

Filed: April 14, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

SANDPIPER CDN, LLC,
Patent Owner.

Case IPR2025-00806
Patent No. 8,645,517

**PETITION FOR *INTER PARTES REVIEW*
OF U.S. PATENT NO. 8,645,517**

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STATUTES

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RULES

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LIST OF EXHIBITS

<u>Exhibit</u>	<u>Description</u>
1001	U.S. Patent No. 8,645,517 to Stolorz et al. (“’517 Patent”)
1002	Prosecution History of U.S. Application No. 12/978,537
1003	Declaration of Dr. Bill Lin (“Lin”)
1004	Curriculum Vitae of Dr. Bill Lin
1005	U.S. Patent Pub. No. 2002/0010798 to Ben-Shaul et al. (“ <i>Ben-Shaul</i> ”)
1006	U.S. Patent No. 7,082,464 to Hasan et al. (“ <i>Hasan</i> ”)
1007	U.S. Patent Pub. No. 2002/0169890 to Beaumont et al. (“ <i>Beaumont</i> ”)
1008	U.S. Patent Pub. No. 2002/0078233 to Biliris et al. (“ <i>Biliris</i> ”)
1009	Balachander Krishnamurthy et al., <i>On the Use and Performance of Content Distribution Networks</i> , Proceedings of the 1st ACM SIGCOMM Workshop on Internet measurement, November 2001 (“ <i>Krishnamurthy</i> ”)
1010	Zhuoqing Morley Mao et al., <i>A Precise and Efficient Evaluation of the Proximity between Web Clients and their Local DNS Servers</i> , Proceedings of the 2002 USENIX Annual Technical Conference, June 2002 (“ <i>Mao</i> ”)
1011	U.S. Provisional Patent App. No. 60/325,177 to Stolorz et al. (“Provisional App.”)
1012	U.S. Patent Pub. No. 2003/0065762 to Stolorz et al. (“2002 Application”)
1013	U.S. Patent Pub. No. 2008/0215718 to Stolorz et al. (“2007 CIP”)
1014	Prosecution History of U.S. Application No. 10/259,497

<u>Exhibit</u>	<u>Description</u>
1015	Scheduling Order, <i>Sandpiper CDN, LLC v. Google LLC</i> , 2:24-cv-03951, Dkt. 62 (C.D. Cal. Dec. 6, 2024)
1016	Letter to Robert H. Reckers <i>re Sandpiper CDN LLC v. Google LLC</i> , No. 2:24-3951-AB-RAO (C.D. Cal.) (Apr. 14, 2025)

*All emphasis is added unless otherwise indicated.

I. Introduction

Petitioner requests cancelation of claims 1-20 of U.S. Patent 8,645,517 (EX-1001).

The '517 patent claims a graphical user interface (“GUI”) for setting DNS policies in a decision tree structure. EX-1001, 6:45-64; claim 1. Policy-based DNS resolution in content delivery networks was widely known. *Id.*, 4:15-21; *see Krishnamurthy*, §V.A; *Mao*, §4.2; *Beaumont*, [0016]. The alleged improvement—the decision-tree-based GUI (EX-1001, 6:59-64)—was also known or at least rendered obvious. Claims 1-20 are unpatentable.

II. Statement of Precise Relief Requested

Petitioner requests review under 35 U.S.C. §311 of claims 1-20 of the '517 patent and their cancelation in view of the following:

Prior Art References	
Ref. 1:	<i>Beaumont</i> (EX-1007), published November 14, 2002, filed May 8, 2001.
Ref. 2:	<i>Hasan</i> (EX-1006), published July 25, 2006, filed July 6, 2001.
Ref. 3:	<i>Biliris</i> (EX-1008), published June 20, 2002, filed July 9, 2001.
Ref. 4:	<i>Ben-Shaul</i> (EX-1005), published January 24, 2002, filed February 16, 2001.

Each of the above references is prior art under 35 U.S.C. §102(b) under the proper priority date of October 26, 2007, *see* §III.D, and is also prior art under 35 U.S.C. §102(e) under any asserted priority date.

Grounds of Unpatentability	
1	Claims 1, 4-9, and 12-20 are obvious under 35 U.S.C. §103 over <i>Beaumont</i> and <i>Hasan</i> .
2	Claims 2, 3, 10, and 11 are obvious under 35 U.S.C. §103 over <i>Beaumont</i> , <i>Hasan</i> , and <i>Biliris</i> .
3A	Claims 1-20 are obvious under 35 U.S.C. §103 over <i>Ben-Shaul</i> .
3B	Claims 1-20 are obvious under 35 U.S.C. §103 over <i>Ben-Shaul</i> and <i>Hasan</i> .

III. The '517 Patent

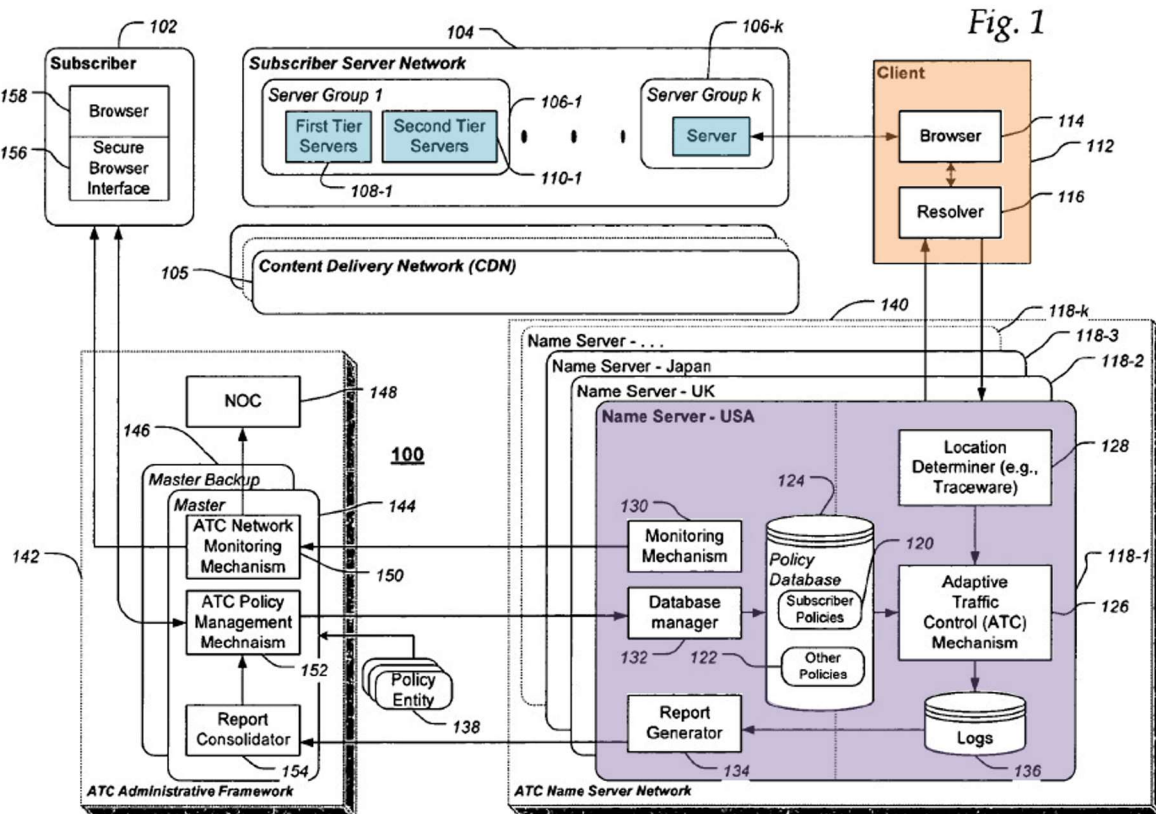
A. Technology Overview

Content delivery networks (CDNs) are geographically dispersed servers for delivering content to end-users. *Krishnamurthy*, Abstract; *Mao*, Abstract; *Biliris*, [0003]. CDNs reduce demand on origin servers by replicating their content on CDN servers. *Krishnamurthy*, Abstract; *Mao*, Abstract; *Biliris*, [0003]. In response to a content request, the CDN locates a CDN server storing a cached copy of that content. *Krishnamurthy*, §I; *Mao*, Abstract, §I; *Biliris*, [0003]. CDNs typically route requests using Domain Name Service (DNS) servers (*Krishnamurthy*, §II; *Mao*, §I), which return IP addresses for servers mapped to

domain names in a request. *Krishnamurthy*, §II; *Beaumont*, [0004]; *Ben-Shaul*, [0007]. The DNS server returns the IP address of the CDN server that is best suited to respond to the request. *Ben-Shaul*, [0007]; *Beaumont*, [0004]; *Krishnamurthy*, §II. Many CDNs allow custom-defined policies for selecting the best-suited CDN servers. *Krishnamurthy*, §V.A; *Mao*, §4.2; *Beaumont*, [0016]; *Lin*, ¶43.

