UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RPX CORP., ERICSSON INC., AND TELEFONAKTIEBOLAGET LM ERICSSON,
Petitioner

v.

IRIDESCENT NETWORKS, INC. (“Iridescent”),
Patent Owner

Patent 8,036,119

PETITION FOR *INTER PARTES* REVIEW

Under 35 U.S.C. §§ 311-319

U.S. Patent No. 8,036,119

Claims 1-16

TABLE OF CONTENTS

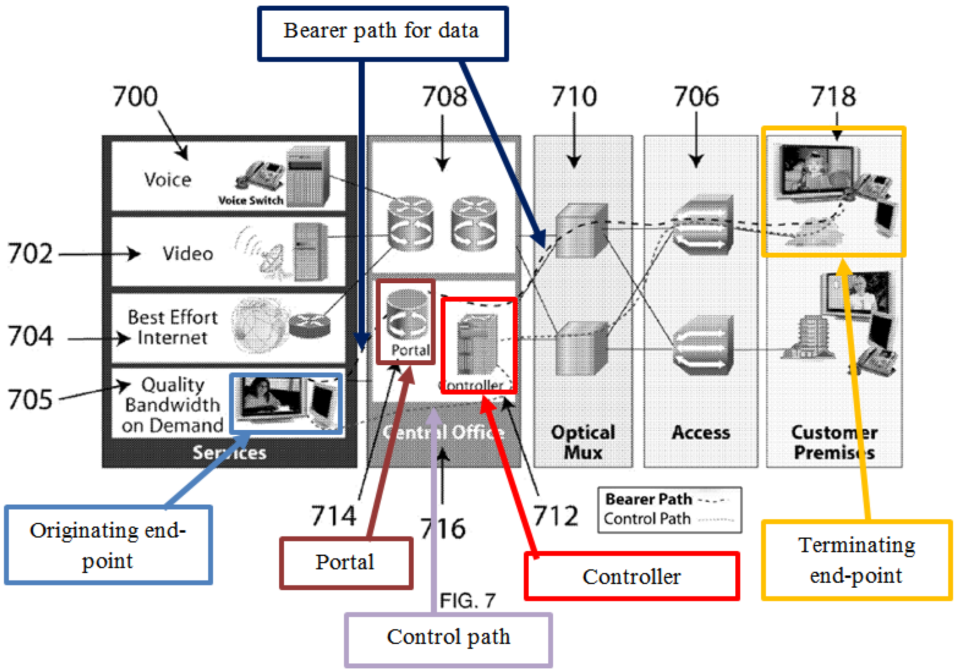
I. Introduction

U.S. Patent No. 8,036,119 ("the '119 Patent," ERIC-1001) is directed to a method for providing bandwidth on demand between an "originating" end-point and a "terminating" end-point. The '119 Patent's purported novelty is to separate control functions and packet transmission functions into two physically separate entities: (1) a "controller" that provides end-to-end quality assurance, and (2) a "portal" that handles packet transmission based on routing instructions from the controller. ERIC-1001, 1:19-22, 4:64-5:6; ERIC-1005, ¶56.

According to the '119 Patent, prior art systems were addressed to the core network only or to the access network only, and thus failed to provide quality assurance from originating end-point to terminating end-point. *Id.*, 2:6-3:2. That is, the prior art allegedly did not provide *end-to-end* quality assurance. *See id.*; ERIC-1005, ¶¶57-58.

To address these perceived shortcomings, the '119 Patent offers "an improved unique system and method of providing bandwidth on demand for an end user and/or enterprise" from "end to end." ERIC-1001, 4:46-48, 3:46-48. To do so, the '119 Patent purports to separate control processing from data transport to manage services end-to-end with a "controller" in charge of a physically separate "portal" for a connection between an "originating end-point" and a "terminating end-point." *Id.*, 4:64-5:6. A control path extends between the end-points and the controller and between the controller and the portal. A bearer path for data extends between the end-points. ERIC-1005, ¶59.

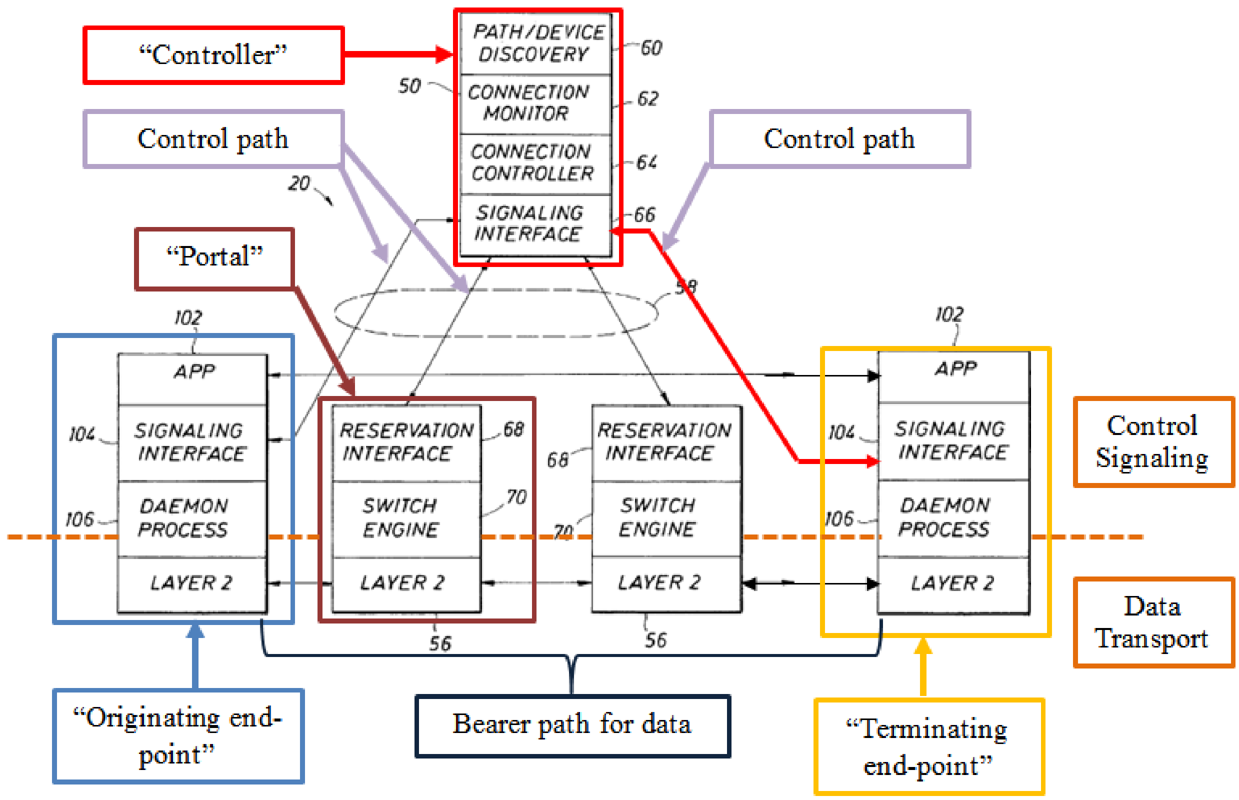
An example of this architecture is shown in FIG. 7:



ERIC-1001, FIG. 7 (annotated); ERIC-1005, ¶60.

However, the solution proposed by the ’119 Patent was not unique or new. Instead, well before the earliest alleged priority date of the ’119 Patent, others had already developed a system to provide end-to-end bandwidth assurance using a physically separate controller and portal platform. ERIC-1005, ¶61.

For example, Golden discloses an identical method for end-to-end QoS over existing networks by establishing reserved-bandwidth connections with guaranteed QoS between endstations on demand. *See* ERIC-1007, 1:14-18. Golden discloses the separation of control functions from packet transmission functions into two physically separate entities: (1) an "enterprise control point" ("ECP," i.e., controller) that assures end-to-end bandwidth, and (2) a "switch" (i.e., portal) that handles packet transmission based on routing instructions from the controller. An example of Golden's end-to-end architecture is illustrated in modified FIG. 9:



ERIC-1007, FIG. 9 (modified and annotated); ERIC-1005, ¶62.

Golden provides the requested QoS, including bandwidth, on demand in local or wide area networks end-to-end. ERIC-1007, 1:11-22. Golden discloses the separation of control processing from data transport to manage services from end-to-end using the ECP. *Id.*, 7:44-46. The ECP is disclosed as providing routing instructions to the physically separate portal for a connection extending between an originating end-point (host 102) and terminating end-point (another host 102). *Id.*, 13:22-30, 37-41. Identical to the embodiment of FIG. 7 of the ’119 Patent, a control path extends between the end-points and the controller and between the controller and the portal, and a bearer path for data extends between the end-points. ERIC-1005, ¶¶63-64.

In an embodiment of the ’119 Patent, the controller receives a request from an end-point for an end-to-end connection having a requested amount of bandwidth. Likewise, Golden’s end-point requests from an ECP a reserved connection (e.g., a dedicated bearer path set up by the ECP) meeting a specified service level. In the ’119 Patent, the controller “dynamically provision[s] a dedicated path, including required route and bandwidth, on demand through the network.” ERIC-1001, 5:64-67. Consistently, Golden discloses reserving bandwidth along a specified required route. ERIC-1005, ¶¶65-69.

In summary, the evidence in this petition demonstrates that claims 1-16 of the ’119 Patent are unpatentable.

II. Mandatory Notices

Real party-in-interest: RPX Corporation, Ericsson Inc., and Telefonaktiebolaget LM Ericsson (collectively “Petitioner”).

Related Matters: As of the filing date of this petition, the ’119 Patent is involved in the following litigation, located in the Eastern District of Texas: *Iridescent Networks, Inc. v. AT&T Inc. et al.*, 6:16-CV-01003.

Lead and Back-up Counsel:

<u>Lead Counsel</u> J. Andrew Lowes USPTO Reg. No. 40,706	 Phone: (972)680-7557 andrew.lowes.ipr@haynesboone.com
<u>Back-up Counsel</u> Adam C. Fowles USPTO Reg. No. 65,005 John Russell Emerson USPTO Reg. No. 44,098 Clint Wilkins USPTO Reg. No. 62,448 Mailing address for all counsel: HAYNES AND BOONE, LLP 2323 Victory Ave. Suite 700 Dallas, TX 75219	 Phone:(972)739-8674 adam.fowles.ipr@haynesboone.com Phone:(214)651-5328 russell.emerson.ipr@haynesboone.com Phone: (972)739-6927 clint.wilkins.ipr @haynesboone.com

Please address all correspondence to lead and back-up counsel. Petitioner consents to electronic service by email.

III. Grounds for Standing

Petitioner certifies that the ’119 Patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting *inter partes* review.

IV. Relief Requested

Petitioner asks that the Board review the accompanying prior art and analysis, institute a trial for *inter partes* review of claims 1-16 of the ’119 Patent, and cancel those claims as unpatentable.

V. The Reasons for the Requested Relief

A. Summary of the Related Technology and the ’119 Patent

The ’119 Patent relates to communications systems that provide guaranteed bandwidth on demand for end users and/or enterprises. ERIC-1001, 1:19-22. The ’119 Patent discloses a system “with a physically separated controller and managed portal platform.” *Id.*, 4:64-66. The controller handles control functions including admission control, path provisioning, and routing, while the portal handles packet data transmission. *Id.*, 4:64-5:6. FIG. 7 illustrates these concepts:

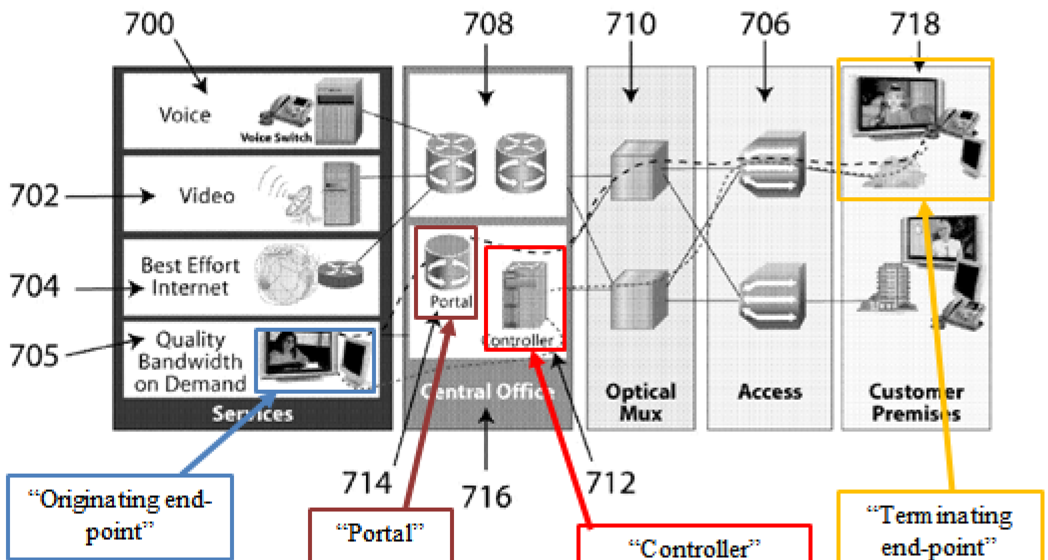


FIG. 7

Id., FIG. 7; 4:29-30; ERIC-1005, ¶¶19-22.

The controller receives requests for high quality of service connections from an originating end-point. ERIC-1001, 5:27-29. The controller next determines if the user is authorized for the requested service. *Id.*, 5:52-55. After authorization, the controller "negotiates across the network with the terminating end-point(s) to set up the connection." *Id.*, 5:29-31; ERIC-1005, ¶¶23-24.

Specifically, the controller "dynamically provision[s] a dedicated path, including required route and bandwidth, on demand through the network." ERIC-1001, 5:64-67. With respect to the dedicated path, the portal "does not perform new routing on any packet"; it "only acts on the information provided by the controller 900." *Id.*, 6:23-29; ERIC-1005, ¶¶25-27.

The '119 Patent envisioned that the control path from the controller to the terminating end-point could extend through another controller or be directly connected. *See, e.g.*, ERIC-1001, FIGs. 8, 11, 7:11-15. The '119 Patent relies on existing routers and mechanisms (such as IP/MPLS) to interconnect the controller and portal to each other and other platforms. *Id.*, 6:50-53; ERIC-1005, ¶¶28-32.

As discussed below in detail, the method claimed in the '119 Patent—providing bandwidth on demand end-to-end—was well-known to POSITAs before the earliest alleged priority date of the '119 Patent. ERIC-1005, ¶¶33-35.

B. The Prosecution History

The ’119 Patent issued on October 11, 2011 from U.S. Patent Application No. 12/632,786, which is a continuation of U.S. Patent No. 7,639,612 (the ’612 Patent). ERIC-1005, ¶¶36-38.

In response to prior art rejections during prosecution of the ‘612 Patent, the Applicant argued that “much of the cited art is clearly directed to access networks and other connections that are not end-to-end.” ERIC-1004, p. 52. Applicant argued that its claimed invention “is directed to end-to-end connection management (i.e., between an originating end-point and a terminating end-point) with a controller that provides ‘end-to-end quality assurance.’” *Id.* After an Examiner’s Amendment, the claims were allowed. *Id.*, pp.25-26; ERIC-1005, ¶¶39-48.

As shown herein, however, the Examiner failed to appreciate all of the relevant art that would have been known to a POSITA as of the earliest alleged priority date of the ’119 Patent that taught “end-to-end connection management … with a controller that provides ‘end-to-end quality assurance’” with the features as claimed. *See* ERIC-1005, ¶49.

C. Identification of Challenges

Claims 1-16 of the ’119 Patent are challenged in this Petition. *See* ERIC-1005, ¶¶66-69.

1. Statutory Grounds for Challenges

The ’119 Patent claims priority to an application filed on May 2, 2007, both of which claim the benefit of a provisional application filed on May 2, 2006. The prior art presented herein pre-dates all of these filing dates.

Challenge #1: Claims 1-9 and 11-12 are obvious under 35 U.S.C. § 103 over U.S. Patent No. 6,563,793 to Golden *et al.* (“Golden,” ERIC-1007) in view of U.S. Patent Publication No. 2001/0023443 to Fichou *et al.* (“Fichou,” ERIC-1008), further in view of U.S. Patent Publication No. 2006/0133300 to Lee *et al.* (“Lee,” ERIC-1009).

