclosure directing the packet to either the CO or CL network is the "forwarding step" and that if the comparison of the packet destination address with the network addresses maintained at the CL-CO gateway does not produce a match of any address served by the CO network, then only the CL network can be used, which discloses "the destination address identifies a destination location to which only a single associated network provides connectivity from the current location." (Ex. 1005 at ¶¶ 327-329.) A POSITA would understand that "the forwarding step forwards the packet to that single associated network" is met by Karol's disclosure to route a packet to the CL network when the packet's destination address does not match an address served by the CO network. (*Id.*)

Claim 9:

A POSITA reading Karol would understand, as noted in § V(A) at claim 9, that Karol discloses these claim elements because each packet received at the CL-CO gateway has a comparison of the packet destination address with the network addresses maintained at the CL-CO gateway. (Ex. 1005 at ¶¶ 330-337.) To the extent "packet-by-packet basis" means "for each packet, a selection is made between network interfaces regardless of the session with which the packet is associated," then Claim 9 is rendered obvious over Karol in view of the skill of a POSITA as set forth in § V(C) at claim 4[d]. (Ex. 1005 at ¶¶ 338-339.)

Claim 10:

A POSITA reading Karol would understand, as noted in § V(A) at claim 10, that this claim is met by Karol because Karol discloses that each packet received at the CL-CO gateway has a comparison of the packet destination address with the network addresses maintained at the CL-CO gateway and additionally a determination if the packet corresponds to a session to be directed to the CO network. (Ex. 1005 at ¶¶ 343, 344.)

Claim 11:

Karol discloses all the elements of claim 11. (*Supra* § V(A) at claim 11.) To the extent claim 11 is not anticipated by Karol, a POSITA would have combined Karol and the knowledge of a POSITA to understand that Karol discloses "the selecting step selects the network path at least in part on the basis of a dynamic load-balancing criterion" for many reasons. (Ex. 1005 at ¶ 352.) Implementing dynamic load-balancing criterion in Karol would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. (Ex. 1005 at ¶¶ 353-359.) A POSITA would have understood that Karol discloses load-balancing because it would enable Karol to avoid congested links or equalize loads over multiple paths. (Ex. 1005 at ¶ 359.) A POSITA understood that few other routing criterion were in common usage for IP protocol based networking, and the combination would yield a predictable result. (Ex. 1005 at ¶ 359.)

Claim 12:

In addition to the reasons set forth in § V(C) at claim 11, it would have been obvious to try common knowledge regarding routing to a dynamic load-balancing criterion that "tends to balance line loads" at least because no specific ***dynamic load-balancing criterion*** alternatives that "tend to ***not*** balance line loads" were in common usage with IP protocol based networking such as described in Karol. (emphasis added.) (Ex. 1005 at ¶¶ 369-377.)

Claim 13:

As noted in § V(C) at claims 11-12, it would have been obvious to a POSITA to combine dynamic load-balancing criterion with the disclosure in Karol to balance network loads by distributing packets between the CL and CO networks. (Ex. 1005 at ¶¶ 392-393, *see also*, Ex. 1005 at ¶¶ 385-391.)

Claim 14:

Karol discloses all the elements of claim 14. (*Supra* § V(A) at claim 14.) To the extent claim 14 is not anticipated by Karol, a POSITA would have combined Karol and the knowledge of a POSITA to understand that Karol discloses "the selecting step selects the network path at least in part on the basis of a reliability criterion" for many reasons. Implementing a reliability criterion in Karol would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. Ex. 1005 at ¶¶ 402, 413. A POSITA would have understood that Karol discloses a reliability criterion because it would enable Karol to avoid congested links or avoiding portions of the network that have failed. (Ex. 1005 at ¶ 406.) Reliability was well-understood by a POSITA. (Ex. 1005 at ¶¶ 402-413; Ex. 1007.) A POSITA understood few other routing criterion were in common usage for IP protocol based networking, and the combination would yield a predictable result. (Ex. 1005 at ¶ 413.)