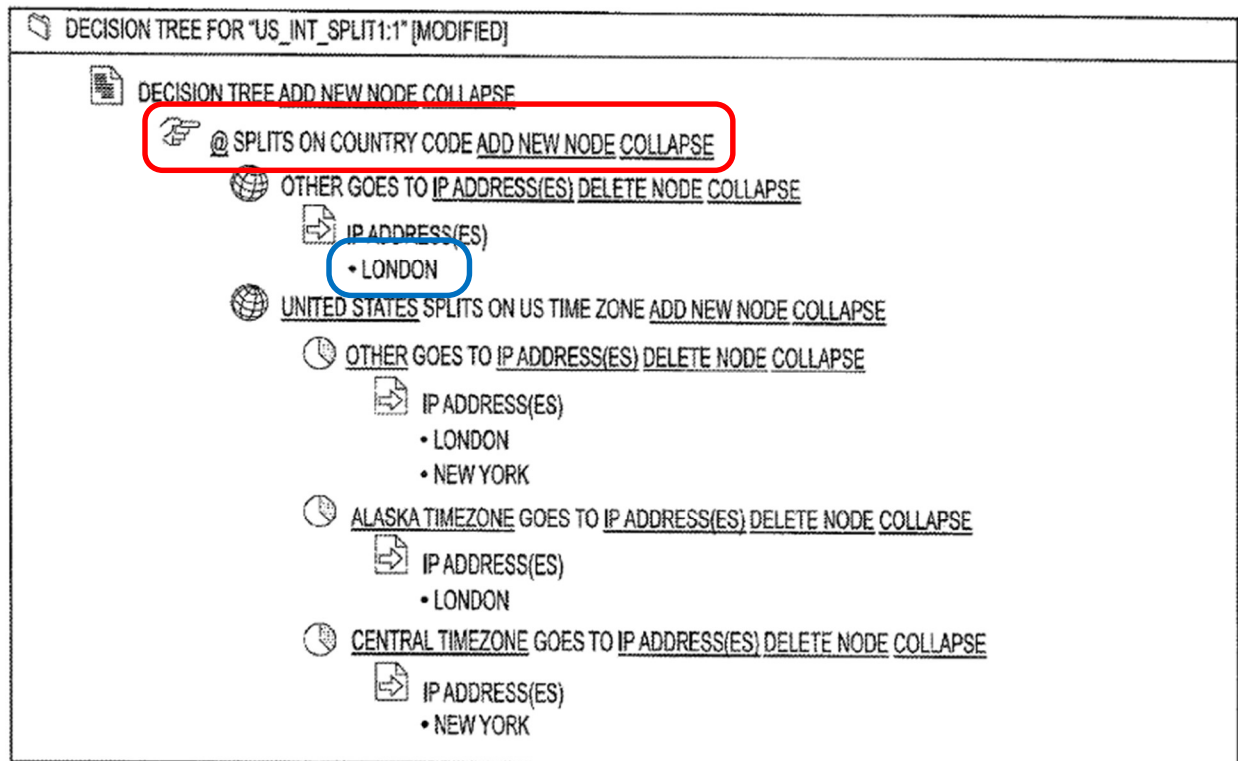
B. The '517 Patent

The '517 patent discloses a framework in which resources are delivered based on policies. EX-1001, Abstract; *Lin*, ¶44. This framework includes a network of subscriber servers, a client, and DNS servers:



EX-1001, Fig. 1. The **client** requests access to content stored on the **servers** (*id.*, 3:57-4:21) and the **DNS server** returns an address of a selected **server** (*id.*, 4:35-51). The **client** then accesses the content via a browser 114. *Id.*

The **DNS server** selects the **server** based on policies stored in a policy database 124. *Id.* These policies are constructed as a hierarchical decision tree, where “branches ...(**branch nodes**)... specif[y] the various decision criteria that the user wants to apply.” *Id.*, 9:1-12. “[L]eaves ...(**resource nodes**)” within the branches “specif[y] the answers ... to provide in response.” *Id.* The subscriber (whose content is delivered) sets these policies via an administrative master agent accessed through a web-based GUI:



Id., Fig. 10(b); 9:1-8; 17:33-45. In this example, a **branch node** defines “a split between the United States and rest of the world” such that a request “initiated from non-U.S. geographical regions is directed to a **resource [node]** named ‘London.’” *Id.*, 25:8-25. Accordingly, the request’s initiation location dictates server selection. *Id.*; Lin, ¶45.

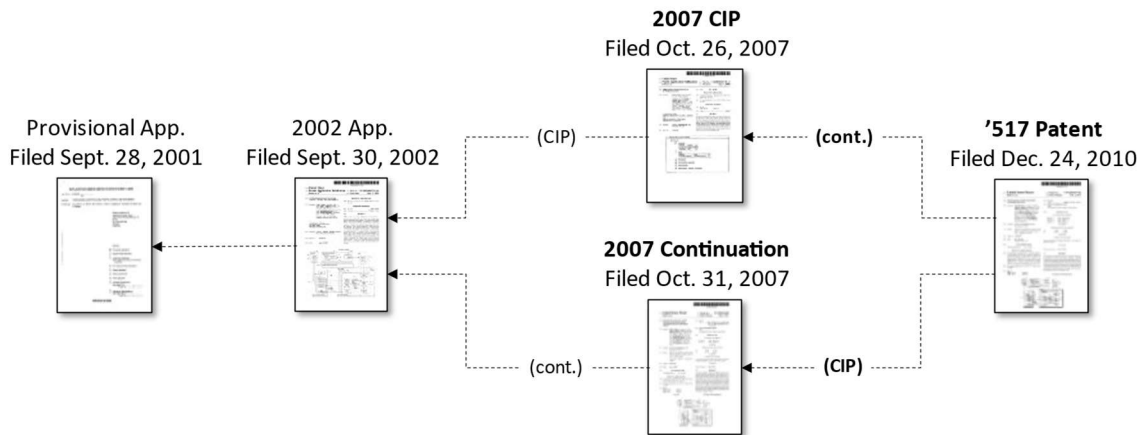
C. Prosecution History

The ’517 patent was filed on December 24, 2010. EX-1001, cover. It was initially rejected based on references not at issue here. EX-1002, 64-72. Applicant responded that the primary reference did not teach the claimed hierarchical GUI for setting DNS policies because it lacked resource nodes specifying answers to DNS requests. *Id.*, 54-58; Lin, ¶46. The Office then allowed the claims. EX-1002, 34-40.

D. Priority Date

The ’517 patent claims priority to a September 28, 2001, provisional through two branches of its family. EX-1001, cover. That provisional spawned a 2002 non-provisional application filed September 30, 2002 (the “2002 Application”). In 2007, the Applicant subsequently filed both a continuation on October 31 (the “2007 Continuation”), and a continuation-in-part on October 26 (the “2007 CIP”) of the 2002 Application.

The ’517 patent is a continuation-in-part of the 2007 Continuation and purports to be a continuation of the 2007 CIP, as illustrated below:



The '517 patent is thus a continuation-in-part twice over. As explained below, the 2007 CIP provides the earliest possible support for its claims. The patent is thus entitled to priority as of, at best, October 26, 2007. Lin, ¶47.