Golden issued on May 13, 2003, and is prior art at least under (pre-AIA) 35 U.S.C. § 102(b). Fichou published on September 20, 2001, and is prior art at least under (pre-AIA) 35 U.S.C. § 102(b). Lee was filed on December 16, 2005 and published on June 22, 2006. Lee is prior art at least under (pre-AIA) 35 U.S.C. § 102(e).

Challenge #2: Claims 10 and 13-15 are obvious under 35 U.S.C. § 103 over Golden in view of Fichou and Lee, further in view of U.S. Patent Publication No. 2003/0219006 to Har (“Har,” ERIC-1010). Har published on November 27, 2003, and is prior art at least under (pre-AIA) 35 U.S.C. § 102(b).

Challenge #3: Claim 16 is obvious under 35 U.S.C. § 103 over Golden in view of Fichou, Lee, and Har, further in view of U.S. Patent Publication No.

2003/0133552 to Pillai *et al.* ("Pillai," ERIC-1011). Pillai published on July 17, 2003, and is prior art at least under (pre-AIA) 35 U.S.C. § 102(b).

D. Reasons that Challenges are Not Redundant

Another petition is filed concurrently with this Petition. The other petition relies on different prior art, combinations, arguments, and expert declaration testimony particular to the different prior art. The prior art combinations presented in this Petition include "Golden," ERIC-1007, as the primary reference. Golden is a patent publication that is used in combination with a patent publication (U.S. Pub. 2006/0133300 to Lee) that qualifies under (pre-AIA) 35 U.S.C. § 102(e) that Patent Owner may attempt to swear behind.

In contrast, the other concurrently filed petition relies upon a different primary reference, namely a printed publication referred to as QBone, that Patent Owner may (wrongly) attack on authentication and public availability grounds. Thus, the challenges in both petitions should be considered for claims 1-16. *See, e.g., NXP Semiconductors v. Inside Secure et al.*, IPR2016-00683, Paper 10 at 26 (declining to deny institution because the grounds are sufficiently distinguished from each other "at least because they are based on different prior art (e.g., prior art under § 102(a) vs. prior art under § 102(b)"); *Valeo N. Am., Inc. v. Magna Elecs., Inc.*, IPR2014-01208, Paper 13 at 15 (instituting both petitions where they presented different combinations of prior art and arguments).

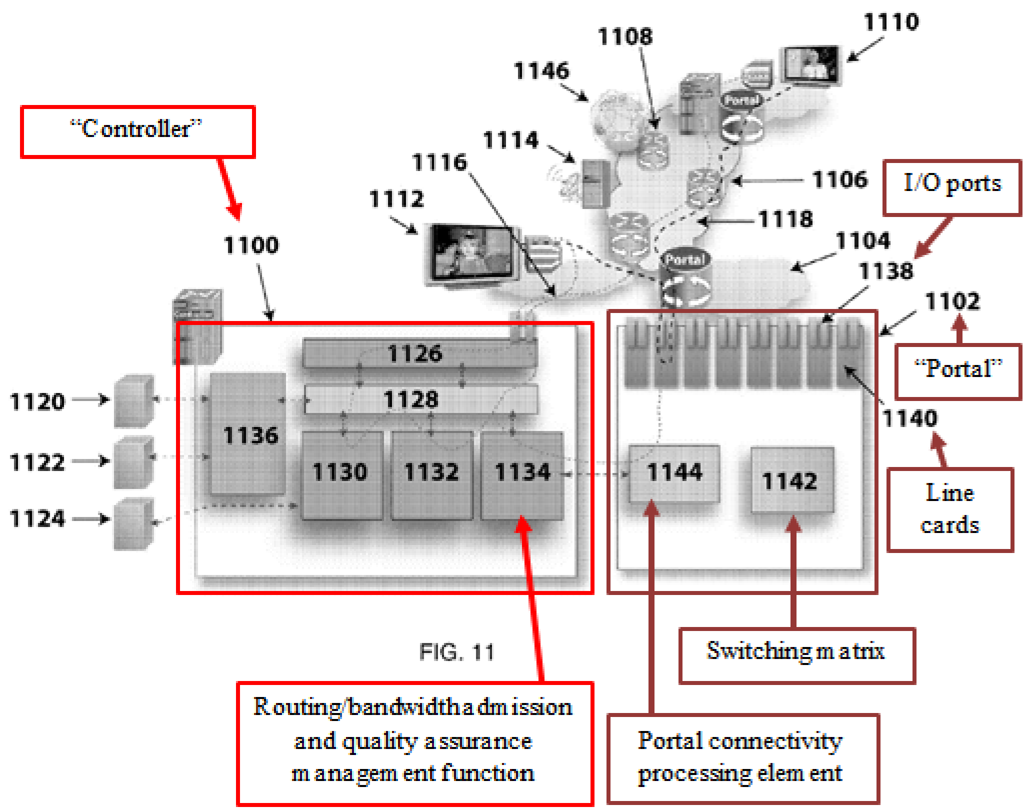
E. Claim Construction

This petition presents claim construction consistent with the broadest reasonable interpretation (BRI) in light of the specification. *See* 37 C.F.R. § 42.100(b). Claim terms are construed only to the extent necessary to resolve the IPR. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc*., 200 F.3d 795, 803 (Fed. Cir. 1999). Claim terms other than those below do not appear to require construction and are understood based on their plain and ordinary meaning.

1. "directing, by the controller, … [a portal] … to allocate local port resources of the portal"

This claim term is found and used similarly in claims 1 and 13.

Resources of the portal are illustrated in FIG. 11, reproduced and annotated below, and described as "[t]he Portal 1102 includes I/O ports 1138 on line cards 1140 for the bearer connections, a switching matrix 1142 and a portal connectivity processing element 1144." ERIC-1001, 7:24-26.



Id., FIG. 11 (annotated); ERIC-1005, ¶¶50-52.

As shown, the controller 1100 sends instructions from the "routing/admission and quality assurance management function 1134" element to the "portal connectivity processing element 1144" in the portal "necessary for the broadband services to be dynamically connected and managed with quality." ERIC-1001, 7:15-23. In discussing the operation of similar embodiments, the '119 Patent discloses that "[t]he Controller 800 directs its associated Portal platform 802 to allocate local port resources" (the only usage of that term in the body of the specification) and the portal "only accepts traffic on its ports when authorized by the Controller." *Id.*, 5:67-6:1 and 6:25-26; ERIC-1005, ¶53.

Thus, the ‘119 Patent discloses that in response to allocation instructions from the controller, elements included within the portal affect the routing, admission and quality of the connection determined by the controller. Moreover, as understood by a POSITA, the portal elements can be implemented as physical and/or logical elements. *Id.*, ¶54.

Therefore, in view of the above, under a BRI a POSITA would have construed the claim term “directing, by the controller, … [a portal] … to allocate local port resources of the portal” to include at least *sending an allocation instruction from the controller to the portal, where the allocation instruction results in the portal allocating physical and/or logical elements of the portal*. ERIC-1005, ¶¶51-55.

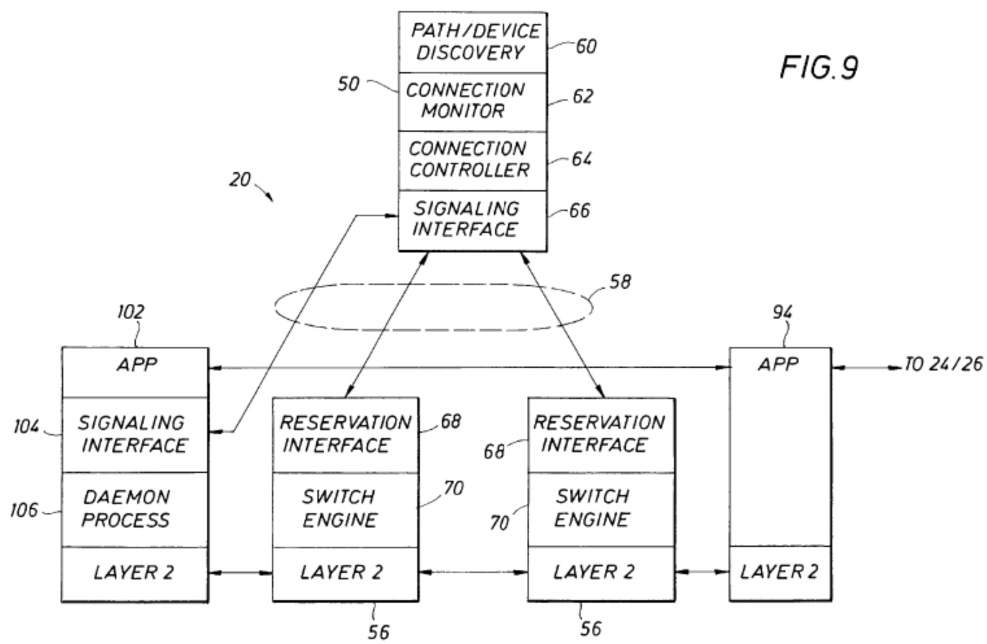
VI. Identification of How Claims are Unpatentable

A. Challenge #1: Claims 1-9 and 11-12 are obvious under 35 U.S.C. § 103 over Golden in view of Fichou and Lee

1. Summary of Golden

Golden relates to adapting an existing packet infrastructure “so that on-demand reserved-bandwidth virtual circuit connections with guaranteed QOS and/or COS between any endstations within the network or between networks can be established.” ERIC-1007, 1:11-18. Recognizing the need for control of resources from “beginning to end,” Golden provides the ECP 50 for “hosts” (end-points) that communicate with one another. *See id.*, 4:53-55, 7:44-46; ERIC-1005, ¶¶70-71.

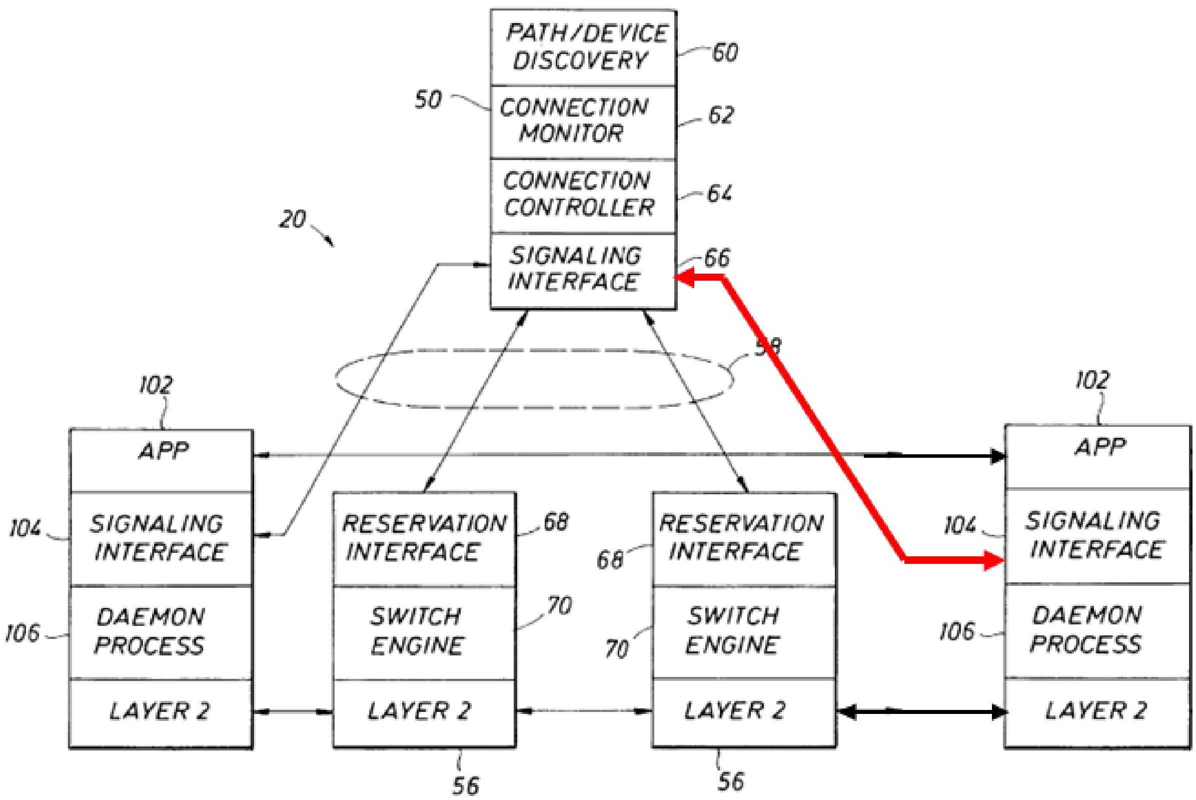
Golden illustrates an exemplary implementation in FIG. 9:



ERIC-1007, FIG. 9; ERIC-1005, ¶72.

ECP 50 is "a standalone processor and software" that communicates with switches in network 20 via a reserved signaling channel 58. ERIC-1007, 7:63-65; 8:16-19. The ECP also learns elements and paths within the network, and uses a connection controller function 64 to set up and tear down reserved connections. *Id.*, 8:20-23, 29-34. The ECP maintains records on the different connections, including the elapsed time of the connection, the parties involved, and the resources used by the connection which can be used for billing, charging, and resource management. *Id.*, 8:34-39; ERIC-1005, ¶73.

Golden teaches that the hosts (end-points) may be conventional hosts 52 in FIG. 4, or enhanced hosts 102 in FIG. 9. ERIC-1007, 8:23-26, 13:37-41. Golden teaches that the hosts are able to "directly request[] a reserved connection from ECP 50" via a reserved signaling channel. *Id.*, 13:23-29, 13:34-37. FIG. 9, modified as taught by Golden, illustrates both endpoints as enhanced hosts 102 with enhanced signaling channels 58:



Id., FIG. 9 (router 94 replacedby enhanced host 102); ERIC-1005, ¶¶74-76.

In one embodiment, a user of the originating end-point (host 102) selects a link from a browser to request a reserved bandwidth connection. ERIC-1007, 14:7-23. The desired connection information is transmitted in a connection request from originating host 102 to ECP 50. *Id.*, 14:23-33. ECP 50 checks for sufficient resources from beginning to end and reserves the bandwidth at each switch in the path. *Id.*, 14:34-37, 15:14-21, 10:27-36, 14:53-60. A switch receives bandwidth reservation instructions from the ECP via another reserved signaling channel. *Id.*, 11:8-12.

Thus, Golden teaches an end-to-end QoS assurance solution with an ECP that is separate from both the switches and the end-points, and uses direct reserved signaling channels to each end-point and the portal. ERIC-1005, ¶82.

2. Summary of Fichou

Fichou describes a system for authorizing a user for a requested connection. Fichou teaches reservation server 26 "for reserving a virtual connection from a source workstation to a destination workstation." ERIC-1008, ¶¶[0010],[0021]. A source workstation 10 "deliver[s] a reservation request to reservation server 26 when required to accommodate a Quality of Service (QoS) requirement for a particular application." *Id.*, ¶[0022]. The source workstation 10 includes "destination, bandwidth, Quality of Service, type protocol or port number" in its request. *Id.*, ¶[0023]; ERIC-1005, ¶83.

The reservation server 26 authenticates users and "determines whether or not the reservation can be granted to this user." ERIC-1008, ¶[0022]. The reservation server 26 then performs "user rights verification." *Id.*, ¶[0025]. The information for verification is drawn from a database that "defines for each user which kind of request he is allowed to perform." *Id.* "The result of such a verification may be in terms of bandwidth required for a call, destination allowed, QoS, etc." *Id.*; ERIC-1005, ¶¶84-86.

3. Reasons to Combine Golden and Fichou

Golden contemplated that the ECP performs various control functions relating to "setting up and tearing down reserved connections" end-to-end using the ECP's "connection controller function 64." ERIC-1007, 8:29-31. Golden's ECP includes control functions related to records, billing, and resource management; the ECP maintains records "for ***billing and resource management***." ERIC-1007, 8:34-39; ERIC-1005, ¶¶87-89.

In addition, Golden teaches that it is desirable to determine whether to admit a connection in the network: "ECP 50 could communicate with a policy server within the network ***for further determination on whether to admit the connection***." ERIC-1007, 10:9-12. Golden does not provide further detail about criteria for admitting a connection, but the criteria for deciding whether to admit a connection of the type contemplated by Golden was well known and would have been obvious to a POSITA. Thus, a POSITA would have been motivated to turn to other teachings in the art to confirm such well-known details in determining whether to admit a connection, as shown by Fichou. ERIC-1005, ¶90.