Claim 15:

To the extent claim 15 is not anticipated by Karol, a POSITA would have combined Karol and the knowledge of a POSITA to understand that Karol discloses "the selecting step selects the network path at least in part on the basis of a security criterion" for many reasons. Implementing a security criterion in Karol would have amounted to nothing more than the use of a known technique to improve similar methods in the same way or the combination of prior art elements according to known methods to yield predictable results. A POSITA would have understood that Karol discloses a security criterion to enable Karol to avoid congested links or avoiding links with an inadequate security level. (*See* Ex. 1005 at ¶ 420.) Security was well-understood by a POSITA. (*See* Ex. 1005 at ¶¶ 420-426; Ex. 1011.) A POSITA understood that few other routing criterion were in common usage for IP protocol based networking, and the combination would yield a predictable result. (*See* Ex. 1005 at ¶ 425.)

Claim 19[a]:

As noted in § V(C) claim 4[a] and § V(A) claim 19[a], Karol renders claim 19[a] obvious. (Ex. 1005 at ¶¶ 438-445.)

Claim 19[b]:

As noted in § V(C) claim 11 and § V(A) claim 19[b], Karol renders claim 19[b] obvious. (Ex. 1005 at ¶¶ 461-469.)

Claim 19[c]:

A POSITA reading Karol would understand, as noted in § V(A) at claim 19[c], that Karol discloses the elements of this claim because the packet path selector of Fig. 4 compares information in each packet received at the CL-CO gateway and then routes each packet to either the CL or CO network interface output line card, as described in Fig. 5. (Ex. 1005 at ¶¶ 476, 478.)

Claim 19[d]:

A POSITA reading Karol would understand, as noted in § V(A) at claim 19[d], that Karol discloses sessions such as Internet telephony involve repeatedly sending packets to the input line card of the CL-CO gateway from a particular source endpoint, which is "the step of sending a packet to the controller site interface is repeated as multiple packets are sent." (Ex. 1005 at ¶¶ 480, 482-483.) A POSITA would also understand that when some datagrams carrying UDP segments within a message from the same source endpoint to the same destination endpoint are routed to the CL network while other datagrams carrying UDP segments within the same message from the same source endpoint to the same destination endpoint are routed to the CO network that "the controller sends different packets of a given message to different parallel networks." (*Id.*)

Claim 22:

Karol renders claim 22 obvious for all the reasons discussed above in §V(C) with respect to claims 5 and 6.

Claim 23:

Karol renders claim 23 obvious for all the reasons discussed above in §V(C) with respect to claim 11.

Claim 24:

Karol renders claim 24 obvious for all the reasons discussed above in §V(C) with respect to claim 9.

VI. CONCLUSION

Petitioner requests *inter partes* review of the '235 Patent be instituted and that the challenged claims be cancelled as unpatentable under 35 U.S.C. § 318(b).

Dated: January 13, 2017

Respectfully submitted,

By: */Robert C. Hilton/*
Robert C. Hilton
Reg. No. 47,649
McGuireWoods LLP

2000 McKinney Ave., Suite 1400
Dallas, TX 75201
Telephone: (214) 932-6400
Facsimile: (214) 932-6499
Email:
rhilton@mcguirewoods.com

Attorney for Petitioner

Certification under 37 C.F.R. § 42.24(d)

I hereby certify that this petition, excluding its table of contents, table of authorities, mandatory notices, table of exhibits, certification under 37 C.F.R. § 42.24(d), and certificate of service has 13,996 words as counted by Microsoft Word 2013, the word-processing system used to prepare this preliminary response.

/Robert C. Hilton/
Robert C. Hilton, Reg. No. 47,649

Date: January 13, 2017

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on January 13, 2017, a complete and entire copy of this Petition for *Inter Partes* Review, and all supporting exhibits, was served on the following counsel of record for Patent Owner:

Correspondence Address of Record, *Via Priority Mail Express:*

Thorpe North & Western, LLP
P.O. Box 1219
Sandy, UT 84091-1219

Counsel of Record for Patent Owner, *Via Federal Express*

Thorpe, North & Western, LLP
Sandy Office
8180 South 700 East, Suite 350
Sandy, Utah 84070

Courtesy Copy, *Via Federal Express*

John Ogilvie
2148 East 11270 South
Sandy, Utah 84092

Litigation Counsel, *Via Federal Express*

Timothy J. Carroll
Douglas L. Sawyer
Perkins Coie
131 South Dearborn Street, Suite 1700
Chicago, Illinois 60603-5559

By: */Robert Hilton/*
Robert C. Hilton
Reg. No. 47,649
rhilton@mcguirewoods.com

Attorney for Petitioner