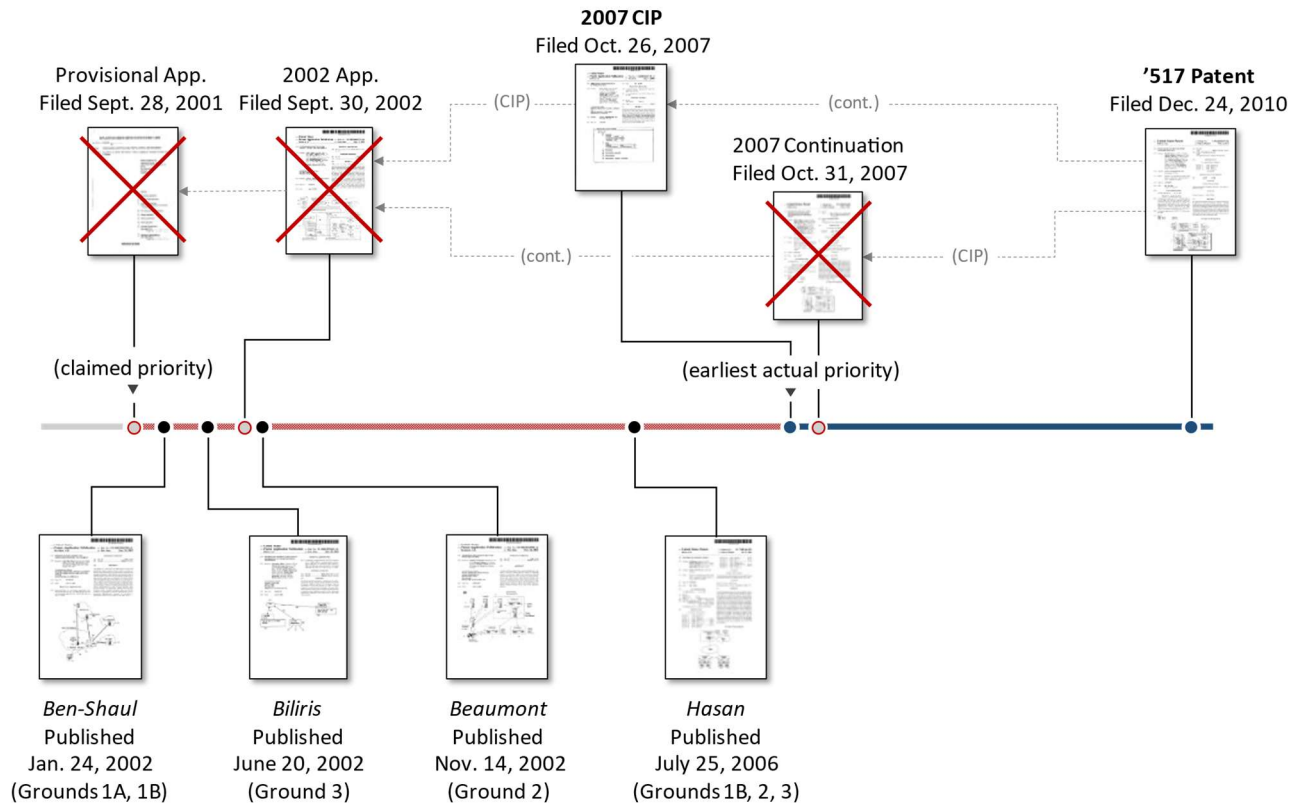
A patent's claims are not entitled to an earlier priority date merely because the patent owner claims priority. *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1379-80 (Fed. Cir. 2015). Rather, Sandpiper must show the earlier application provides written description support under 35 U.S.C. §112(a); 35 U.S.C. §120; *Dynamic Drinkware*, 800 F.3d at 1379-80; *Paice LLC v. Ford Motor Co.*, 881 F.3d 894, 906 (Fed. Cir. 2018); *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306-11 (Fed. Cir. 2008).

The test for written description sufficiency is whether the prior application's disclosure "reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharms., Inc.*

v. Eli Lilly & Co., 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc); *Augustine Medical, Inc. v. Gaymar Indus., Inc.*, 181 F.3d 1291, 1302-03 (Fed. Cir. 1999).

Sandpiper cannot meet this burden. No claim of the '517 patent is entitled to a priority date before October 26, 2007 (the 2007 CIP filing date), at least because neither the 2002 Application nor the Provisional Application describes “one or more resource nodes [being] ... mail exchange (MX) records,” as recited in each of the independent claims. Lin, ¶48; *Dr. Reddy's Labs. S.A. v. Indivior UK Ltd.*, IPR2019-00329, Paper 49, 82 (P.T.A.B. June 2, 2020); *aff'd Indivior UK Ltd. v. Dr. Reddy's Labs. SA*, 18 F.4th 1323, 1330 (Fed. Cir. 2021). The concept of resource nodes as MX records never appears in the Provisional Application or the 2002 Application (*see generally* EX-1011, EX-1012) and was first introduced in the 2007 CIP (*compare* EX-1012 *with* EX-1013); Lin, ¶48. Indeed, “mail exchange” and “MX” never appear prior to the 2007 CIP. *See generally* EX-1011, EX-1012, EX-1013.

The earliest possible priority date is thus October 26, 2007. Lin, ¶49; *Dr. Reddy*, IPR2019-00329, Paper 49, 82. As the following timeline shows, *Ben-Shaul*, *Biliris*, *Beaumont*, and *Hasan* were each published prior to the 2007 CIP filing:



Accordingly, under the actual October 26, 2007, priority date, each of these references are prior art under 35 U.S.C. §102(b). But each reference was filed before the claimed September 28, 2021, priority date, and remains prior art under 35 U.S.C. §102(e) under any priority date.

IV. Level of Ordinary Skill

A POSITA at the time of the invention would have had at least a bachelor's degree in computer science, electrical engineering, or a related field, and at least two years of work or research experience in the field of content delivery management or networks. Work experience can substitute for formal education and additional formal education can substitute for work experience. Lin, ¶¶50-52.

V. Claim Construction

The Board construes claims under *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc); 37 C.F.R. §42.100(b) (2018). Under this standard, terms receive their plain and ordinary meaning as understood by a POSITA, consistent with the disclosure and prosecution history. *Phillips*, 415 F.3d at 1314-19. Claims should only be construed to the extent necessary to resolve a controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). No claim terms need to be construed by the Board at this time, and all should be given their ordinary meanings. Lin, ¶53.

VI. Claims 1-20 Are Unpatentable

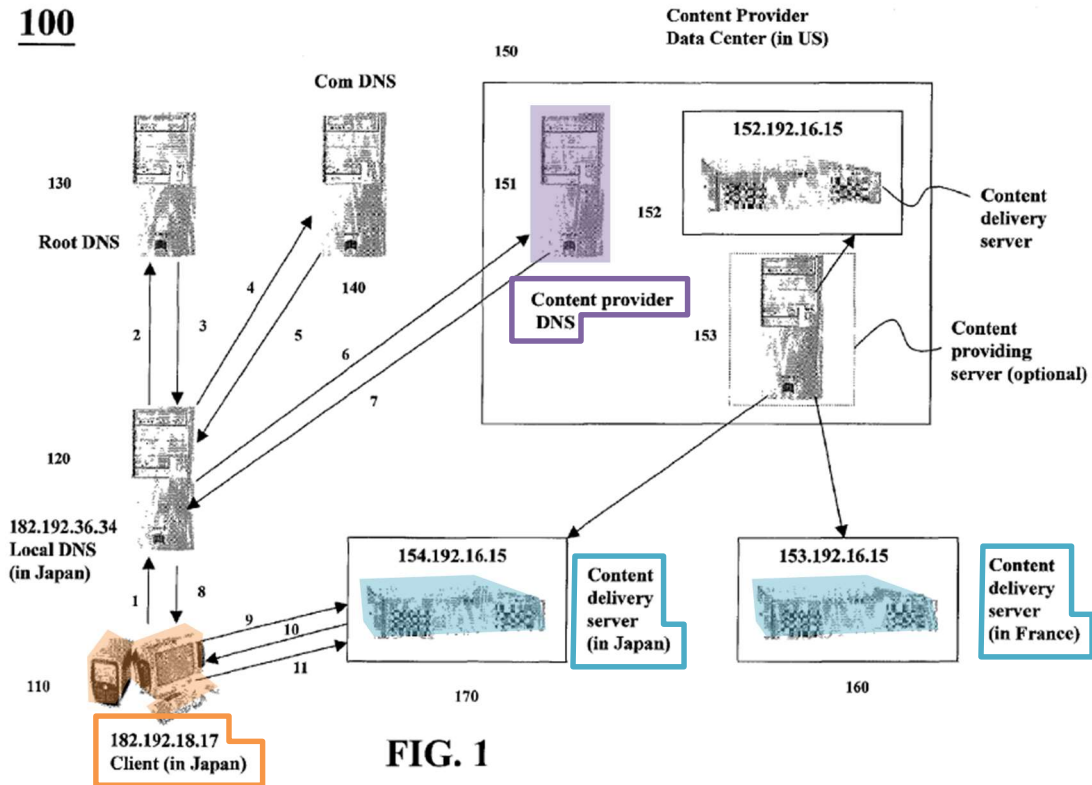
A. Ground 1: The Combination of *Beaumont* and *Hasan* Renders Obvious Claims 1, 4-9, and 12-20

1. Overview of Ground 1

a. *Beaumont*

Like the '517 patent, *Beaumont* deals with content delivery networks. Lin, ¶54; *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004).