Fichou provides an example of a reservation server, similar to Golden's ECP, that also assists in determining whether to admit a connection. Fichou teaches that the criteria for admission may include verifying whether the user has the rights to use the requested QoS for the connection (i.e., is authorized). Fichou is directed to "reserving a QoS designated virtual connection in a network equipped with a reservation server." ERIC-1008, ¶[0002]. This "virtual connection" is reserved "through backbone nodes … between source workstation 10 and destination workstation 32." *Id.*, ¶[0021]; ERIC-1005, ¶91.

Fichou's reservation server engages in "user rights verification" based on definitions of the kinds of requests (i.e., bandwidth, destination, QoS, etc.) each user is allowed to make. ERIC-1008, ¶[0025]. Applying Fichou's verification teachings to Golden's policy server gives the advantage of "provid[ing] a way for the customer to manage the authorization for each user of the source workstation." *Id.* Thus, a POSITA would have been motivated to turn to Fichou's verification teachings as an example of Golden's "further determination on whether to admit the connection." ERIC-1005, ¶¶92-93.

The combination of Golden's teachings regarding ECP and policy server functions, and Fichou's reservation server with verification, would have been predictable in order to implement the "further determination on whether to admit a connection" in Golden. Golden acknowledges an ability to interface with a policy server. Fichou's teachings are a well-known example of what Golden would have been able to implement with respect to determining whether to admit a connection. ERIC-1005, ¶94.

Fichou's teachings provide an obvious implementation detail that a POSITA would have been motivated to include when implementing the system of Golden. Any modifications to accommodate the teachings of Fichou would have been within the skill level of a POSITA. Golden invited a POSITA to apply common knowledge for determining whether to admit a connection, and Fichou confirms one such commonly accepted method includes user authorization of requested QoS and bandwidth in a similar centralized control architecture. Thus, a POSITA would have been motivated to and capable of incorporating the teachings of Fichou in Golden with predictable results. ERIC-1005, ¶¶95-96.

This predictable and desirable combination would yield a system with the ability to perform verification on reservation requests by ensuring the user was authorized to use the requested QoS, as taught by Fichou, from hosts sending the requests as taught by Golden. ERIC-1005, ¶97.

4. Summary of Lee

Lee teaches that guarantees for end-to-end QoS include "the guarantee for service bandwidth, delay, jitter, loss and the like." ERIC-1009, ¶[0006]. To aid MPLS in providing such QoS guarantees, Lee describes "an apparatus and a method of centralized control of a MPLS [multiprotocol label switching] network capable of minimizing a message exchange between respective switches in the MPLS network." *Id.*, ¶[0003]. Lee teaches that the MPLS network includes "at least one label switching network element," an MPLS switch. *Id.*, ¶¶[0016],[0028]. The centralized control apparatus in Lee "compute[s] an LSP [label switched path] of the MPLS network" on behalf of the MPLS switches in the network. *Id.*, ¶¶[0016],[0034]; ERIC-1005, ¶98.

The centralized control apparatus sends the computed LSP "to the respective MPLS switches via an LSP activation section 304." ERIC-1009, ¶[0057]. The information "transmitted to the respective MPLS switches is Forward Equivalence Classes (FEC) information … Label Forwarding Information Base (LFIB) information and so on." *Id.* LFIB information is the information used by MPLS switches when performing lookups for forwarding packets received that include an MPLS label (as opposed to a routing table). Lee teaches that the LFIB "is the MPLS label switching information that the respective MPLS switches should proceed and which can include an input label, an output label, an output interface and so on." *Id.*, ¶[0058]; ERIC-1005, ¶¶99-100.

5. Reasons to Combine Golden, Fichou, and Lee

Golden taught its applicability to various conventional and novel protocols/frame formats by the ECP to set up and tear down reserved connections with those protocols. ERIC-1007, Abstract; ERIC-1005, ¶¶101-102.

Golden also taught "a technique for ***adapting an existing packet-switched/routed infrastructure*** … ***while providing interoperation with and improving the performance of existing reservation protocols and frame formats***." ERIC-1007, 1:14-21. This solution also applied to the challenge of allowing interoperability between different protocols in the same or different networks from beginning to end, with the use of ECPs (centralized control). *Id.*, 5:47-50; ERIC-1005, ¶103.

Golden taught that the network elements include MPLS switches. *See* ERIC-1007, 8:20-26, 16:19-29, 20:34-41. A POSITA would have understood, therefore, that Golden taught the use of MPLS switches in its network under the control of ECPs, the ECPs determining a path through the network for a requested connection, and that the ECPs provide instructions to MPLS switches along the path for a requested high QoS connection. However, Golden is silent concerning specific implementation details of an MPLS system (relying on the common knowledge of a POSITA to know and understand those basic networking details). Fichou provides additional detail, teaching that the reservation server distributes a "FlowID" which can be an MPLS label. ERIC-1008, ¶[0030]. Thus, a POSITA would have been motivated to fill in specific implementation details of an MPLS system based on a POSITA's knowledge and understanding such as from the teachings of Fichou. It would have been obvious for a POSITA to use that knowledge to implement control of Golden's MPLS routers within the ECP of Golden as modified by Fichou. ERIC-1005, ¶¶104-105.

Lee taught the usefulness of collecting network management to a centralized control point, since according to Lee distributed control for an MPLS network results in "a complicated protocol … for the setting and management of LSP." ERIC-1009, ¶[0011]. Lee taught that its centralized control system finds use in networks "including at least one label switching network element [e.g., MPLS switch]." *Id.*, ¶[0016]. The use of a centralized control apparatus for an MPLS network with at least one MPLS switch reduces the complexity and load of an MPLS switch in the network. *Id.*, ¶¶[0015],[0016]; ERIC-1005, ¶106.

Lee taught performing "all of the computation and setting of the LSP and topology/resources, resource information and fault management and so on" for the MPLS network at the centralized point, "thereby simplifying the operation and management of the network." ERIC-1009, ¶[0030]. In view of Lee's centralized

MPLS control teachings, a natural selection for the POSITA to implement such functionality in Golden would have been the ECP. ERIC-1005, ¶107.

A POSITA, reading Golden and Fichou, would have been motivated to look to other teachings in the art for detail about interactions with MPLS switches, and turned to Lee with its teachings of MPLS switch interaction with a centralized control system for detail regarding what was already known with respect to MPLS. Lee teaches details about instructions sent to MPLS switches after making centralized route determinations in response to a connection request. This includes sending the LFIB to relevant MPLS switches, and the MPLS switches using the LFIB on marked packets instead of routing according to their own routing table. ERIC-1005, ¶108.

Using Lee's teachings about the MPLS switch instructions for supporting a guarantee for service bandwidth, delay, jitter, loss and the like in combination with Golden's teachings regarding ECP bandwidth reservation determinations and instruction transmission to switches in the path, and Fichou's teachings regarding distribution of FlowID's, would have been within the skill of a POSITA. Implementing the teachings of Lee would have allowed a reduction of load imposed on the MPLS switches (e.g., via advanced control functions occurring at the ECP instead, per Lee's teachings) in Golden. *See* ERIC-1009, ¶[0013]; ERIC-1005, ¶109.

Accordingly, a POSITA would have been motivated to turn to, and combine, Lee's teachings about control of MPLS switches. Golden designed its system to operate with existing protocols such as MPLS, as did Fichou. Lee taught the advantages of MPLS switch load reduction by offloading the path calculations to a centralized control system. The predictable and desirable result of such a combination would be a system with the ability to make route determinations/reservations at a centralized control point (Golden's ECP, Fichou's reservation server), as taught by Lee, with Lee's particular MPLS information details provided to MPLS switches in the determined path. ERIC-1005, ¶110.

6. Detailed Analysis of Challenge #1

The following analysis describes how Golden in view of Fichou, further in view of Lee, renders obvious each and every element of at least claims 1-9 and 11-12 of the '119 Patent. *See* ERIC-1005, ¶¶111-305.

<u>Claim 1</u> recites:

[1.0] ***A method for providing bandwidth on demand comprising:***

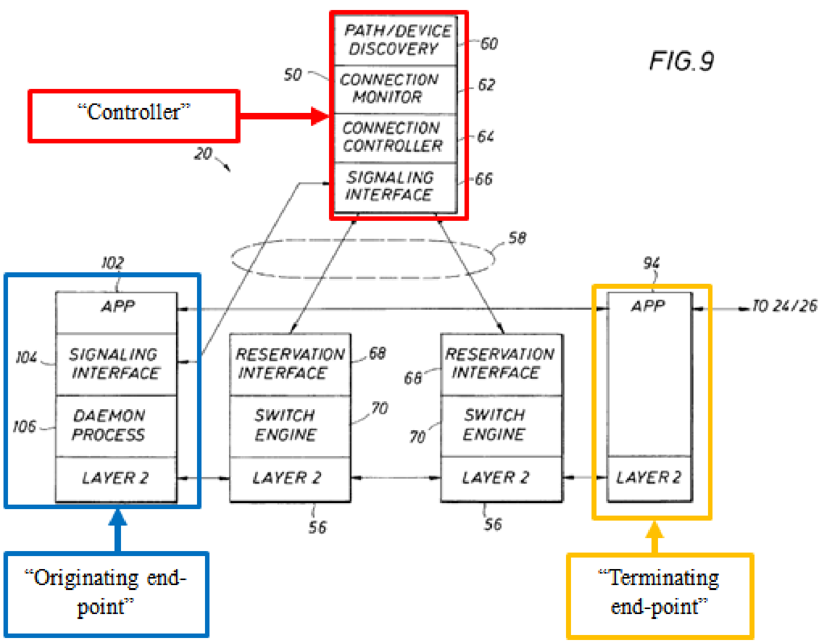
Golden teaches that it provides guaranteed QoS "***so that on-demand reserved-bandwidth virtual circuit connections with guaranteed QOS and/or COS between any endstations within the network or between networks can be established***." ERIC-1007, 1:11-21. "***The enterprise control point identifies a path***

within the network that can satisfy the requested QOS/COS and reserves the requested resources all along the path ***from beginning to end***." *Id.*, 5:47-50.

Thus, to the extent that the preamble is limiting, Golden teaches the features of element [1.0]. ERIC-1005, ¶¶111-113.

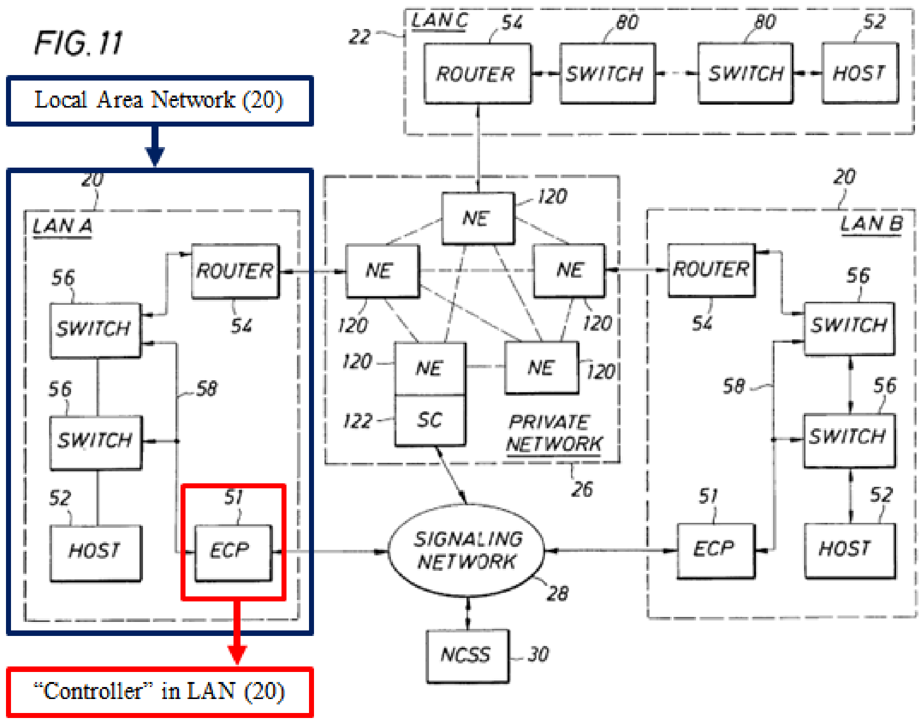
[1.1] ***receiving, by a controller positioned in a network, a request for a high quality of service connection supporting any one of a plurality of one-way and two-way traffic types between an originating end-point and a terminating end-point,***

First, Golden teaches a controller positioned in a network, as well as an originating end-point and a terminating end-point:



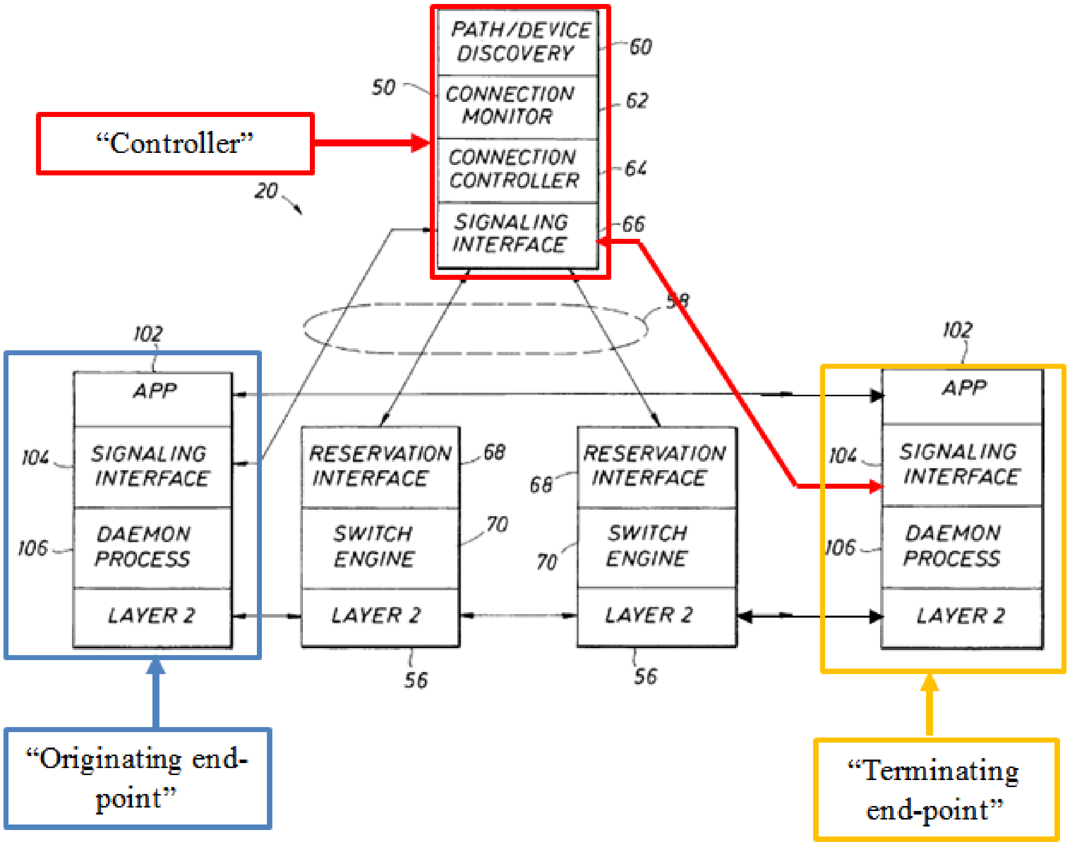
ERIC-1007, FIG. 9 (annotated); ERIC-1005, ¶¶114-115.

In FIG. 9, "enterprise control point 50" (ECP) is a "controller." *See* ERIC-1007, 13:34-37. The ECP is in a network: "***the network includes*** … ***ECP 50***." *Id.*, 13:23-30; *see also* 7:42-46. Golden teaches that "ECP 50 is … a standalone processor and software that communicates with a switch in network 20." *Id.*, 7:63-65. The network 20 identified in FIG. 9 is illustrated again in FIG. 11:



Id., FIG. 11 (annotated showing ECP in LAN 20); ERIC-1005, ¶¶116-120.

Golden teaches an originating end-point and a terminating end-point: "[t]he ***network elements include endstations***." ERIC-1007, 8:27-30. The endstations are illustrated in FIG. 9 as "hosts 102" and "conventional host/router 94." *Id.*, 13:25-27,37-38. Golden also teaches that destination host 94 can be an upgraded host 102: "***host 102 can also communicate with other hosts similarly upgraded as host 102***." *Id.*, 13:36-40. Modified and annotated FIG. 9 below illustrates host 94 replaced with upgraded host 102:



Id., FIG. 9 (modified/annotated); ERIC-1005, ¶¶121-122.