Beaumont discloses a content delivery system in which a **client 110** (e.g., an end-user) requests access to content stored on **content delivery servers**. *Beaumont*, Abstract, [0018]. In response, a **content provider DNS** selects a **content delivery server** to provide the content:



Id., Fig. 1, [0018], [0019], [0022].

The **content provider DNS** selects the **content server** by identifying servers mapped to the client domain (*id.*, [0022], [0024]) and selecting a particular server using a preference database (*id.*, [0023]). The preference database may enable selecting the closest content server (*id.*, [0007], [0019]) or through other selection rules, including customizable preference values (*id.*, [0006], [0031]-[0035]):

	371	372	373	374	375 (optional)	376 (optional)	377 (optional)	378 (optional)	379 (optional)
	number								
310	Delivery Server	Destination		Number	Number of	Estimate	of times		Time-To-
320	Address	Domain	Preference	r of lost	connection	d distance	being	Health	Live
321	152.192.16.15	182.192	1	100	1	100	100	Working	1
322	153.192.16.15	182.192	2	200	2	90	90	Down	2
323	154.192.16.15	182.192	9	900	9	10	10	Working	9
330	155.192.17.15	155.192	8	800	8	20	20	Working	8
340	156.192.17.15	156.192	1	100	1	10	10	Working	1
350	157.192.17.15	156.192	5	500	5	50	50	Working	5
360	158.192.17.15	156.192	3	300	3	70	70	Working	3

Id., Fig. 3. Lin, ¶55-57. In this example, the system may identify servers

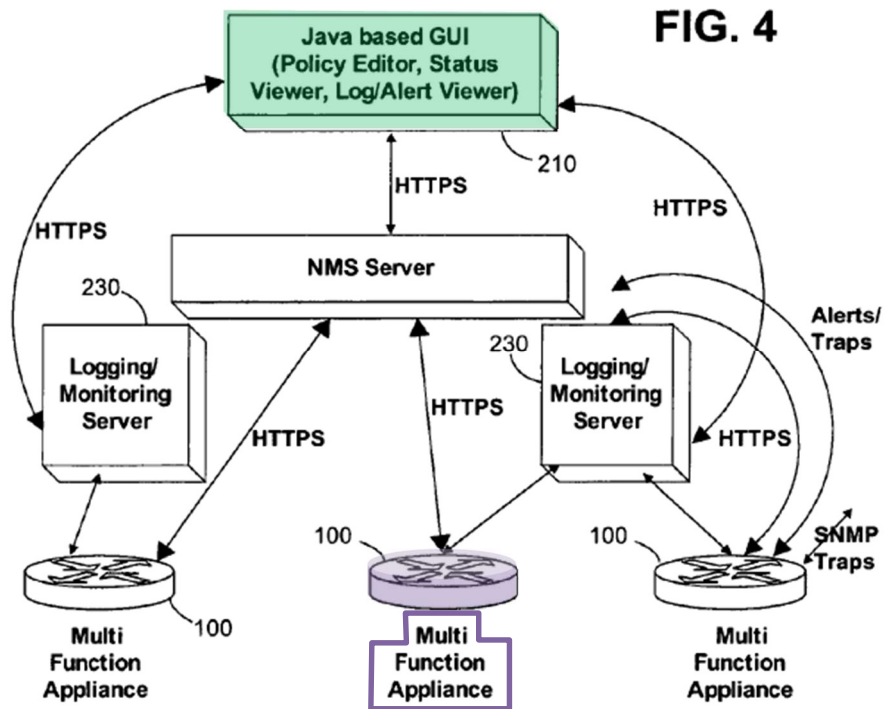
152.192.16.15, 153.192.16.15, and 154.192.16.15 as belonging to the same

destination domain as the client (182.192) and may select **server 154.192.16.15**

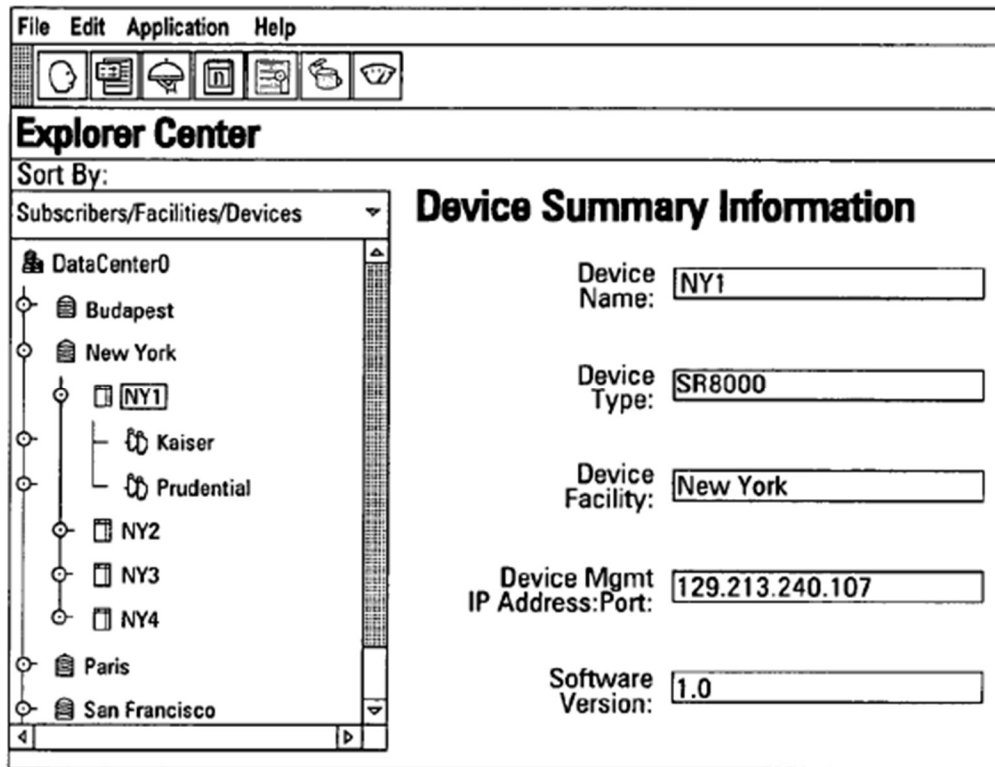
as having the highest preference value. *Beaumont*, [0028]. These preference values are “entered manually.” *Id.*, [0031], [0034].

b. *Hasan*

Hasan discloses a “virtual management system” providing an administrative interface with “devices, facilities, subscribers, log servers, and services” presented as objects. *Hasan*, Abstract. *Hasan*’s system includes **multi-function service devices 100** providing various services to the subscribers:



Hasan, Fig. 4, 5:63-6:14; Lin, ¶58. These **devices** are connected to a “network management server (NMS) 200 ... provid[ing] a **graphical user interface** to [an] administrative interface device” for configuring the **devices**. *Id.*, 6:37-58, 7:7-26. *Hasan*’s GUI provides a “hierarchical layout” of the system in a “familiar tree structure, with the root being the data center, and the branches being the facilities, subscribers, devices and log servers,” as shown in Fig. 6A:



Id., 8:19-29.