The hosts 102 are end-points because they are the original endstations that request the reserved connections and are the targets to receive communications. *See, e.g.*, ERIC-1007, 8:23-26; 13:31-41; ERIC-1005, ¶123.

Second, Golden teaches that the controller receives a request from an originating end-point: "one or more hosts 102 … ***directly request[] a reserved connection from ECP 50.***" ERIC-1007, 13:23-27. "Signaling interface process 104 [of host 102] … ***sends requests for origination or termination of reserved***

connections to ECP 50." *Id.*, 14:2-8. In response, the controller checks resources along possible paths to secure the service. *Id.*, 14:34-37; ERIC-1005, ¶124.

The originating end-point "***request[s] a connection***… ***and [determines] how much bandwidth and what quality or class of service to request for such connection***." ERIC-1007, 15:31-39. This is a QoS connection request. The ECP acts on the QoS connection request to "determine[] the overall capacity of the first available path … whether the minimum bandwidth available through each link, switch, and switch port in the path will be sufficient to ***fulfill the bandwidth and/or quality of service*** requested for the connection." *Id.*, 9:61-66; ERIC-1005, ¶¶125-126.

Golden teaches that the connections support any one of one-way or two-way traffic types: "this approach … gives ***QOS/COS traffic*** preferred access to the available bandwidth of a switch or router port." ERIC-1007, 11:48-53. It would have been obvious to a POSITA that traffic traversing a connection is one-way or two-way traffic. Golden teaches that the connection can be for "audio only, data only, teleconference, etc." *Id.*, 14:26-30. Some traffic examples include video or audio conferences. *Id.*, 14:60-62. In particular, video and/or audio conferencing are examples of at least two-way traffic types. ERIC-1005, ¶¶127-128.

Third, Golden teaches that the request is for a high QoS connection because it provides similar example applications as the '119 Patent, such as "video conferencing." According to the '119 Patent, "high quality bandwidth on demand services" include "video and gaming applications." ERIC-1001, 5:23-26. During prosecution of the '612 Patent, Patent Owner identified "the boxed set of applications on the left side of Fig. 3" as examples of pre-existing "high QoS" applications. ERIC-1004, p.51. FIG. 3 identifies examples of applications that have high QoS requirements including ***video conferencing***, file sharing, distance learning, SD video on demand, multi-player gaming, telemedicine, Realtime video, HD video multicasting, network hosted software, and video from studio. ERIC-1001, FIG. 3; ERIC-1005, ¶129.

Claim terms are understood to encompass disclosed embodiments in the absence of clear disavowals of claim scope. *See, e.g.*, *Vitronics Corp. v. Conceptronics, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) (a claim interpretation that excludes a preferred embodiment is rarely the right construction, if ever). Here, claim 1 should cover at least the high QoS application requirements in FIG. 3, identified by Patent Owner during prosecution, and the related description in the '119 Patent. Golden provides examples of applications that receive a requested QoS, which would have similar parameters to those in the '119 Patent. *See* ERIC-1005, ¶130.

In Golden, the originating end-point determines the type of connection to request, including bandwidth amount and QoS. ERIC-1007, 15:35-39. Golden identifies applications for which the bandwidth is requested as "real time applications such as ***video conferencing***." *Id.*, 1:43-47; *see also* 14:60-62 (video or audio conferencing). Further, Golden identifies connections that provide lower QoS, including best effort connections: "[i]f bandwidth on a port has been reserved by the ECP but priority packets are not arriving to make use of that bandwidth, 'best effort' packets can and will be allowed to be forwarded through that port." ERIC-1007, 11:53-56; ERIC-1005, ¶131.

A POSITA would have known that QoS connections would have several different parameters associated with it including bandwidth, as well as (in certain applications) latency and packet loss. Golden teaches that the bandwidth requested is part of a QoS request for the end-to-end connection. ERIC-1007, 1:11-21,9:61-66. Further, Golden in combination with Lee teaches that guarantees for end-to-end QoS include "the guarantee for service bandwidth, delay, jitter, loss and the like." ERIC-1009, ¶[0006]. Patent Owner agreed that these parameters were all well-known, stating that bandwidth, packet loss, and latency requirements "are commonly used parameters." ERIC-1004, p.51; ERIC-1005, ¶132.

Further, FIG. 3 of the Background of the '119 Patent identified that it was already known for video conferencing to have bandwidth on the order of 1 Mbps, with packet loss of 10^{-5} and latency of less than 400 ms round trip time. ERIC-1001, FIG. 3. Accordingly, a POSITA would have recognized Golden, which teaches guaranteeing a requested QoS service end-to-end for real-time video conferencing, would have had similar parameters associated with its bandwidth request including delay, loss, and jitter as taught by Lee and acknowledged by the '119 Patent. ERIC-1005, ¶133.

Golden's QoS connection is a connection that assures at least a bandwidth parameter of the connection from end-to-end by providing "***reserved bandwidth*** and QOS/COS virtual circuit reserved connections." ERIC-1007, 5:18-27. The ECP assures that the bandwidth is supported end to end by its treatment of every link and switch in the end-to-end path: "[the ECP] determines … ***whether the minimum bandwidth available through each link, switch, and switch port in the path will be sufficient to fulfill the bandwidth and/or quality of service requested for the connection***." *Id.*, 9:60-10:3; ERIC-1005, ¶¶134-135.

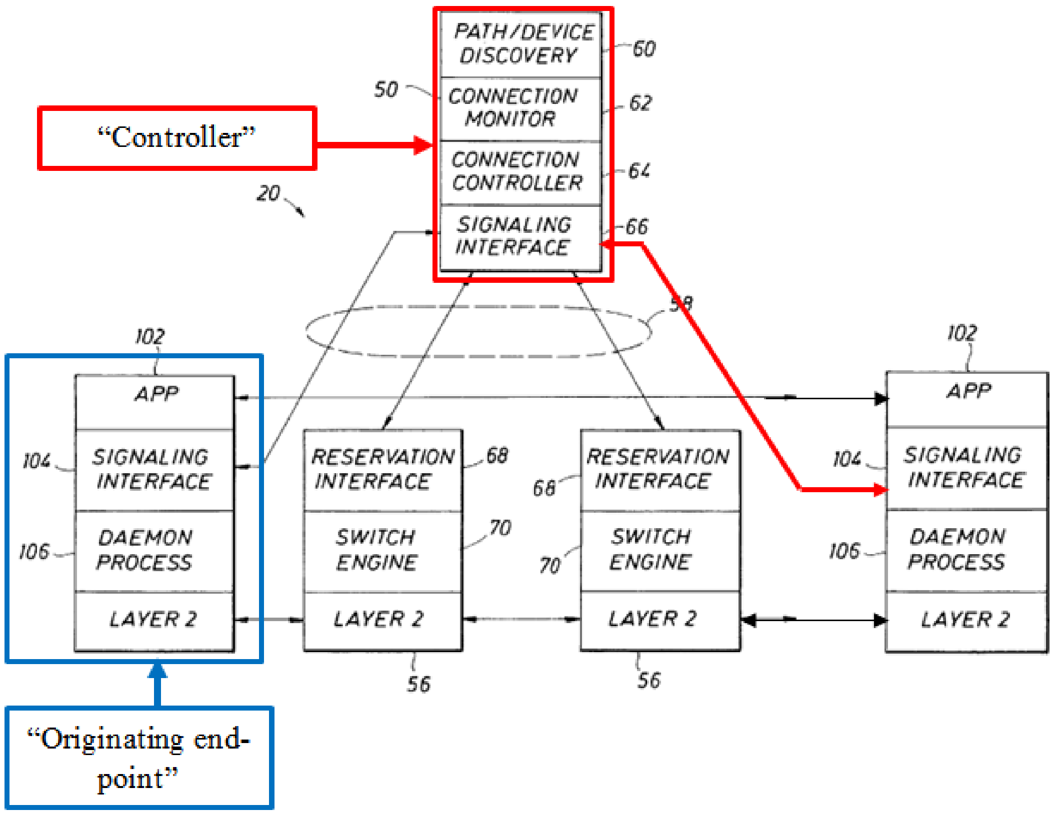
Further, to the extent that the parameters of a requested high quality of service connection vary according to application, Golden teaches that the assured bandwidth is based on the requirements of the particular application. This is because the request from the originating end-point is based on a determination on bandwidth and QoS for the connection. ERIC-1007, 15:35-39. A POSITA would have recognized that a "guaranteed" QoS that supports real-time applications "such as video conferencing" has bandwidth parameters and, for a requested QoS, latency and packet loss parameters for the connection. ERIC-1005, ¶¶136-138.

Fourth, Golden teaches that the connection is between the originating and terminating end-points when reserving resources "all along the path ***from beginning to end***." ERIC-1007, 5:47-50. The ECP checks resources on the path "***to the requested destination***." *Id.*, 14:34-37. Because the request is from the originating end-point in Golden, and the ECP identifies the path from beginning to end including the requested destination, Golden teaches that the connection is between the end-points. ERIC-1005, ¶139.

Thus, Golden teaches the features of element [1.1]. *Id.*, ¶140.

[1.2] ***wherein the request comes from the originating end-point and includes at least one of a requested amount of bandwidth and a codec;***

First, Golden teaches that the request comes from the originating end-point: "one or more ***hosts 102 [] have been configured*** … ***for directly requesting a reserved connection from ECP 50.***" ERIC-1007, 13:23-27. At an originating end-point, requests to initiate or terminate a reserved connection are "***formatted into a connection request***" and sent to the ECP. *Id.*, 14:9-33. FIG. 9 illustrates the originating end-point and controller:



Id., FIG. 9 (modified and annotated); ERIC-1005, ¶¶141-143.

Second, Golden teaches that the request includes a requested amount of bandwidth: "additional layers of software [at host 102] … determine … ***how much bandwidth*** and what quality or class of service ***to request for such connection***." ERIC-1007, 15:35-39. The ECP receives the request from the originating end-point and sends a reservation with "***the desired bandwidth in packets per second***." *Id.*, 10:30-36. Accordingly, by teaching a request that includes a desired bandwidth from the originating end-point to the ECP, Golden teaches the limitation for "at least one of a requested amount of bandwidth …." ERIC-1005, ¶¶144-147.

Third, to the extent the limitation also requires a codec, it would have been obvious to a POSITA for a requested codec to be included in the request with the desired bandwidth. *Id.*, ¶148. For example, Golden teaches that it supports "real time applications such as ***video conferencing***." ERIC-1007, 1:43-47; *see also* 14:60-62. For real-time applications, such as real-time video conferencing, codecs permit the sender to transmit video data according to a coding standard to ease the transmission requirement. ERIC-1005, ¶149.

At the time of the earliest priority date of the '119 Patent, compression via a codec was a common practice for the streaming of real-time data, including for video conferencing. As was known by a POSITA, compression (such as by codec) reduced a bit rate required for transmission. Indeed, per the '119 Patent's Background, "[v]ideo transmission ***requires compression*** in order to effectively utilize the available broadband bandwidth across packet domains." ERIC-1001, 3:31-33. For example, the video conferencing application envisioned by Golden would have employed "compression" by a codec to ease "[v]ideo transmission" requirements. ERIC-1005, ¶¶150-151.

A POSITA would have known that the codec being utilized by the originating end-point would be communicated to at least some intermediate point, if not the receiver, to ensure that the terminating end-point can handle the requested service for Golden's end-to-end connection. Further, a POSITA would have known that a request for connection would include at least one codec for the video conferencing application (in addition to the requested bandwidth), in the same request. *Id.*, ¶152.

Thus, it would have been obvious to a POSITA that the request in Golden for a reserved QoS connection for video conferencing, as an example, would have also included a request for a codec. Therefore, a POSITA reading Golden's teachings of providing a guaranteed QoS connection for a requested "video conferencing" application would have understood such real-time applications as "video conferencing" to include the "basic component" of a codec. *Id.*, ¶153.

Thus, Golden teaches the features of element [1.2]. *Id.*, ¶154.

[1.3] ***determining, by the controller, whether the originating end-point is authorized to use the requested amount of bandwidth or the codec***

First, Golden teaches authorization for use of a network: "[routing function 133] can also perform security functions that provide additional safeguards against ***unauthorized use***" by screening against "***a list of authorized users***." ERIC-1007, 22:7-13; ERIC-1005, ¶¶155-156.

Second, Golden teaches determining whether to admit a requested connection in a network, with the ECP communicating with a policy server "***for further determination on whether to admit the connection***." ERIC-1007, 10:9-12. As would have been recognized by a POSITA, Golden's teaching regarding whether to admit a requested connection by a policy server encompasses a determination on whether the requesting end-point is authorized to use a QoS parameter, such as Golden's bandwidth or codec. *See, e.g., id.*, 15:35-39; ERIC-1005, ¶¶157-158.

To the extent that Golden does not explicitly teach the ECP determining whether the originating end-point is authorized to use the bandwidth requested, such would have been well known. ERIC-1005, ¶¶157-158. For example, Fichou teaches a reservation server that verifies reservation requests from a source workstation on a per user basis (based on stored rights of each user). ERIC-1008, Abstract; ERIC-1005, ¶159.

The "reservation request" identified in Fichou includes a bandwidth requested by the source workstation: "***a reservation request message [includes] the necessary parameters such as*** … ***bandwidth***, [or] Quality of Service." ERIC-1008, ¶[0023]. Fichou's reservation server takes the requested bandwidth into consideration when determining whether the user is authorized for the request: "***a user rights verification (step 52) is performed*** using the same database 50 which defines for each user ***which kind of request he is allowed to perform***. The result of such a verification ***may be in terms of bandwidth required for a call, destination allowed, QoS***, etc." *Id.*, ¶[0025]; ERIC-1005, ¶¶160-161.

As would have been recognized by a POSITA, a "user rights verification" in Fichou, based on the information identified above, is a determination of whether the requesting user is authorized for the requested service including bandwidth required. ERIC-1005, ¶¶162-163.

Thus, Golden and Fichou teach the features of element [1.3]. ERIC-1005, ¶164.

[1.4] ***and whether the terminating end-point can be reached by the controller;***

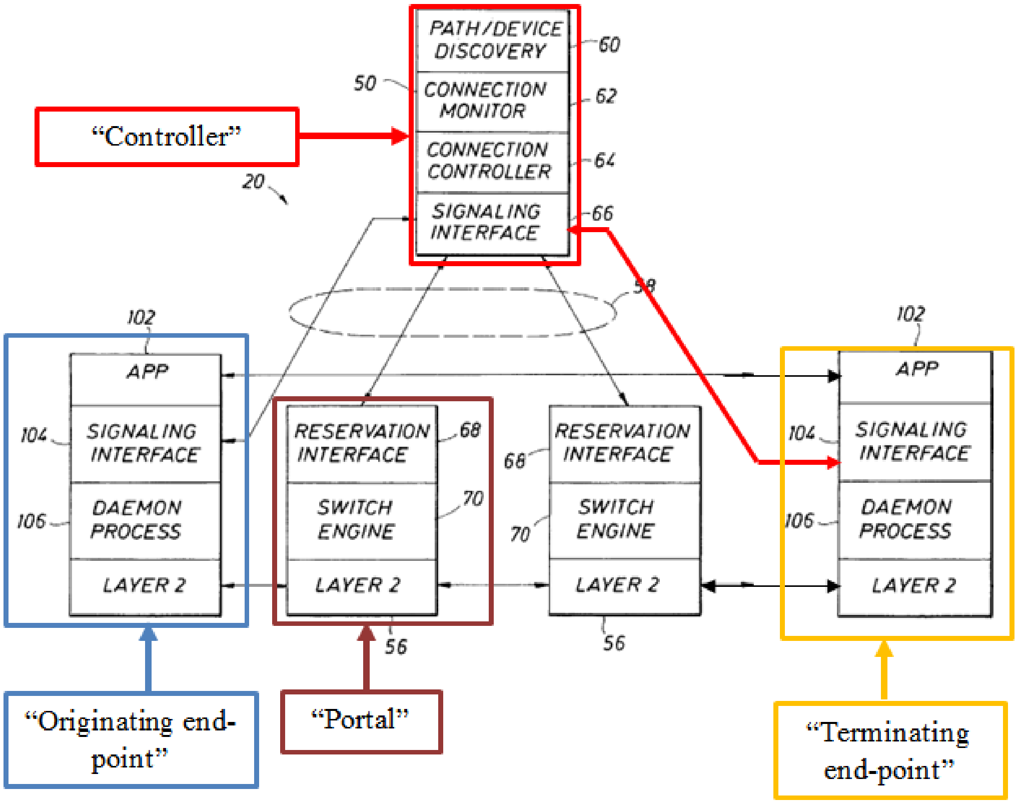
Golden teaches that the ECP (controller) determines whether the terminating end-point can be reached by the ECP: "ECP 50 then processes the request …checking the resources along the path(s) to the requested destination." ERIC-1007, 14:34-37. If the terminating end-point can be reached by the ECP, "signaling interface process 104 [of the terminating end-point] ***receives requests for participation*** in, or termination of, a reserved connection ***from ECP 50***." *Id.*, 14:2-4; ERIC-1005, ¶165,167.

Further, "[i]f the connection cannot be established (e.g., not enough bandwidth available, or the other participant does not agree to the connection), ECP 50 notifies host 102 to that effect." ERIC-1007, 14:34-41; ERIC-1005, ¶166.

Thus, Golden teaches the features of element [1.4]. ERIC-1005, ¶168.

[1.5] ***directing, by the controller, a portal that is positioned in the network and physically separate from the controller to allocate local port resources of the portal for the connection;***

First, Golden teaches a portal (e.g., switch 56) that is positioned in the network, as illustrated in FIG. 9 below:



ERIC-1007, FIG. 9 (modified and annotated); ERIC-1005, ¶¶169-170.

Golden teaches that the discussion with respect to "switches" applies to "routers" as well (generally, layer 2/3 forwarding devices), while using switches as an example. ERIC-1007, 8:64-9:8; ERIC-1005, ¶171.

Second, Golden teaches that the portal is physically separate from the controller: "***ECP 50 is … a standalone processor and software that communicates with a switch in network 20***." ERIC-1007, 7:63-67. This is further illustrated in annotated FIG. 9 above. ERIC-1005, ¶172.

Third, Golden teaches that the switches have port resources, including more than one port and bandwidth for those ports: "[t]he network elements include …

interfaces between [switches] (e.g. ***switch ports***).” ERIC-1007, 8:23-26. A POSITA would have understood a port in Golden to have a bandwidth reservable by the ECP. *See id.*, 11:53-56. It would have been obvious to a POSITA to look at the details regarding switches at column 8 or 11 of Golden when discussing FIG. 9, because reference is made in Golden to the same switches throughout the figures. ERIC-1005, ¶¶173-174.

Fourth, Golden teaches that the ECP directs the switch to allocate local port resources including bandwidth for the connection: “[ECP] ***sends a bandwidth reservation to each switch 56 in the path via signaling interface function 66 and signaling channel 58***. The reservation includes … the desired bandwidth in packets per second, for example.” EIC-1007, 10:26-36. As a result of the above reservation, “***bandwidth on a port*** has been reserved by the ECP” in the switches. *Id.*, 11:53-54; ERIC-1005, ¶¶175-176.

A POSITA would have recognized that the bandwidth reservation to the switches involves allocating local port resources of that switch in Golden. Golden shows that when traffic reaches a switch with port bandwidth reserved, traffic not part of the reservation does not receive preferred access to those resources. ERIC-1007, 11:51-53. Accordingly, the switch in Golden allocates local port resources including at least bandwidth on at least one port in response to a direction from the ECP. ERIC-1005, ¶177.

Golden also teaches "input-queuing and output-queuing" port resources that are allocated. ERIC-1007, 3:7-9. In particular, a switch "maintains ***separate port queues for priority traffic***." *Id.*, 11:57-62. It would have been obvious to a POSITA that, in Golden's switch having separate queues for different priorities of traffic, the higher priority traffic would be allocated space in higher priority queues. This was a well-known design choice. ERIC-1005, ¶¶178-179.

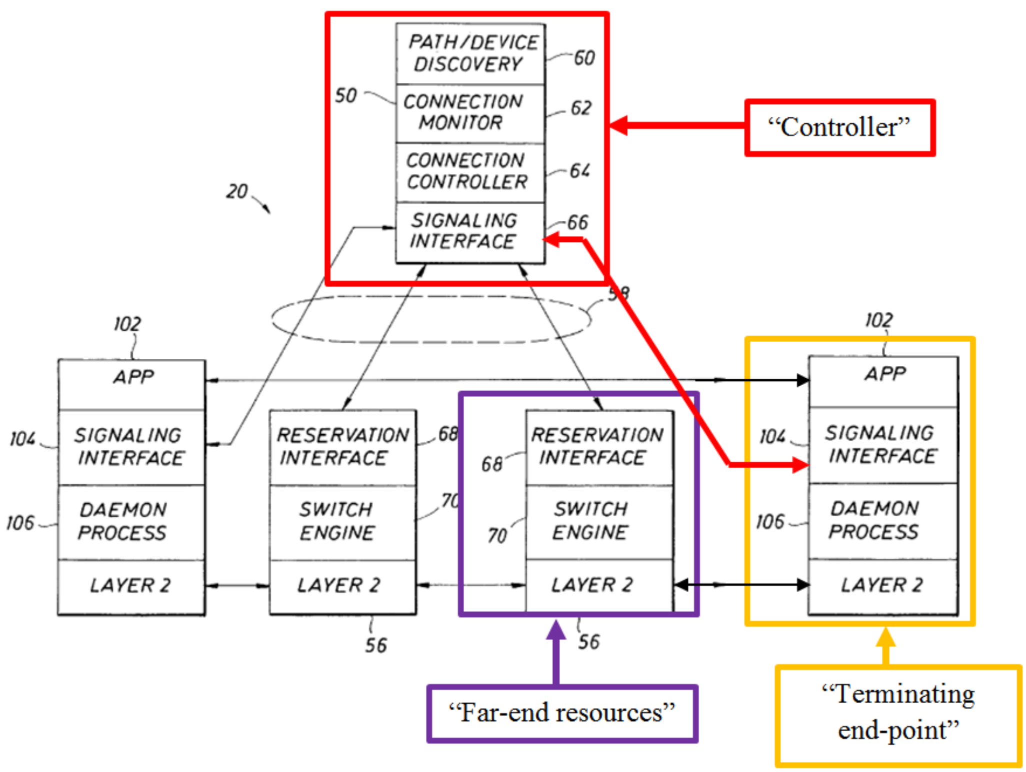
Therefore, as explained above, Golden teaches "directing, by the controller, … [a portal] to allocate local port resources of the portal" that includes at least *sending an allocation instruction from the controller to the portal, where the allocation instruction results in the portal allocating physical and/or logical elements of the portal*. Thus, Golden teaches the features of element [1.5]. ERIC-1005, ¶¶180-181.

[1.6] ***negotiating, by the controller, to reserve far-end resources for the terminating end-point; and***

Golden teaches both negotiating to reserve resources near the terminating end-point and on the terminating end-point.

First, Golden teaches that the ECP attempts to secure the desired service at resources along the path to the destination: "ECP 50 … check[s] the resources along the path(s) to the requested destination and attempt[s] to secure the desired service." ERIC-1007, 14:34-37. In particular, Golden teaches that ECP 50 waits for a response from the switches along the path (including at the far end) before the connection is counted as established: "[c]onnection controller function 64 then waits for an acknowledgment from each switch 56 to which a reservation request was sent." *Id.*, 10:37-46; ERIC-1005, ¶¶182-183.

As would have been recognized by a POSITA, "attempting to secure the desired service" at "resources along the path," including waiting for the switches to respond to a reservation request, teaches negotiating the reservation of resources. Further, because those resources in Golden include switches near the terminating host along the path, i.e. a far-end switch near the terminating end-point in FIG. 9, these are "far-end resources for the terminating end-point."



ERIC-1007, FIG. 9 (modified and annotated); ERIC-1005, ¶184.

Second, Golden teaches that the ECP attempts to secure the desired service (reserve resources) on the terminating end-point: "[m]eanwhile, for ***connection requests sent to host 102 from another network host*** … daemon process 106 [of the terminating end-point] … quer[ies] the user whether to participate in the connection. The answer is collected … and relayed … to ECP 50." ERIC-1007, 15:12-30; ERIC-1005, ¶185.

As would be recognized by a POSITA, the connection reservation requests received at a terminating end-point are for the terminating end-point. Further, it would have been recognized that the terminating end-point receiving the request, and responding with whether the request is accepted or not, is an act of negotiation between the ECP and the terminating end-point. ERIC-1005, ¶186.

Thus, Golden teaches the features of element [1.6]. *Id.*, ¶187.

[1.7] ***providing, by the controller to the portal, routing instructions for traffic corresponding to the connection so that the traffic is directed by the portal based only on the routing instructions provided by the controller,***

The ECP provides reservation requests to the portal: "***switch 56 receives bandwidth reservation requests from ECP 50 via reserved signaling channel 58***." ERIC-1007, 11:8-24. A POSITA would have recognized that Golden's ECP performs centralized control functions relating to bandwidth reservation, as well as provides the results of those control functions as instructions to the switches in the determined path (for a reserved connection), and that the instructions affect the treatment of packets received at the recipient switches. ERIC-1005, ¶¶189-192.

A signaling protocol that Golden teaches is MPLS, "a scheme in which labels are associated with streams of packets between communicating hosts. ***These labels are used by MPLS-capable routers in the path between the hosts to cause all packets in the stream to be forwarded the same way. This further allows hosts to use predetermined explicit routing***." ERIC-1007, 2:26-31,2:22-24; ERIC-1005, ¶¶193-195.

Thus, Golden teaches that a POSITA would be able to implement the switches, network elements, as MPLS switches. ERIC-1007, 8:20-26. Golden continues that the controllable network elements would be able to support MPLS, including "devices such as … IP switches and routers, QOS routers, Layer 2 switches …," where one or more "network elements" support MPLS. *See* ERIC-1007, 16:19-29, 20:34-41; ERIC-1005, ¶¶196-197.

Accordingly, it would have been obvious to a POSITA reading Golden that the switches may be MPLS switches. To the extent that Golden does not state the particular types of MPLS instructions the ECP would provide, Lee teaches such details. For example, Lee teaches that a "centralized control apparatus" managing an MPLS network with "at least one label switching network element" provides instructions "for controlling and managing the MPLS network." ERIC-1009, ¶¶[0016],[0033]. Lee teaches that a centralized control system performs path (LSP) computations on behalf of the MPLS switches in the MPLS network. *See id.*, ¶[0034]; ERIC-1005, ¶¶198-199.

After the centralized control system calculates the LSP through the network, "[t]he LSP calculated by the LSP computation section 302 [of the centralized control system] ***is set [sic] to the respective MPLS switches***." ERIC-1009, ¶[0057]. Lee further teaches that "***the information transmitted to the respective MPLS switches is … Label Forwarding Information Base (LFIB) information***." *Id.*; ERIC-1005, ¶200.

Lee's "LFIB," as would have been recognized by a POSITA, is used by a switch for lookups when a labeled packet is received, as opposed to an IP lookup in a traditional routing table. Indeed, Lee teaches that the LFIB "is the MPLS label switching information that the respective MPLS switches should proceed." ERIC-1009, ¶[0058]. Thus, the "LFIB" taught in Lee constitutes "routing instructions" as claimed. ERIC-1005, ¶¶201-202.

Traffic that qualifies under the reservation request (i.e., "traffic corresponding to the connection"), as taught by Golden, is directed by the switch based only on the LFIB information as taught by Lee. *See* ERIC-1009, ¶[0058]. Therefore, the corresponding labeled packets are routed based only on the routing determined by the centralized control point taught by Golden in combination with Lee. ERIC-1005, ¶203.

Thus, Golden and Lee teach the features of element [1.7]. *Id.*, ¶204.

[1.8] ***wherein the portal does not perform any independent routing on the traffic,***

Golden's MPLS switch (the "portal"), in combination with Lee's MPLS routing instruction teachings, does not perform any independent routing on the traffic associated with the reserved connection (e.g., labeled packets for the LSP taught as determined by a centralized control system in Lee). ERIC-1009, ¶[0058]; ERIC-1005, ¶¶205-206.

As would have been recognized by a POSITA, MPLS switches use the LFIB instead of a routing table when a labeled packet is received on one of their ports. ERIC-1005, ¶218. Lee teaches that the MPLS switches do not perform independent routing on labeled packets when there is an LFIB that pertains to the labeled packets. *Id.*, ¶207.

Thus, Golden and Lee teach the features of element [1.8]. *Id.*, ¶208.

[1.9] ***and wherein the connection extending from the originating end-point to the terminating end-point is provided by a dedicated bearer path that includes a required route supported by the portal and dynamically provisioned by the controller,***

First, Golden teaches that the connection from originating end-point to terminating end-point is provided by a dedicated bearer path: "[t]he [ECP] … ***reserves the requested resources all along the path from beginning to end***." ERIC-1007, 5:47-50; ERIC-1005, ¶¶209-210.

Second, Golden teaches that the end-to-end path is reserved (dedicated) for the traffic when describing the ECP establishing the connection, and includes a required route via Lee's labeled packets. ERIC-1007, 14:63-15:1. The ECP maintains connection information about "the overall capacity of the path, ***in accordance with bandwidth consumed by currently existing connections listed in its current connection list 63***." *Id.*, 9:66-10:3; *see also* 10:26-29. The "available path" in Golden becomes a dedicated bearer path in response to the ECP sending bandwidth reservations to each switch in the path. ERIC-1005, ¶211.

Third, Golden teaches that the dedicated bearer path includes a route that is supported by the portal. The bandwidth reservation requests result in a path being reserved through the switch that interfaces with the originating end-point (this switch being the "portal"), which "***receives bandwidth reservation requests from ECP 50 via reserved signaling channel 58***." ERIC-1007, 11:8-24. Because Golden teaches that the path is determined end-to-end, and the portal receives the reservation for its part of the path (including labels as taught in combination with Lee), Golden teaches that the part of the path through the portal is a required route supported by that portal. ERIC-1005, ¶212.

Fourth, Golden teaches that the route is dynamically provisioned by the ECP which "***sends a bandwidth reservation to each switch 56 in the path***." ERIC-1007, 10:26-29. Because each switch in the path receives reservation commands from the ECP, the route supported by each switch (including the portal) is dynamically provisioned as part of the end-to-end path. ERIC-1005, ¶213.

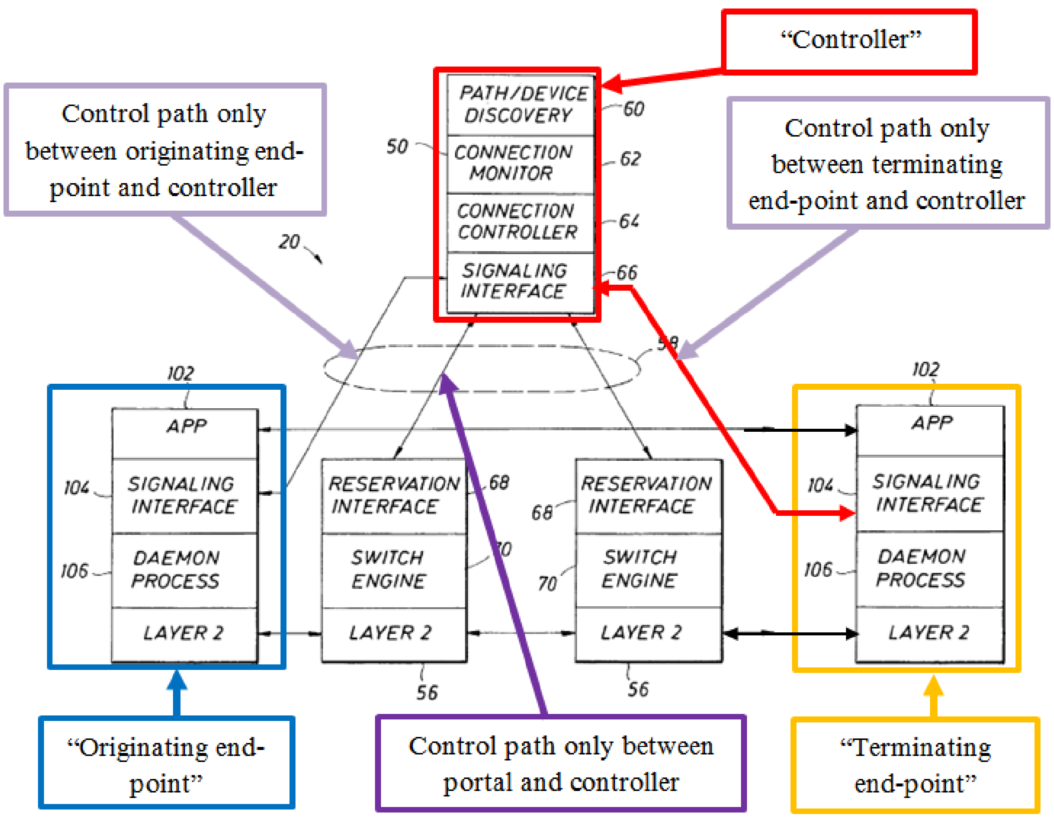
Fifth, Golden teaches that the connection is dynamically provisioned by the controller in establishing "***on-demand reserved-bandwidth virtual circuit connections with guaranteed QOS and/or COS between any endstations within the network or between networks***." ERIC-1007, 1:11-21. Golden details how the connections are "on-demand" when describing the establishing of the reservations all along the path from end-to-end for connections in response to a request (*see, e.g.*, *id.*, 10:27-30), as well as tearing down connections when they are done. *Id.*, 11:14-24; ERIC-1005, ¶¶214-215.