“[U]sing the GUI, an administrator can configure device and service configuration data and policy information.” *Id.*, 7:7-26. For example, “[w]hen an object is selected, various management capabilities can be performed on the object.” *Id.*, 8:30-46. *Hasan* also discloses various “reporting facilities” capable of presenting “logs for various events detected by the infrastructure service equipment” (*id.*, 15:9-12) via the GUI (*id.*, 6:59-63). *Lin*, ¶59.

c. Motivation to Combine *Beaumont* and *Hasan*

Beaumont and *Hasan* are both concerned with network traffic management. *Hasan*, 6:44-45; *Beaumont*, [0017]. In view of *Beaumont*’s teaching of manually

entered rule preferences (*Beaumont*, [0031]), a POSITA would have been motivated to implement *Hasan*'s "platform independent" teachings in *Beaumont* to allow manual entry of policy and rules through *Hasan*'s GUI. Lin, ¶68-69.

While *Beaumont* does not describe a specific interface for manually entering preferences, *Hasan* discloses a GUI for exactly this type of policy specification. Lin, ¶70. Its Java-based, "platform independent" GUI takes the form of a "familiar tree structure." *Hasan*, Abstract, 8:19-29, 18:9-20. And *Hasan*'s GUI allows administrators to "configure device and service configuration data and policy information." *Id.*, 7:7-26.

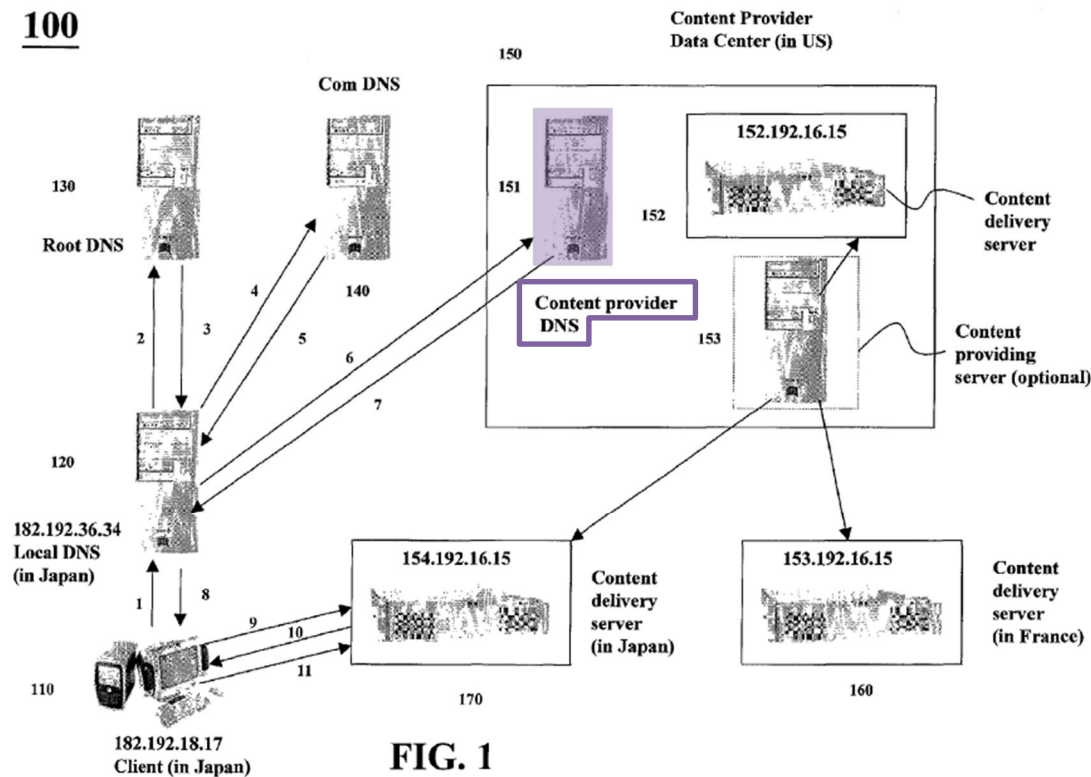
Combining the teachings of *Beaumont* and *Hasan* would have been straightforward. Like *Hasan*, *Beaumont* suggests a "tree" hierarchy to organize information. *Beaumont*, [0023]. A POSITA would have been motivated to incorporate *Hasan*'s GUI so that administrators could conveniently configure preferences for *Beaumont*'s DNS servers through an intuitive interface. *Hasan*, 3:66-4:8, 8:19-29; Lin, ¶71; *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 800 (Fed. Cir. 2021); *Par Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1197-98 (Fed. Cir. 2014). Applying *Hasan*'s teaching to *Beaumont* would have been a straightforward use of a known technique to enhance a similar device or method in the same way. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-18 (2017); Lin, ¶71.

2. Independent Claim 1

- a. [1.pre.i]: “A method, operable in a framework in which an adaptive traffic control name server network implements policy-based traffic direction”

Beaumont in view of *Hasan* discloses [1.pre.i]. Lin, ¶72.

Beaumont discloses a method for using DNS servers (adaptive traffic control name servers) to respond to DNS requests. *Beaumont*, [0004]-[0005], [0017], [0023]. *Beaumont*’s method operates in a “data network” (framework) including a **content provider DNS server** that directs requests (traffic) according to a configurable preference table (policies):



Id., Fig. 1, [0006], [0017], [0023]. The DNS servers are “adaptive” because the preferences for directing traffic are updated dynamically (*id.*, [0019], [0030]) and account for current network conditions (*id.*, [0031]).

- b. **[1.pre.ii]: “the name server network comprising at least one domain name server comprising hardware in combination with software and constructed and adapted to provide adaptive policy-based domain name service”**

Beaumont in view of *Hasan* discloses [1.pre.ii]. Lin, ¶73.

Beaumont expressly states its DNS servers (“domain name server”) “comprise[] hardware ... and software.” *Beaumont*, [0032], Fig. 4. The content provider DNS server forwards DNS requests according to a preference database and thus “provide[s] ... policy-based domain name service.” *Id.*, [0030]-[0031]. *Beaumont*’s DNS servers are “adaptive” at least because they distribute requests based on dynamically changing preferences and current network conditions (e.g., “number of connections,” “number of times ... selected”). *Id.*

- c. **[1.a]: “(A) providing a graphical user interface (GUI)”**

Beaumont in view of *Hasan* discloses [1.a]. Lin, ¶74-75.

Beaumont’s DNS server uses a preference table to resolve DNS requests. *Beaumont*, Abstract, [0006], [0023], [0031], [0032], [0034], [0035]. The table includes custom preferences “entered manually” by users. *Id.*, [0031]. A POSITA

would have understood that *Beaumont* at least suggests providing a user interface for manually entering/defining preferences. Lin, ¶74.

Hasan discloses a GUI for defining “configuration data and policy information” for servers within a network. *Hasan*, 7:12-21; 6:59-63. A POSITA would have been motivated to incorporate *Hasan*’s GUI into *Beaumont*’s network to enable similar user preference configuration, as suggested by *Beaumont*. Lin, ¶75; *Beaumont*, [0031]; §VI.A.1.b.

- d. **[1.b]: “(B) using said GUI to obtain at least one policy for direction of network traffic wherein the GUI supports the setting of said at least one policy using a decision tree representing rules”**

Beaumont in view of *Hasan* discloses [1.b]. Lin, ¶76-77.

Beaumont acknowledges that “[a]lthough presented as a table, other data structures such as a *tree* can be used” for its preference database. *Beaumont*, [0023]. *Hasan*’s GUI provides this “tree structure,” “presenting a plurality of network items as objects within the interface.” *Hasan*, 3:58-65, 8:19-29. “When an object is selected [in the GUI], various management capabilities can be performed on the object” (*id.*, 8:30-36), which a POSITA would have understood to include defining policy information (*id.*, 7:14-21, 8:49-59). A POSITA would have been motivated to combine *Hasan*’s GUI teachings with *Beaumont*. §VI.A.1.b.

The *Beaumont-Hasan* GUI would enable an administrator to set policies for a selected content delivery server. *Hasan*, 8:30-36, 10:25-34, 10:53-67; *Beaumont*, [0031]. For example, selecting a server would launch a menu for assigning the preferences shown in Fig. 3 of *Beaumont*. Lin, ¶77; *Beaumont*, Figs. 2, 3, [0029]-[0031]. The combined GUI would “support[] the setting of said at least one policy using a decision tree representing rules” because it is presented in a “familiar tree structure” and would allow users to set server preferences and rules. Lin, ¶77.

e. [1.c]: “(C) providing said at least one policy to the name server network”

Beaumont in view of *Hasan* discloses [1.c]. Lin, ¶78.

Beaumont’s custom preferences are stored at the DNS servers. *Beaumont*, [0032]. Incorporating *Hasan*’s GUI would not affect the storage of the preference table. Lin, ¶78. Thus, once set using the combined GUI, the preferences and/or rules would be stored in the network’s content provider DNS servers and thus would be “provided ... to the name server network.” *Id.*

f. [1.d]: “wherein the decision tree comprises one or more resource nodes, and one or more branch nodes, wherein the one or more resource nodes specify one or more answers to be provided in response to a Domain Name Service (DNS) request, and wherein the one or more branch nodes specify one or more decision criteria to be applied”

Beaumont in view of *Hasan* discloses [1.d]. Lin, ¶79-83.

The combined *Beaumont-Hasan* system incorporates *Hasan*'s GUI, which provides “a hierarchical layout” in a “familiar tree structure, with ... the branches being the facilities, subscribers, devices and log servers.” *Hasan*, 8:19-29. When used in *Beaumont*'s network, **higher-level branches** (“branch nodes”) in the GUI represent decision criteria (e.g., server health (e.g., working or down), destination domains (e.g., 182.192)), and **subbranches** (“resource nodes”) represent individual delivery (content) servers that fulfill the decision criteria and are thus “answers” provided in response to a DNS request. *See, e.g., Beaumont*, Fig. 2; Lin, ¶79.

For example, *Beaumont* teaches that its content provider DNS server selects a content delivery server closest to a client (*Beaumont*, [0019]) using an “estimated distance from each mapped content delivery server to that destination domain” (*id.*, [0023], [0024]). In other words, *Beaumont*'s system first identifies working servers sharing the destination domain of the client (182.192) and then selects a server from within that set to handle the request based on a distance or other preferences. Lin, ¶80 (citing *Beaumont*, [0031]).

A POSITA would have recognized the locations or domains defined by the higher-level branches “specify one or more decision criteria to be applied,” because the content delivery servers are selected based on sharing a high-level domain (and thus location) with the requesting client. Lin, ¶81; *Beaumont*, [0024], [0028]. For example, *Beaumont*'s DNS server selects from content delivery servers represented

in rows R2, R3, and R4 in FIG. 2 because they “are mapped to the same destination domain, 182.192.” *Id.*, [0028]. In the tree structure of the combined GUI, these content delivery servers would be grouped under the same destination domain and the destination domain would thus act as a decision criterion. Lin, ¶82.

The content delivery servers in the GUI represent “one or more answers to be provided in response to a Domain Name Service (DNS) request” because these servers are selected for handling the request. *Id.*, ¶83; *Beaumont*, [0023], [0024], [0026].

g. [1.e.i]: “wherein the GUI supports the specification of: (i) one or more answers for the one or more resource nodes”

Beaumont in view of *Hasan* discloses [1.e.i]. Lin, ¶84-85.

The content delivery servers represent “one or more answers” in the *Beaumont-Hasan* GUI because these servers are selected for handling a request. §VI.A.2.f.

Content servers within a destination domain may be selected based on manually entered preferences. *Beaumont*, [0028], [0031]. When incorporated into *Beaumont*’s network, *Hasan*’s GUI would enable users to specify these preferences. Lin, ¶85; *Hasan*, 6:28-31 (configuring “individual devices ... via the interface”), 8:61-64, 9:1-9; 17:11-13, 17:41-55. Because these preferences define which server address is returned (*Beaumont*, [0023], [0025]), and the GUI supports the

specification of the preferences, the GUI supports specification of one or more answers for the one or more resource nodes. Lin, ¶85.

- h. [1.e.ii]: “wherein the GUI supports the specification of: ... (ii) one or more decision criteria for the one or more branch nodes, wherein the one or more criteria are selected from criteria related to: world zones, countries, states, time zones, and blocks of Internet Protocol (IP) addresses”**

Beaumont in view of *Hasan* discloses [1.e.ii]. Lin, ¶86-90.

Beaumont discloses criteria that would be presented as branch nodes in the *Beaumont-Hasan* GUI. §VI.A.2.f.

This criteria includes “destination domain[s]” (*Beaumont*, [0028]) illustrated as blocks of IP addresses. *Id.*, Fig. 2 (col. C2), [0024] (selecting a server “shar[ing] the same address block”).

Beaumont also suggests geographic criteria (e.g., world zone, countries, or states) as decision criteria. *Id.*, [0024] (selecting a server “in the same geographic area”); Lin, ¶88.

Hasan’s GUI enables adding or removing objects within subbranches. *Hasan*, 8:22-25, 8:31-36, 17:11-13. When incorporated in *Beaumont*’s network, the combined GUI would thus allow grouping content delivery servers by IP address block or geographic zone, thus supporting specification of decision criteria for the one or more branch nodes. Lin, ¶89.

Further, *Beaumont* envisions applying multiple assigning rules according to weights (*Beaumont*, [0031]), which administrators could configure through the *Hasan* GUI (*Hasan*, 7:12-14, Fig. 4). Lin, ¶90.

- i. **[1.f]: “wherein the one or more resource nodes are selected from: IP addresses, canonical name (CNAME) records, mail exchange (MX) records, name server (NS) records, and load sharing server sets”**

Beaumont in view of *Hasan* discloses [1.f]. Lin, ¶91.

Beaumont explicitly states its content delivery servers (i.e. “resource nodes”) are identified by IP addresses. *Beaumont*, [0023] (“[t]he preference database table illustratively contains the addresses of content delivery servers”), Figs. 2 and 3, [0003], [0017]. The content delivery servers would similarly be represented as IP addresses in the combined GUI. Lin, ¶91; *see Hasan*, 8:61-64, 17:41-55.

- j. **[1.g]: “wherein the answers are selected from: IP addresses and CNAMEs.”**

Beaumont in view of *Hasan* discloses [1.g]. Lin, ¶92.

Beaumont explicitly states its responses to DNS requests (“answers”) are provided as IP addresses. *Beaumont*, [0003] (“return[ing] a response to the client using ... IP addresses”), [0004], [0030] (returning a “mapped address identifying a content delivery server”). Implementing *Hasan*’s GUI would not impact this feature. Lin, ¶92; *see Hasan*, 8:61-64, 17:41-55.

3. Claim 4: “further comprising: (D) generating reports based on information gathered from the name server network; and (E) providing said reports”

Beaumont in view of *Hasan* discloses claim 4. Lin, ¶93-94.

Hasan discloses various “reporting facilities” to “make available logs for various events detected by the infrastructure service equipment.” *Hasan*, 15:9-12. It describes “[l]ogging and monitoring servers ... to ... provide standard format output reports to the administrator.” *Id.*, 6:64-67. And it teaches providing this logged information in the GUI. *Id.*, 10:53-67, 11:11-15.

When incorporating *Hasan*’s GUI into *Beaumont*, a POSITA would have been motivated to include these report logging and viewing aspects to present relevant information about the DNS servers (e.g., whether the servers are “down” or failing) to administrators. Lin, ¶94. *Beaumont* contemplates tracking server health (e.g., *Beaumont*, [0026]), and a POSITA would have understood that extending this tracking to the DNS servers and providing that information through the GUI would allow network policy setters to better control network traffic. Lin, ¶94.

4. Claim 5: “wherein the information gathered from the name server network comprises: DNS log summaries from the at least one domain name server in the name server network”

Beaumont in view of *Hasan* discloses claim 5. Lin, ¶95-96.

Beaumont and *Hasan* disclose gathering and reporting DNS network information. §VI.A.3.