Thus, Golden teaches the features of element [1.9]. ERIC-1005, ¶216.

[1.10] ***and wherein control paths for the connection are supported only between each of the originating and terminating end-points and the controller and between the portal and the controller.***

First, the control paths for the connection are supported only between each of the end-points and the controller "***via reserved signaling channel 58***." ERIC-1007, 13:34-37. Golden thereby teaches that an originating end-point has a direct signaling path. Golden further teaches that the terminating end-point has a similar dedicated path: "host 102 can also ***communicate with other hosts similarly upgraded as host 102***." *Id.*, 14:37-40. With the terminating end-point an upgraded host 102 as well, "[s]ignaling interface process 104 [of the terminating end-point] receives requests for participation in, or termination of, a reserved connection from ECP 50 via signaling channel 58." *Id.*, 14:2-4; ERIC-1005, ¶¶217-219.

Second, the control paths for the connection are supported only between the portal and the controller: "switches 56 include … reservation interface function 68 that communicates with ECP via reserved signaling channel 58." ERIC-1007, 9:53-57; *see also* 8:16-19. Both of the above concepts are illustrated in FIG. 9 below:



ERIC-1007, FIG. 9 (modified and annotated); ERIC-1005, ¶¶220-221.

Thus, Golden teaches the features of element [1.10]. ERIC-1005, ¶222.

<u>Claim 2</u> depends on claim 1 and further recites:

[2.1] ***wherein the controller is associated with a single class of service and wherein a service type of the request identifies the request as being of the single class of service and the request is routed to the controller based on the service type.***

First, Golden teaches embodiments where traffic is routed to the ECP based on the service type (class of service) of the request. ERIC-1007, 5:55-56,12:28-67. The ’119 Patent refers to “IEEE 802.1p bit marking to differentiate the service classes, and route traffic accordingly.” ERIC-1001, 3:5-6. Golden similarly teaches using IEEE 802.1P/Q and, upon detecting such packets, forwarding detected packets to the ECP via a reserved signaling channel. ERIC-1007, 5:55-56. Therefore, the ECP in Golden is associated with at least one class of service of the reserved connection. ERIC-1005, ¶¶223-225.

Second, Golden teaches that the IEEE 802.1P/Q priority level (class of service) in a packet identifies the request as being of the single class of service. With IEEE 802.1P/Q, a packet header in Golden includes “the desired class of service or priority level.” ERIC-1007, 12:44-46. As a result, the IEEE 802.1P/Q header information identifies the packet as being of the “single class of service.” ERIC-1005, ¶226.

Third, Golden teaches that requests are routed to the controller based on the service type. The IEEE 802.1P/Q priority level (class of service) in a packet (service type of the request) of a new flow is an “implicit reservation” (a request for a reserved connection with certain QoS parameters). ERIC-1007, 12:21-24. The packet including the desired priority level is routed to the ECP based on this "implicit reservation" in the packet header. *Id.*; ERIC-1005, ¶227.

When 802.1P/Q-formatted packets are sent, switches in the path detect them and compare the packet's header information to currently reserved connections. ERIC-1007, 12:40-44. For a header information mismatch, "the header information is forwarded to ECP 50 via the reserved signaling channel." *Id.*, 12:50-52. This mismatch identifies the packet as part of a new flow, Golden's "implicit reservation." Golden's priority level causes the packet with a new flow to be routed to the ECP based on the service type. ERIC-1005, ¶228.

With respect to the routing of new flows based on the "desired priority level within the packet" based on a "single" priority level, a POSITA would have known that routing decisions are based on any number of criteria and are generally programmable and flexible. ERIC-1005, ¶229. A POSITA would have known to implement Golden's "desired priority level" in a programmable way to include any one or more priority levels. *Id*.

Thus, Golden teaches the features of element [2.1]. ERIC-1005, ¶230.

Claim 3 depends on claim 1 and further recites:

[3.1] ***wherein the request is received by the controller based on signaling from a user to the controller.***

First, Golden teaches reservation requests that are from a user: "host 102 includes a daemon process 106 that processes ***user requests for reserved connections*** with other hosts." ERIC-1007, 13:31-34; ERIC-1005, ¶¶231-233.

Second, Golden teaches that the request is received by the controller based on signaling from the user's device: "***signaling interface 104 [of host 102] sends connect/disconnect messages to ECP 50 via reserved signaling channel 58***." ERIC-1007, 13:34-37; ERIC-1005, ¶234.

Thus, Golden teaches the features of element [3.1]. ERIC-1005, ¶235.

<u>**Claim 4**</u> depends from claim 3 and further recites:

[4.1] ***wherein the request is received from the user via one of a directory request, an Internet Protocol address, and a web page.***

Golden teaches that a user requests a reserved connection with a browser: "[t]o enable ***browser 112*** to handle URLs unique to the reserved connection services of the present invention, browser 112 is configured … to notify daemon process 106 ***when a reserved connection is being requested from the browser***." ERIC-1007, 13:64-14:1.

Golden continues that the user makes a selection in the browser (a web page): "***a web page that contains a directory of users is accessed*** and ***the directory is displayed in the browser window***. … ***When the user selects a party … browser 112 invokes plug-in application 110 to handle the request*** … [the specified] ***information is returned to daemon process 106 and formatted into a connection***

request that is forwarded to signaling interface 104, which sends the request to ECP 50." *Id.*, 14:17-33; ERIC-1005, ¶¶236-239.

Thus, Golden teaches the features of element [4.1]. ERIC-1005, ¶240.

Claim 5 depends from claim 1 and further recites:

[5.1] ***identifying, by the controller, billing information of a user corresponding to the request for a high quality of service connection; and***

The '119 Patent provides no definition or limitation on what "billing information" might be. In the context of billing, Golden teaches monitoring (identifying) billing information for a QoS reserved connection. The ECP "***maintains a permanent list of connections***, including … records 65 that show the elapsed time of the connection, the parties involved, and the resources used. ***Such records can be used for billing and resource management***." ERIC-1007, 8:16-39.

This "permanent list of connections" is for desired QoS "reserved connections." Therefore, Golden teaches that the ECP identifies, by its monitoring, information for billing for the reserved connections it sets up and tears down. This includes "the parties involved," which a POSITA would have recognized would include the corresponding user making the request. ERIC-1005, ¶¶241-244.

Fichou further teaches maintaining a "user database" of "each user allowed to access the reservation server and [that] also stores the rights of each user." ERIC-1008, Abstract. Fichou teaches similar reservation accounting, where a reservation server "will start a connection timer for this flow for accounting of the use of this reservation." *Id.*, ¶[0037]. The combination of Golden and Fichou therefore teaches the tracking of billing on a per-user basis (per Fichou) with respect to high QoS connections set up by Golden's ECP. ERIC-1005, ¶245.

Golden further teaches a "billing management component 182" associated with a "network control system server" (NCSS) that "collects and formats the information recorded" for use with "standard billing information formats." ERIC-1007, 17:51-55. It would have been obvious to a POSITA that Golden's teaching of "standard billing information formats" would include user database information about how to bill the users for the requested connections, i.e. format and contact information for the users. ERIC-1005, ¶¶246-247.

Golden's ECP maintaining records regarding billing for reserved connections, including the parties, combined with Fichou's teaching database records on a per-user basis, teaches the features of element [5.1]. *Id.*, ¶248.

[5.2] ***charging the user for the connection.***

Golden teaches using a billing management component that "collects and formats the information recorded therein for output and ***use according to de-facto standard billing information formats used throughout the telecommunications industry***." ERIC-1007, 17:51-55. As would have been recognized by a POSITA, after billing information has been formatted for output, "use" would include charging the customer. ERIC-1005, ¶¶249-250.

It would have been obvious to a POSITA to combine Golden's billing teachings with the ECP teachings. As Golden recognizes, its different embodiments are modifiable and substitutable. *See* ERIC-1007, 24:12-16. A POSITA would have recognized that operators of even a single local area network (LAN) or wide area network would still have need to bill customers for using the services offered. This is a well-known option as Golden acknowledges. ERIC-1005, ¶251.

Golden's NCSS aids in reserving the path in a network between the end-points. *See* ERIC-1007, 17:26-43. Golden teaches that NCSS's use of the billing information relies upon "de-facto standard billing information formats" which would include actually billing, such as by providing formatted bills to, users. *Id.*, 17:51-55. Fichou further explained this with its user-based database management. Fichou teaches tracking (i.e., accounting for use of each requested reservation) "each user," such as with a connection timer. ERIC-1008, ¶[0037]. A POSITA would have appreciated that Fichou's "accounting" per user, in view of Golden's reserved connection billing teachings, would include conveying the bill produced. ERIC-1005, ¶¶252-254.

Thus, Golden and Fichou teach the features of element [5.2]. *Id.*, ¶255.

Claim 6 depends from claim 5 and further recites:

[6.1] ***wherein the charging may be based on at least one of a service type, an elapsed period of time, a codec type, and an amount of bandwidth used.***

Golden teaches gathering information for billing based on an elapsed period of time and an amount of bandwidth used, where connection records "show ***the elapsed time of the connection***, the parties involved, and ***the resources used.***" ERIC-1007, 8:16-39. Golden therefore teaches at least billing based on "the elapsed time of the connection" and "the resources used," which includes bandwidth. *See, e.g.*, *id.*, Abstract; ERIC-1005, ¶¶256-259.

Since the claim recites that the charging "may be based on ***at least one of***" the categories listed, and Golden teaches at least two of those categories, Golden teaches the features of element [6.1]. ERIC-1005, ¶260.

Claim 7 depends from claim 1 and further recites:

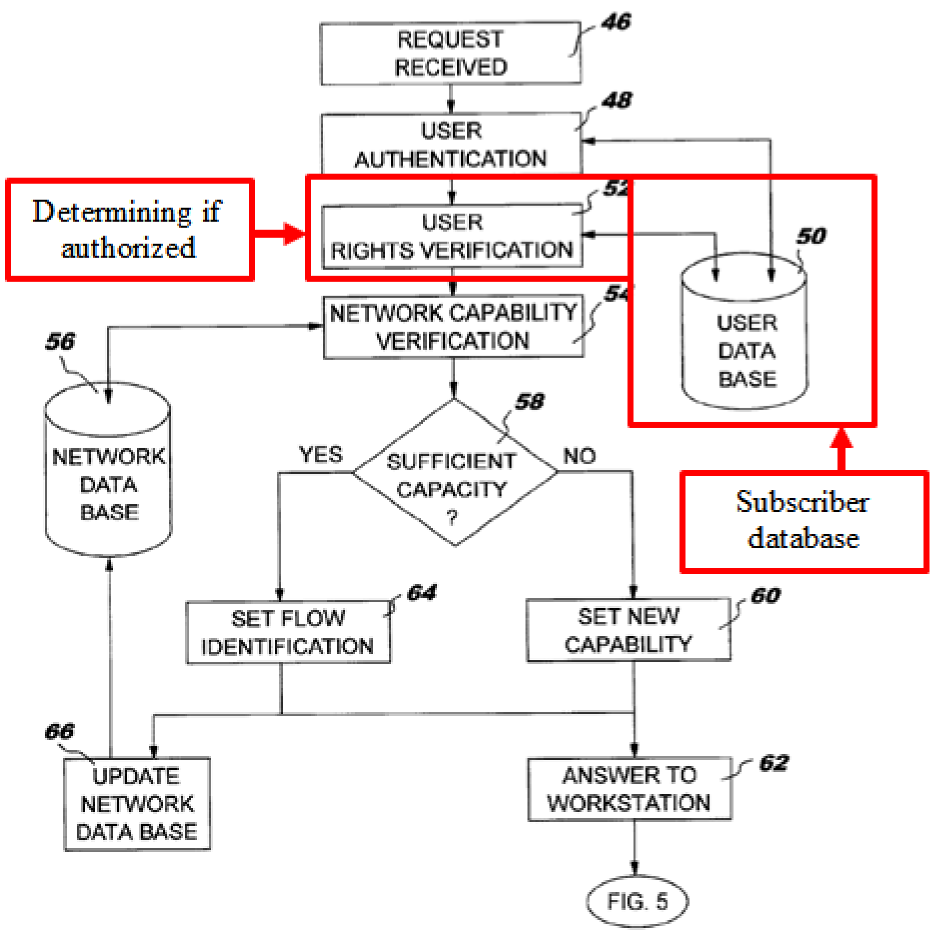
[7.1] ***wherein determining whether the originating end-point is authorized is based on information in a subscriber database.***

First, Golden teaches authorization with respect to use of a network, such as with a policy server. *See* ERIC-1007, 10:10-11; *see also* element [1.3]. Further, Fichou teaches that the authorization is for an amount of bandwidth requested, since the "reservation request" in Fichou includes a requested bandwidth. ERIC-1008, ¶[0023]; ERIC-1005, ¶¶261-263.

Second, Fichou teaches that the user verification (of the originating end-point) is based on information in a subscriber database: "[n]ext, ***a user rights verification (step 52) is performed using the same database 50***," where "[t]he result of such a verification may be in terms of bandwidth required for a call, destination allowed, QoS, etc." ERIC-1008, ¶[0025]; ERIC-1005, ¶264.

The "database 50" in Fichou is a database that stores "the identification of each user and the user/customer profile when the user of the source workstation is one of multiple users associated with a customer of the server" and "which defines for each user which kind of request he is allowed to perform." ERIC-1008, ¶¶[0024],[0025]. This "user database 50" is illustrated in FIG. 3:

FIG. 3



ERIC-1008, FIG. 3 (annotated); ERIC-1005, ¶265.

A POSITA would have recognized, from FIG. 3, together with the description in Fichou's specification, that as part of "user rights verification," the "user database 50" is checked. ERIC-1005, ¶266.

Thus, Golden and Fichou teach the features of element [7.1]. *Id.*, ¶267.

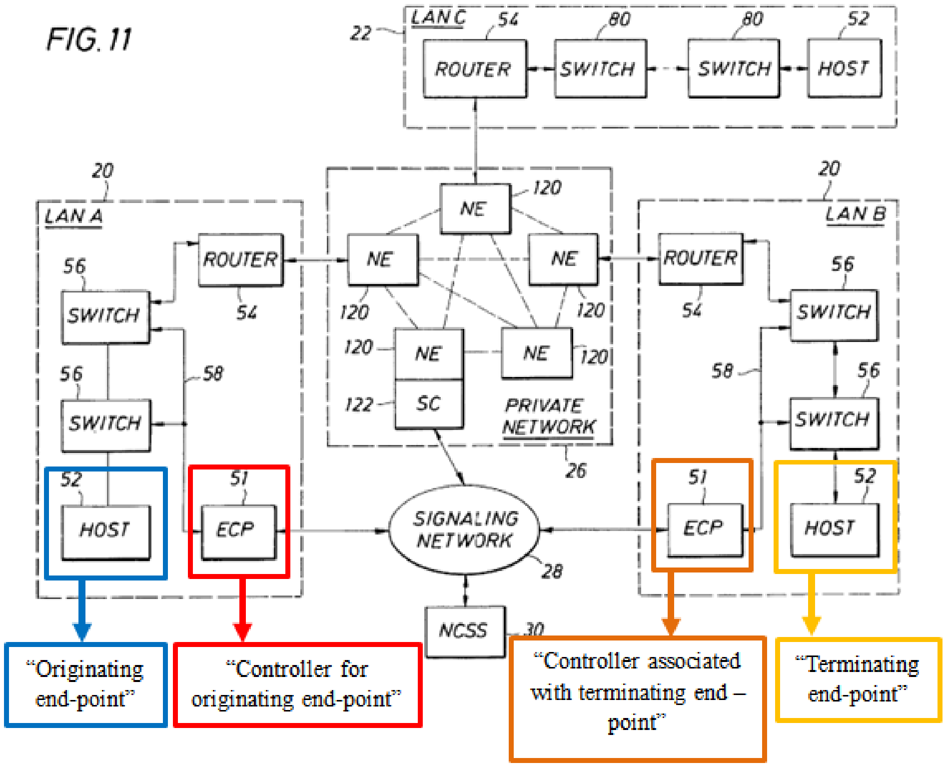
<u>Claim 8</u> depends from claim 1 and further recites:

[8.1] ***wherein the negotiating, by the controller, to reserve far-end resources on the terminating end-point includes negotiating with another controller associated with the terminating end-point.***

As shown with respect to element [1.6], Golden teaches reserving far-end resources on the terminating end-point. *See* element [1.6]; ERIC-1005, ¶¶268-270.