A POSITA would have been motivated to include DNS log summaries from the content provider DNS in the reports. Lin, ¶96.

Hasan discloses “reporting facilities” for logging detected events. §VI.A.3; *Hasan*, 15:9-12. This includes “accumulat[ing] the raw event information reported by the infrastructure devices” and “convert[ing the raw information] into useful reports” (summaries). *Hasan*, 15:9-12. When implemented in *Beaumont*’s network, the infrastructure devices would include DNS servers and the reports would thus include “DNS log summaries” from the content provider DNS server. Lin, ¶96. A POSITA would have been motivated to include this collected information in the combined GUI. §VI.A.3.

5. Claim 6: “wherein the information includes a number of requests directed to particular servers in a given time period”

Beaumont in view of *Hasan* discloses claim 6. Lin, ¶97-99.

Beaumont and *Hasan* disclose generating and providing reports, including DNS log summaries. §§VI.A.3, VI.A.4.

A POSITA would have been motivated to include the number of requests made to each content provider DNS server in a particular time period in the log summaries. Lin, ¶97.

Hasan teaches “set[ting] up a polling interval to query attribute values” via the GUI *Hasan*, 13:51-53. Through this polling interval, a POSITA would have

recognized that *Hasan*'s reports include activity recorded "in a given time period." Lin, ¶98. And *Beaumont* teaches logging the "number of times a content delivery server has been selected" (a "number of requests directed to particular servers") "within a given period (for example, one hour)" ("in a given time period")." *Beaumont*, [0029], [0031], Fig. 3.

A POSITA would have been motivated to track similar information regarding the content provider DNS servers in the *Beaumont-Hasan* system to allow better control of network traffic. §VI.A.3; Lin, ¶99. Reporting the number of requests made in a particular time period would allow policy setters to better identify potential failure points in the system and allocate network resources more efficiently. Lin, ¶99.

6. Claim 7: "wherein the reports are made available via a secure web-based GUI"

Beaumont in view of *Hasan* discloses claim 7. Lin, ¶100.

Beaumont as modified by *Hasan* discloses a web-based GUI for visualizing reported data. §§VI.A.2.c, VI.A.3. *Hasan*'s GUI is "secure" because access is restricted to specific administrators. *Hasan*, 8:41-47, 10:31-34, 13:17-20. For example, an administrator having subscriber privileges has access only to information for that subscriber. *Id.*, 9:14-16. A POSITA would have been motivated to include these features when incorporating the GUI into *Beaumont*'s network to

enable secure viewing of reported data in a convenient manner. Lin, ¶100; *Hasan*, 5:41-53.

7. Claim 8: “wherein the act (C) comprises: providing said at least one policy to the name server network as an XML file”

Beaumont in view of *Hasan* discloses claim 8. Lin, ¶101-02.

Beaumont discloses providing policies to the content provider DNS servers to be stored as a table, but does not explicitly state the format of the provided file. *Beaumont*, [0032]. *Hasan*, however, discloses that “[p]olicy information is stored in XML format.” *Hasan*, 4:60-64, 13:44-50.

A POSITA would thus have found XML as a suitable format for providing policies to the content provider DNS servers and would have recognized XML as one of a finite set of file-type options. Lin, ¶102.

8. Independent Claim 9

a. [9.pre.i]: “An administrative agent, operable in a framework in which an adaptive traffic control name server network implements policy-based traffic direction”

As explained for [1.pre.i], *Beaumont* discloses a “framework in which an adaptive traffic control name server network implements policy-based traffic direction.” §VI.A.2.a; Lin, ¶103. *Hasan* further discloses an administrative agent operable in this framework.

Hasan's administrative interface device (administrative agent) enables administrators to "configure individual devices, log servers, or services." *Hasan*, 6:28-31. Thus, when incorporated into *Beaumont*'s system, the administrative interface device would be operable in the framework. Lin, ¶104. A POSITA would have been motivated to incorporate *Hasan*'s administrative interface device into *Beaumont* to provide secure access to the GUI. *Id.*; *Hasan*, 6:2-8, 13:39-43; §VI.A.1.c.

- b. **[9.pre.ii]: "the name server network comprising at least one domain name server comprising hardware in combination with software and constructed and adapted to provide adaptive policy-based domain name service, said administrative agent comprising hardware in combination with software:"**

Beaumont in view of *Hasan* discloses [1.pre.ii]. Lin, ¶105-06.

As explained for [1.pre.ii], *Beaumont* discloses a "name server network comprising at least one domain name server comprising hardware in combination with software and constructed and adapted to provide adaptive policy-based domain name service." §VI.A.2.b; Lin, ¶105.

A POSITA would have understood *Hasan*'s administrative access interface ("administrative agent") is also implemented via hardware and software. *Hasan*, 4:39-58 ("combination of both hardware and software"), 5:63-6:14 (running an

“administrative application”), 6:28-36; Lin, ¶106. And a POSITA would have been motivated to include *Hasan*’s administrative access interface. §VI.A.8.a.

c. [9.a]: “constructed and adapted to: (a) provide a graphical user interface (GUI)”

As explained for [1.a], *Beaumont* in view of *Hasan* teaches providing a GUI. §VI.A.2.a; Lin, ¶107. *Hasan*’s GUI is provided via its administrative access interface (“administrative agent”) and thus *Beaumont* in view of *Hasan* also teaches [9.a]. *Hasan*, 5:63-6:14, 6:44-46, 13:39-43; Lin, ¶107.

d. [9.b]: “(b) use said GUI to obtain at least one policy for direction of network traffic, wherein the GUI supports the setting of said at least one policy using a decision tree representing rules”

As explained for [1.b], *Beaumont* in view of *Hasan* teaches “us[ing] said GUI to obtain at least one policy for direction of network traffic, wherein the GUI supports the setting of said at least one policy using a decision tree representing rules.” §VI.A.2.d. The administrative access interface (administrative agent) uses the GUI to obtain and set a policy as claimed, and thus *Beaumont* in view of *Hasan* also teaches [9.b]. *Hasan*, 6:28-36, 6:44-46; Lin, ¶108.

e. [9.c]: “(c) provide said at least one policy to the name server network”

As explained for [1.c], *Beaumont* in view of *Hasan* teaches “provid[ing] said at least one policy to the name server network.” §VI.A.2.e. When combined with *Hasan*, this policy would be received (and thus “provid[ed]”) through *Hasan*’s

administrative access interface (administrative agent) and *Beaumont* in view of *Hasan* thus teaches [9.c]. *Hasan*, 6:59-63; Lin, ¶109.

- f. **[9.d]: “wherein the decision tree comprises one or more resource nodes, and one or more branch nodes, wherein the one or more resource nodes specify one or more answers to be provided in response to a Domain Name Service (DNS) request, and wherein the one or more branch nodes specify one or more decision criteria to be applied”**

As explained for [1.d], *Beaumont* in view of *Hasan* teaches [9.d]. §VI.A.2.f; Lin, ¶110.

- g. **[9.e.i]: “wherein the GUI supports the specification of: (i) one or more answers for the one or more resource nodes”**

As explained for [1.e.i], *Beaumont* in view of *Hasan* teaches [9.e.i]. §VI.A.2.g; Lin, ¶111.

- h. **[9.e.ii]: “wherein the GUI supports the specification of: ... (ii) one or more decision criteria for the one or more branch nodes, wherein the one or more criteria are selected from criteria related to: world zones, countries, states, time zones, and blocks of Internet Protocol (IP) addresses”**

As explained for [1.e.ii], *Beaumont* in view of *Hasan* teaches [9.e.ii]. §VI.A.2.h; Lin, ¶112.

- i. **[9.f]: “wherein the one or more resource nodes are selected from: IP addresses, canonical name (CNAME) records, mail exchange (MX) records, name server (NS) records, and load sharing server sets”**

As explained for [1.f], *Beaumont* in view of *Hasan* teaches [9.f]. §VI.A.2.i;
Lin, ¶113.

- j. **[9.g]: “wherein the answers are selected from: IP addresses and CNAMEs.”**

As explained for [1.g], *Beaumont* in view of *Hasan* teaches [9.g]. §VI.A.2.j;
Lin, ¶114.