Golden teaches multiple embodiments of its invention. One embodiment achieves end-to-end high QoS connection in a single LAN, while another achieves this spanning "other networks." *See* ERIC-1007, 13:30-33, 15:14-21. Per Golden, "the principles of the invention are ***extended to inter-network reserved connections***." *Id.*, 15:60-63; ERIC-1005, ¶271.

In inter-network embodiments, the originating ECP (ECP 51 in LAN A, FIG. 11) receives a connection request. *See* elements [1.0]-[1.10]. The terminating end-point in LAN B is administered by a terminating ECP (LAN B, FIG. 11). Each ECP intercepts the service request for path determination, which reserves resources in the ECP's local network. ERIC-1007, 16:2-10.



ERIC-1007, FIG. 11 (annotated); ERIC-1005, ¶¶272-273.

The originating ECP (LAN A) communicates with the terminating ECP (LAN B) to reserve resources for the terminating end-point. ERIC-1007, 16:6-10. Golden teaches embodiments where the terminating end-point sends an answer message to the terminating ECP on whether a request is accepted (e.g., a Resv message). *Id.*, 15:12-30,16:2-10. The terminating ECP sends the Resv message back to the NCSS 30 and, from there, the originating ECP. *Id.* The Resv message would, upon reaching the originating domain (e.g., LAN A), be trapped and received by the originating ECP. *Id.*; ERIC-1005, ¶¶274-275.

It would have been obvious to a POSITA to combine Golden's teachings about the end-points communicating with an enhanced ECP in one network, with Golden's teachings with respect to FIG. 11's multiple enhanced ECPs of multiple networks communicating together, since Golden taught combining the embodiments between different local networks. ERIC-1007, 1:11-18, 5:60-64; ERIC-1005, ¶¶276-278.

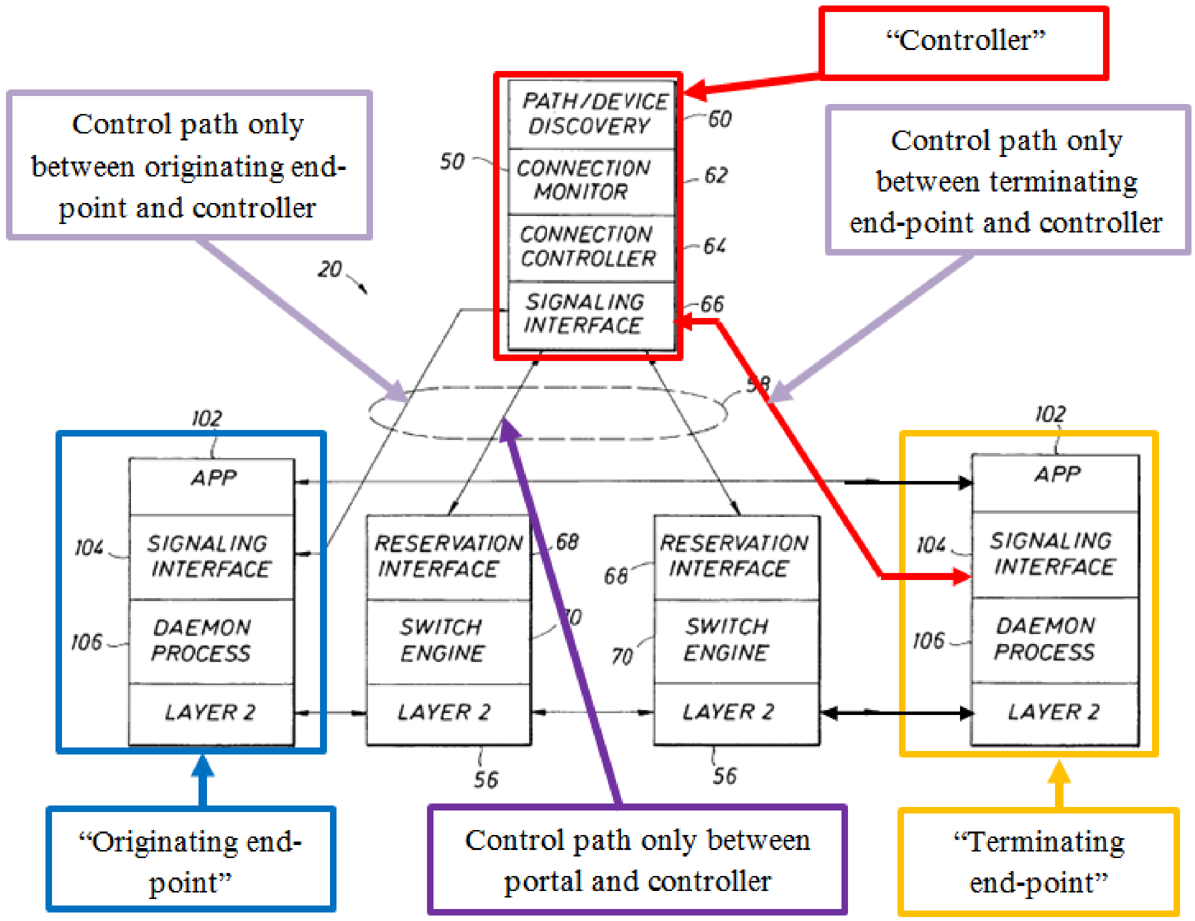
Thus, Golden teaches the features of element [8.1]. ERIC-1005, ¶279.

Claim 9 depends from claim 1 and further recites:

[9.1] ***wherein the negotiating, by the controller, to reserve far-end resources for the terminating end-point includes negotiating directly with the terminating end-point.***

Golden's originating end-point (host 102) "directly request[s] a reserved connection from ECP 50," as does a similarly upgraded terminating end-point. ERIC-1007, 13:25-29,36-40; ERIC-1005, ¶¶280-282.

Golden teaches the ECP signaling directly to the terminating end-point and receiving a direct answer message. ERIC-1007, 15:12-30. This is illustrated in FIG. 9 below:



ERIC-1007, FIG. 9 (modified and annotated); ERIC-1005, ¶¶283-284.

As would have been recognized by a POSITA, the connection requests received at the terminating end-point result in reserving resources on the terminating end-point for the connection. Further, the terminating end-point answering whether the request is accepted constitutes an act of negotiation directly between the ECP and the terminating end-point. ERIC-1005, ¶285.

Thus, Golden teaches the features of element [9.1]. *Id.*, ¶286.

<u>Claim 11</u> depends from claim 1 and further recites:

[11.1] ***wherein the connection is a point-to-point connection between only the originating and terminating end-points.***

Golden teaches a path established between the hosts by the ECP, which "***reserves the requested resources all along the path from beginning to end***." ERIC-1007, 5:47-50. In Golden, "the desired reservation can be maintained … ***for each switch from host to host along the path***." *Id.*, 13:10-15; ERIC-1005, ¶¶287-289.

A POSITA would have recognized that this path between hosts, through each switch, would be a point-to-point connection between the originating and destination hosts. Golden further teaches that the result of the reservations constitutes a "virtual circuit." ERIC-1007, 1:14-18; ERIC-1005, ¶290.

This is consistent with the '119 Patent, where a point-to-point connection refers to a single originating point and a single terminating point, regardless of whether there are intervening network nodes that carry the traffic between the two points. *See, e.g.*, ERIC-1001, FIG. 7 (traffic between a single originating point and a single terminating point); ERIC-1005, ¶291.

Thus, Golden teaches the features of element [11.1]. ERIC-1005, ¶292.

<u>Claim 12</u> depends from claim 1 and further recites:

[12.1] ***wherein the connection is a point-to-multipoint connection between one of the originating and terminating end-points and the other of the originating and terminating end-points and at least one other end-point.***

Golden teaches that the connection extends between end-points. *See* analysis of element [1.1].

Further, Golden teaches a QoS solution between an originating end-point and multiple terminating end-points using multicast. ERIC-1007, 6:22-23, 1:49-57. It would have been obvious to combine Golden's teachings regarding use of the ECP for "providing guaranteed quality and/or class of service (QOS/COS)" with the multicast QoS teachings of Golden. Golden's ECP is interoperable with existing protocols, including RSVP (the example protocol in Golden's multicast session). *Id.*, 1:11-21, 5:36-50; ERIC-1005, ¶¶293-297.

Indeed, point-to-multipoint connections (i.e., multicast), were already well known. As the '119 Patent acknowledged, "MPLS standards have expanded to include point-to-multipoint multicasting … and resource reservation protocols [including RSVP]." ERIC-1001, 2:16-23. Pointing to an MPLS router, the '119 Patent states that "the point-to-multipoint multicasting capabilities of MPLS" can be used to instruct routers to multicast traffic. *Id.*, 2:31-34. ERIC-1005, ¶298.

Thus, utilizing Golden's ECP solution with the well-known use of multicast (both generally and MPLS in particular) would have been the combination of known elements according to known methods to yield predictable results (e.g., multicast transmission with the requested QoS reserved end-to-end under the ECP) as well as the mere duplication of parts (e.g., end-to-end QoS on multiple paths). ERIC-1005, ¶299.

It would have been obvious to a POSITA to implement Golden's ECP teachings with the multicast teachings, because the ECP interoperates with existing protocols including RSVP, and a multicast connection exists in examples using RSVP. Golden is consistent with the '119 Patent's description regarding multicast/point-to-multipoint connections in the context of MPLS. ERIC-1001, 2:16-26, 4:24-25; ERIC-1005, ¶¶300-304.

Thus, Golden teaches the features of element [12.1]. ERIC-1005, ¶305.

B. Challenge #2: Claims 10 and 13-15 are obvious under 35 U.S.C. § 103 over Golden in view of Fichou, Lee, and Har

1. Summary of Har

Har teaches "[a] method and several novel components to reduce communications delays and improve video and audio quality in IP telephony systems." ERIC-1010, Abstract. Delay is reduced by enabling "a single codec to be implemented for an entire communications path" between a calling end-point and a called end-point. *Id.*, ¶¶[0012]-[0013].

A gateway selects "a common codec for both receive and transmit channels." *Id.*, ¶[0037]. A calling end-point (EP-1) identifies supported codecs in a request to the gateway. *Id.*, ¶[0041]. The gateway extracts the codec list, creates a remote codec list therefrom with its own supported codecs, and sends the remote code list to the destination end-point (EP-2). *Id.* A codec is selected from the remote codec list and passed back to the calling end-point EP-1. *Id.*, ¶[0045]. As a result, "a single end-to-end codec is guaranteed to be used along the entire communications path." *Id*.

Har supports audio and video codecs. *See* ERIC-1010, ¶¶[0081],[0084]. Har further teaches implementation as hardware or as software. *Id.*, ¶¶[0079]-[0080]; ERIC-1005, ¶¶306-309.

2. Reasons to Combine Golden, Fichou, Lee, and Har

Golden teaches the ECP performing control functions relating to "setting up and tearing down reserved connections" with the ECP's "connection controller function 64." ERIC-1007, 8:29-31. The additional features of Fichou and Lee would be combined with Golden for the reasons set forth above. A POSITA would have understood that codec selection would be part of setting up a reserved connection. For example, Golden teaches video using reserved connections (e.g., "video conferencing"). *Id.*, 1:43-45, 14:60-62; ERIC-1005, ¶¶310-311.

Golden teaches the desirability of obtaining QoS guaranteed connections "***with minimal and predetermined transmission latency***" for its applications. ERIC-1007, 43-47. Thus, a POSITA would have been motivated, as part of Golden's guaranteeing QoS, to further improve transmission latency. Har provides such a teaching. The state of the art was well aware that multiple codec translations adversely affect speech quality because of delays. ERIC-1010, ¶[0008]; ERIC-1005, ¶¶312-313.

Using Har's teachings with respect to negotiating between end-points with Golden's ECP provides the advantage of guaranteeing "***a single end-to-end codec … to be used along the entire communications path***." ERIC-1010, ¶[0045]. As Har teaches, "[t]his significantly reduces latency resulting from codec translations," because they are no longer required. *Id.*, ¶[0014]; ERIC-1005, ¶314.

Har's teachings combined with Golden's ECP would have been within the level of a POSITA. Har's teachings are embeddable as hardware or software with an entity located between end-points. ERIC-1010, ¶¶[0079]-[0080]. Further, Har's functionality includes communication to and from the end-points, which Golden provides via its "reserved signaling channel[s] 58" to the ECP. Thus, to the extent that any modifications would have been needed to Golden for Har's codec negotiation teachings, such would have been within the level of a POSITA. ERIC-1005, ¶¶315-316.

Accordingly, a POSITA would have been motivated to combine Har's teachings regarding negotiating a single codec end-to-end, to avoid conversions along the path and reduce delay in transmission, with Golden's teaching of an ECP for setting up reserved end-to-end connections. Golden was motivated to guarantee QoS by way of its centralized ECP, and Har contributes to that guarantee by incorporating its teachings into the ECP. This predictable and desirable combination would yield a system with the ability to negotiate a single codec end-to-end to reduce delay (per Har), while reserving the connection end-to-end for a guaranteed QoS (per Golden). ERIC-1005, ¶317.

3. Detailed Analysis of Challenge #2

The following analysis describes how Golden in view of Fichou and Lee, further in view of Har, renders obvious each and every element claims 10 and 13-15 of the ’119 Patent. *See* ERIC-1005, ¶¶318-351.

Claim 10 depends from claim 1 and further recites:

[10.1] ***wherein the negotiating, by the controller, to reserve far-end resources for the terminating end-point includes negotiating a video codec for use with the connection to avoid video codec conversion between the originating and terminating end-points.***

First, Golden teaches negotiating by the ECP with far-end resources as discussed above with respect to element [1.6].

Second, to the extent that Golden does not expressly teach video codecs with respect to the resources negotiated, Har teaches negotiating a video codec for use with the connection to avoid video codec conversion between the originating and terminating end-points. Har teaches a control node (a gateway) negotiating with a terminating end-point (EP-2) to select a common codec between the EP-2 and an originating end-point (EP-1). ERIC-1010, ¶[0037]; ERIC-1005, ¶¶318-322.

Har teaches that the gateway receives a list of available codecs from EP-1 and sends the list to the terminating end-point (EP-2). ERIC-1010, ¶[0041]. The resulting exchange confirms a single virtual codec to use. *Id.*, ¶[0043]. As a result, "***a single end-to-end codec is guaranteed to be used along the entire communications path***." *Id.*, ¶[0045]; ERIC-1005, ¶¶323-324.

Thus, Har teaches a control element between two end-points negotiating a single codec between them. *See* ERIC-1010, ¶[0085]. Har teaches a negotiation by the control node (gateway) that receives codec information from an originating end-point, conveys codec information to the terminating end-point, and finalizes the negotiation for a common codec. *See id.*, ¶[0057]; ERIC-1005, ¶325.

Third, Har's teachings that negotiate the "single end-to-end codec" between the originating and terminating end-points is implemented as hardware or software added to routers or computers. ERIC-1010, ¶¶[0079]-[0080]. Golden's ECP is an example of such a "computer." ERIC-1005, ¶¶326-327.

Fourth, Har teaches that the codecs which the invention accommodates (e.g., for a "single end-to-end codec" guaranteed along the entire path) include video codecs ("***Video Codec 705***."). ERIC-1010, ¶[0084], *see also* ¶[0081]; ERIC-1005, ¶¶328-329.

Thus, Golden and Har teach the features of element [10.1]. ERIC-1005, ¶330.

<u>Claim 13</u> recites:

[13.0] ***A method for providing bandwidth on demand comprising:***

See the analysis of element [1.0]. ERIC-1005, ¶331.

[13.1] ***receiving, by a controller positioned in a network, a request for a high quality of service connection between an originating end-point and a terminating end-point,***

See the analysis of element [1.1]. ERIC-1005, ¶332.

[13.2] ***wherein the request includes at least one of a requested amount of bandwidth and a video codec;***

See the analysis of element [1.2]. ERIC-1005, ¶333.

[13.3] ***determining, by the controller, whether the originating end-point is authorized to use the requested amount of bandwidth or the video codec;***

See the analysis of element [1.3]. ERIC-1005, ¶334.

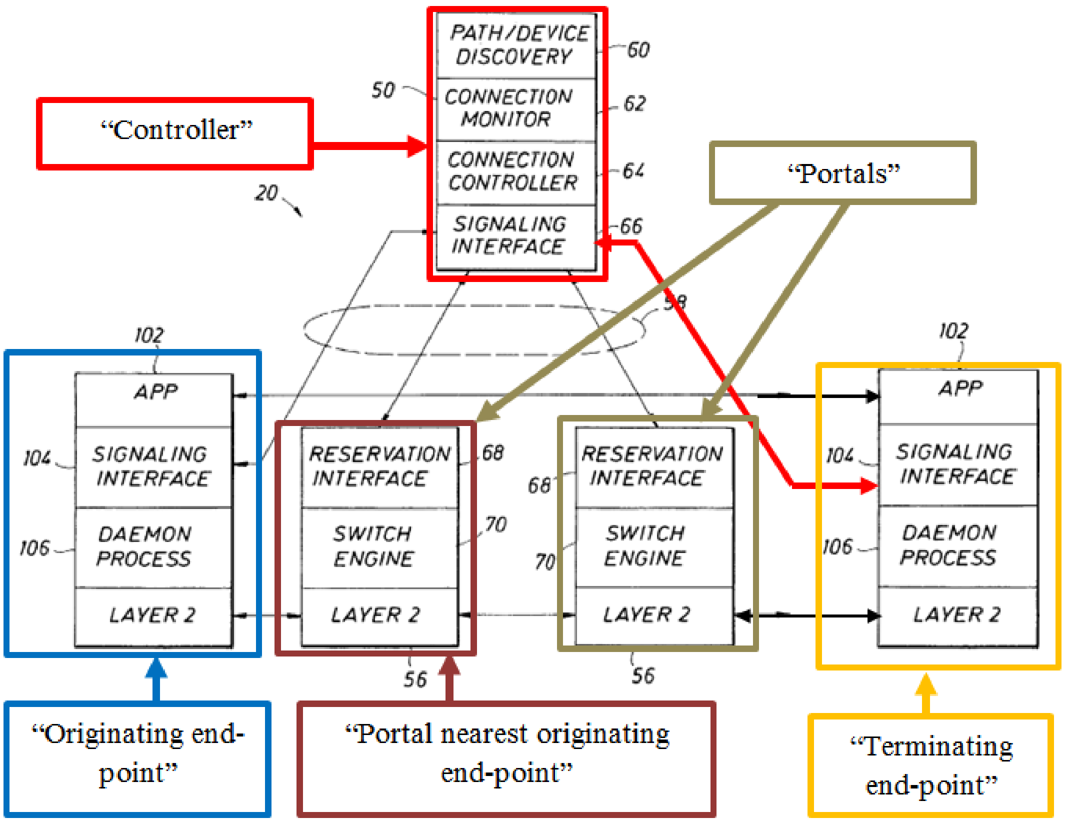
[13.4] ***communicating, by the controller, with the originating and terminating end-points to ensure that the connection is free from video codec conversion;***

See the analysis of element [10.1]. As established there, Golden teaches negotiating by the ECP with the originating and terminating end-points, in combination with Har's teachings of video codec negotiation to avoid video codec conversion. ERIC-1010, ¶¶[0037],[0045]. "[N]egotiating" as shown in element [10.1] is a form of "communicating" per element [13.4]. ERIC-1005, ¶335.

[13.5] ***directing, by the controller, one of a plurality of portals that is positioned in the network nearest to the originating end-point and physically separate from the controller to allocate local port resources of the portal for the connection; and***

See analysis at element [1.5] (with respect to a single portal). Golden also teaches a controller directing one of a plurality of portals nearest the originating end-point to allocate local port resources for the connection. ERIC-1005, ¶¶336-337.

Golden teaches a plurality of portals, with one nearest the originating end-point receiving the allocation direction from the ECP. Specifically, the switch nearest the originating end-point receives direction from the ECP to make the noted allocation via signaling channel 58:



ERIC-1007, FIG. 9 (modified and annotated); ERIC-1005, ¶338.

As would have been recognized by a POSITA, the switch next to the originating host 102 would be the "nearest" to the originating host 102, by number of hops, physical distance, or both. Generally, it is obvious that there is a switch nearest to an originating end-point. *See* FIG. 9 above; ERIC-1005, ¶339.

Golden further teaches that the ECP directs the switch nearest the originating end-point to allocate local port resources for the connection. *See, e.g.*, ERIC-1007, 9:60-66; 10:26-36; 11:53-54; *see also* analysis of element [1.5]; ERIC-1005, ¶340.

[13.6] ***sending, by the controller to the portal, routing instructions for the connection, wherein traffic for the connection is routed by the portal based only on the routing instructions,***

See analysis at element [1.7]. Golden teaches "providing," and therefore also teaches "sending." ERIC-1005, ¶341. Further, as noted in element [1.7], Golden in combination with Lee teaches that the routing instructions the ECP provides are for the traffic corresponding to the connection. The combination likewise teaches the same aspect for "traffic for the connection." *Id*.

[13.7] ***and wherein the connection extending from the originating end-point to the terminating end-point is provided by a dedicated bearer path that includes a required route supported by the portal and dynamically provisioned by the controller,***

See analysis at element [1.9]. ERIC-1005, ¶342.

[13.8] ***and wherein control paths for the connection are supported between each of the originating and terminating end-points and the controller and between the portal and the controller.***

See analysis at element [1.10]. Because Golden's control paths are supported "only" between the originating and terminating end-points and the controller and between the portal and the controller (as shown for element [1.10]), Golden also teaches that the control paths for the connection are supported generally between each of the originating and terminating end-points and the controller and between the portal and the controller. ERIC-1005, ¶343.

Claim 14 depends from claim 13 and further recites:

[14.1] ***further comprising negotiating, by the controller, to reserve far-end resources on the terminating end-point.***

See analysis of elements [1.6] (similar claim language, but using "on" instead of "for" in [14.1]) and [10.1] (relating to video codecs as a resource), above.

Har teaches receiving codec information from the originating end-point and communicating to the terminating end-point regarding codec selection: "[t]he gateway GW … sends this remote codec list … ***to destination endpoint EP-2***." ERIC-1010, ¶[0041]. Har's exchange between EP-1, gateway, and EP-2 results in confirming a single virtual codec in data transfer. ERIC-1010, ¶[0043]; ERIC-1005, ¶¶344-346.

The confirming of the codec in the terminating end-point is an example of resources reserved on Har's terminating end-point. As would have been recognized by a POSITA, the selection of a codec for a terminating end-point impacts multiple resources including processor resources, bandwidth resources, and memory resources for execution of the confirmed codec. ERIC-1005, ¶347.

Thus, Golden and Har teach the features of element [14.1]. ERIC-1005, ¶348.

<u>Claim 15</u> depends from claim 14 and further recites:

[15.1] ***wherein the negotiating is performed with one of another controller associated with the terminating end-point or directly with the terminating end-point.***

See analysis at element [8.1] (showing how Golden teaches that negotiating is performed with another controller associated with the terminating end-point) and element [9.1] (showing how Golden teaches that negotiating is performed directly with the terminating end-point).

Thus, Golden teaches the features of element [15.1]. ERIC-1005, ¶¶349-351.

C. Challenge #3: Claim 16 is obvious under 35 U.S.C. § 103 over Golden in view of Fichou, Lee, and Har, further in view of Pillai

1. Summary of Pillai

Pillai teaches user configurable platforms adaptable for use with "a variety of separate and distinct support systems." ERIC-1011, ¶[0044]. This includes supporting billing for voice and data services, including "prepaid integrated voice and data services." *Id.*, ¶[0071]; ERIC-1005, ¶¶352-353.

Pillai teaches a "separate control element, a Real-Time Universal Resource Consumption Monitor (RURCM) 300" that tracks "ongoing usage [o]f system resources," and which "applies prepaid service definitions to effectively regulate network usage." ERIC-1011, ¶[0087]. Pillai teaches that the RURCM maintains connections with network elements that "regulate the user's ongoing calls/sessions." *Id.*, ¶[0088]; ERIC-1005, ¶354.

The RURCM periodically polls the network elements (e.g., switches/routers) or receives updates after triggering by a threshold. ERIC-1011, ¶[0088]. The RURCM compares the usage "against the authorized limits specified by the pre-paid policy." *Id.*, ¶[0089]. The RURCM uses this information to decide whether to terminate a connection. *Id.*, ¶[0093]. Based on the result of a determination to terminate the connection, the RURCM instructs an appropriate switch to terminate the session. *Id.*; ERIC-1005, ¶¶355-356.

2. Reasons to Combine Pillai with the Golden/Fichou/Lee/Har combination

Golden contemplated that the ECP performs various control functions, including "***billing and resource management***." ERIC-1007, 8:34-39. Golden does not explicitly detail what those functions could be. Accordingly, a POSITA would have been motivated to look at the available techniques for billing and resource management, such as those in Pillai. For example, a POSITA would have understood billing and resource management to include prepaid usage tracking up to an agreed-upon amount. ERIC-1005, ¶¶357-360.

Pillai contemplates particular ways in which to "support combined and integrated billing and rating … to support prepaid integrated … data services." ERIC-1011, ¶[0071]. Using Pillai's RURCM teachings with Golden's ECP provides the advantage of managing prepaid services (*id.*, ¶[0087]) as well as "ensuring that the customer only has access to whatever was specified in the prepaid contract." *Id.*, ¶[0093]. Market forces dictate that service providers be compensated for usage of their communication networks such that implementation of the billing and access teachings of Pillai are readily combinable with Golden, since Pillai's teachings further detail an example of Golden's "billing and resource management" in the ECP's control functions. ERIC-1005, ¶¶361-364.

To the extent that any modifications would have been needed to the teachings of Golden in order to accommodate the teachings of Pillai, they would have been within the level of a POSITA. Golden left open what the billing and resource management would entail, and Pillai teaches ways to implement both billing and resource management, for example by Golden's ECP implementing the RURCM functionality taught by Pillai. Such a combination would yield the predictable result of Golden's ECP communicating with a switch to receive usage information from the switch, and determinations made therefrom, as taught by Pillai. *Id.*, ¶¶365-366.

3. Detailed Analysis of Challenge #3

The following analysis describes how Golden in view of Fichou, Lee, and Har, further in view of Pillai, renders obvious each and every element of claim 16 of the ’119 Patent. *See* ERIC-1005, ¶¶367-381.

<u>Claim 16</u> depends from claim 13 and further recites:

[16.1] ***receiving, by the controller, a notification from the portal that traffic on the connection has exceeded an authorized limit; and***

Golden’s ECP is an example of the “controller.” *See* analysis of elements [13.1] and [1.1].

Further, Golden teaches that the ECP has multiple functions including “billing and resource management.” ERIC-1007, 8:34-39. To the extent that Golden does not explicitly teach details of “billing and resource management,” and particularly actions taken when the reserved connection has exceeded an authorized limit, Pillai teaches these techniques. ERIC-1005, ¶¶367-371.

For example, Pillai teaches a RURCM (a controller) separate from other network elements “***to keep track of ongoing usage*** [o]f system resources in real-time.” ERIC-1011, ¶[0087]. Pillai teaches that a switch monitors traffic and notifies the RURCM when usage exceeds an authorized limit, with thresholds “on the switches that trigger ***the switch to send live updates to the RURCM 300***.” *Id.*, ¶[0088]; ERIC-1005, ¶¶372-373.

Pillai teaches that the RURCM compares the "usage" from the switches "against the authorized limits specified by the pre-paid policy." ERIC-1011, ¶[0089]. Accordingly, Golden's ECP modified by Pillai's teachings result in a controller to monitor and control specific usage as an example of "resource management," with Pillai's teachings of a switch notifying a control element that usage has exceeded authorized limits. ERIC-1005, ¶¶374-375.

Thus, Golden and Pillai teach the features of element [16.1]. ERIC-1005, ¶376.

[16.2] ***instructing the portal, by the controller, whether to terminate or allow the connection to continue.***

Pillai teaches that the RURCM determines whether to terminate the connection: "***the RURCM 300 decides at what point one or more of the ongoing sessions/connections should be terminated***." ERIC-1011, ¶[0093]; ERIC-1005, ¶¶377-379.

Upon determining, Pillai teaches conveying the determination to the switch ("portal"): "[a]fter making this decision, the RURCM 300 instructs the appropriate network switch … to terminate the ongoing call/session." ERIC-1011, ¶[0093]; ERIC-1005, ¶380.

Thus, Golden and Pillai teach the features of element [16.2]. ERIC-1005, ¶381.

VII. Conclusion

For the reasons set forth above, Petitioner asks that the Patent Office order an *inter partes* review trial and then proceed to cancel claims 1-16 as unpatentable in view of the grounds set forth above. The undersigned further authorizes payment for any additional fees that may be due in connection with this Petition to be charged to Deposit Account No. 08-1394.

Respectfully submitted,

Dated: June 22, 2017

/J. Andrew Lowes/

J. Andrew Lowes
Counsel for Petitioner
Registration No. 40,706
HAYNES AND BOONE, LLP
Telephone: 972/680-7557

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), Petitioner hereby certifies, in accordance with and 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 less than 14,000. Pursuant to 37 C.F.R. §42.24(d), this word count excludes the table of contents, grounds for standing under §42.104, mandatory notices under §42.8, certificate of service, certificate of word count, appendix of exhibits, and any claim listing.

Dated: June 22, 2017

/J. Andrew Lowes/

J. Andrew Lowes
Counsel for Petitioner
Registration No. 40,706
HAYNES AND BOONE, LLP
Telephone: 972/680-7557

ERICSSON'S EXHIBIT LIST

ERIC-1001	U.S. Pat. No. 8,036,119
ERIC-1002	File History of U.S. Pat. No. 8,036,119
ERIC-1003	U.S. Pat. No. 7,639,612
ERIC-1004	File History of U.S. Pat. No. 7,639,612
ERIC-1005	Declaration of Dr. Narasimha Reddy
ERIC-1006	Curriculum Vitae of Dr. Narasimha Reddy
ERIC-1007	U.S. Pat. No. 6,563,793 (Golden)
ERIC-1008	U.S. Pat. Pub. No. 2001/0023443 (Fichou)
ERIC-1009	U.S. Pat. Pub. No. 2006/0133300 (Lee)
ERIC-1010	U.S. Pat. Pub. No. 2003/0219006 (Har)
ERIC-1011	U.S. Pat. Pub. No. 2003/0133552 (Pillai)
ERIC-1012	U.S. Pat. No. 7,164,435 (Wang)
ERIC-1013	File History of U.S. Pat. Appl. No. 09/060,520 (incorporated by reference into Golden)
ERIC-1014	RESERVED
ERIC-1015	RESERVED
ERIC-1016	RESERVED
ERIC-1017	RESERVED
ERIC-1018	RESERVED
ERIC-1019	RESERVED
ERIC-1020	RESERVED
ERIC-1021	RESERVED
ERIC-1022	RESERVED
ERIC-1023	RESERVED
ERIC-1024	RESERVED
ERIC-1025	RESERVED
ERIC-1026	RESERVED

ERIC-1027	RESERVED
ERIC-1028	RESERVED
ERIC-1029	U.S. Pat. Pub. No. 2005/0024487 (Chen)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent of: McEwen	§	Petition for *Inter Partes* Review
	§	
U.S. Patent No. 8,036,119	§	Attorney Docket No.: 51167.8
	§	
Issued: October 11, 2011	§	Customer No.: 27683
	§	
Title:	§	Real Party in Interest:
SYSTEM AND METHOD OF	§	RPX Corp., Ericsson Inc. and
PROVIDING BANDWIDTH ON	§	Telefonaktiebolaget LM Ericsson
DEMAND	§	
	§	
	§	

CERTIFICATE OF SERVICE

The undersigned certifies, in accordance with 37 C.F.R. § 42.205, that service was made on the Patent Owner as detailed below.

Date of service	June 22, 2017
Manner of service	FEDERAL EXPRESS
Documents served	Petition for *Inter Partes* Review Petitioner's Exhibit List Exhibits ERIC-1001-ERIC-1013 and ERIC-1029
Persons served	Kathy McEwen 7809 La Guardia Drive Plano, TX 75025

/J. Andrew Lowes/
J. Andrew Lowes
Counsel for Petitioner
Registration No. 40,706