- 9. **Claim 12: “wherein said administrative agent comprises hardware in combination with software and constructed and adapted to: (d) generate reports based on information gathered from the name server network; and (e) provide said reports”**

As explained for claim 4, *Beaumont* in view of *Hasan* teaches claim 12.
§VI.A.3; Lin, ¶115.

- 10. **Claim 13: “wherein the information gathered from the name server network comprises: DNS log summaries from the at least one domain name server in the name server network”**

As explained for claim 5, *Beaumont* in view of *Hasan* teaches claim 13.
§VI.A.4; Lin, ¶116.

11. Claim 14: “wherein the information includes a number of requests directed to particular servers in a given time period”

As explained for claim 6, *Beaumont* in view of *Hasan* teaches claim 14.

§VI.A.5; Lin, ¶117.

12. Claim 15: “wherein the reports are made available via a secure web-based GUI”

As explained for claim 7, *Beaumont* in view of *Hasan* teaches claim 15.

§VI.A.6; Lin, ¶118.

13. Claim 16: “wherein said at least one policy is provided to the name server network as an XML file”

As explained for claim 8, *Beaumont* in view of *Hasan* teaches claim 16.

§VI.A.7; Lin, ¶119.

14. Independent Claim 17

- a. [17.pre.i]: “A system comprising: (A) an adaptive traffic control name server network comprising at least one domain name server comprising hardware in combination with software and constructed and adapted to provide adaptive policy-based domain name service”**

As explained for [9.pre.ii], *Beaumont* in view of *Hasan* teaches an adaptive traffic control name server network as claimed. §VI.A.8.a; Lin, ¶120.

- b. **[17.pre.ii]: “A system comprising: ... (B) an administrative agent comprising hardware in combination with software”**

As explained for [9.pre.i], *Beaumont* in view of *Hasan* teaches an administrative interface device (administrative agent). §VI.A.8.a; Lin, ¶121.

- c. **[17.a]: “constructed and adapted to: (a) provide a graphical user interface (GUI)”**

As explained for [9.a], *Beaumont* in view of *Hasan* teaches [17.a]. §VI.A.8.c; Lin, ¶122.

- d. **[17.b]: “(b) use said GUI to obtain at least one policy for direction of network traffic, wherein the GUI supports the setting of said at least one policy using a decision tree representing rules”**

As explained for [9.b], *Beaumont* in view of *Hasan* teaches [17.b]. §VI.A.8.d; Lin, ¶123.

- e. **[17.c]: “(c) provide said at least one policy to the name server network”**

As explained for [9.c], *Beaumont* in view of *Hasan* teaches [17.c]. §VI.A.8.e; Lin, ¶124.

- f. **[17.d]: “wherein the decision tree comprises one or more resource nodes, and one or more branch nodes, wherein the one or more resource nodes specify one or more answers to be provided in response to a Domain Name Service (DNS) request, and wherein**

the one or more branch nodes specify one or more decision criteria to be applied”

As explained for [9.d], *Beaumont* in view of *Hasan* teaches [17.d]. §VI.A.8.f; Lin, ¶125.

- g. [17.e.i]: “wherein the GUI supports the specification of: (i) one or more answers for the one or more resource nodes”**

As explained for [9.e.i], *Beaumont* in view of *Hasan* teaches [17.e.i]. §VI.A.8.g; Lin, ¶126.

- h. [17.e.ii]: “wherein the GUI supports the specification of: ... (ii) one or more decision criteria for the one or more branch nodes, wherein the one or more criteria are selected from criteria related to: world zones, countries, states, time zones, and blocks of Internet Protocol (IP) addresses”**

As explained for [9.e.ii], *Beaumont* in view of *Hasan* teaches [17.e.ii]. §VI.A.8.h; Lin, ¶127.

- i. [17.f]: “wherein the one or more resource nodes are selected from: IP addresses, canonical name (CNAME) records, mail exchange (MX) records, name server (NS) records, and load sharing server sets”**

As explained for [9.f], *Beaumont* in view of *Hasan* teaches [17.f]. §VI.A.8.i; Lin, ¶128.

j. [17.g]: “wherein the answers are selected from: IP addresses and CNAMEs.”

As explained for [9.g], *Beaumont* in view of *Hasan* teaches [17.g]. §VI.A.8.j; Lin, ¶129.

15. Claim 18: “wherein said administrative agent comprises hardware in combination with software and constructed and adapted to: (d) generate reports based on information gathered from the name server network; and (e) provide said reports”

As explained for claim 4, *Beaumont* in view of *Hasan* teaches claim 18. §VI.A.3; Lin, ¶130.

16. Claim 19: “wherein the information gathered from the name server network comprises: DNS log summaries from the at least one domain name server in the name server network”

As explained for claim 5, *Beaumont* in view of *Hasan* teaches claim 19. §VI.A.4; Lin, ¶131.

17. Claim 20: “wherein the information includes a number of requests directed to particular servers in a given time period”

As explained for claim 6, *Beaumont* in view of *Hasan* teaches claim 20. §VI.A.5; Lin, ¶132.

B. Ground 2: The Combination of *Beaumont*, *Hasan* and *Biliris* Renders Obvious Claims 2, 3, 10, and 11

1. Overview of Ground 2

a. *Biliris*

Like the '517 patent, *Biliris* deals with content delivery networks. Lin, ¶60; *Bigio*, 381 F.3d at 1325.

Biliris discloses a content distribution architecture in which content requests are shared among multiple content distribution networks. *Biliris*, Abstract. Accordingly, content requests can be distributed to better balance load across content distribution networks and servers. *Id.*, [0006], [0007]. *Biliris* describes a DNS outsourcing mechanism, in which a DNS name server resolves requests for part of a company's website. *Id.*, [0004], [0016], [0025]. For example, requests for a web page *www.xyz.com* may be served by the customer, but the subdomain *img.xyz.com* may be served by a DNS server of a specified network. *Id.*, [0025], [0026]. Accordingly, *Biliris*'s architecture allows for redirecting queries based on subdomains indicated in the request. *Id.*, [0025], [0027].

b. Motivation to Combine *Beaumont*, *Hasan*, and *Biliris*

As explained for Ground 1, a POSITA would have been motivated to combine *Beaumont* and *Hasan*. §VI.A.1.c; Lin, ¶133.

A POSITA would have also been motivated to combine *Biliris* with *Beaumont* and *Hasan*. Lin, ¶134-136. Like *Beaumont* (and the *Beaumont-Hasan* combination),

Biliris distributes requests among content delivery servers, resolves requests based on a client's domain, and returns answers based on a content server's IP address. *Biliris*, [0013], [0014], [0025]-[0026]; *see also Beaumont*, [0003]-[0004], [0018], [0022], [0024], [0030].

Biliris further teaches that network traffic can be handled even more effectively by distributing requests not just at the content provider level but also at the subdomain level. Lin, ¶135. *Biliris* explicitly acknowledges that DNS servers may be assigned to an entire domain, similar to the content provider DNS of *Beaumont*. *Compare Biliris*, [0025] (“entire domain (e.g. xyz.com) could ... be served by the CDN”) with *Beaumont*, [0018] (“content provider DNS 151 ... is the local DNS for domain ‘foo.com’”). However, *Biliris* further envisions a DNS server handling a portion of the domain, such as subdomain img.xyz.com, to improve load distribution. *Biliris*, [0006], [0007], [0025]. A POSITA would have been motivated to incorporate *Biliris*'s subdomain-level distribution into *Beaumont*'s architecture to achieve these benefits. Lin, ¶135.

Given the references' similarities, a POSITA would have had a reasonable expectation of success in implementing *Biliris*'s subdomain delegation into *Beaumont*'s architecture. Lin, ¶136. Further, applying *Biliris*'s teaching to *Beaumont-Hasan* would have been a straightforward use of a known technique to enhance a similar system or method in the same manner. *See KSR*, 550 U.S. at

417-18; Lin, ¶136. *Hasan* would improve the combination for the same reasons discussed above. §VI.A.1.c.

2. Claim 2: “wherein the at least one policy relates to direction of network traffic based on sub-domains of a domain of a subscriber”

The combination of *Beaumont*, *Hasan*, and *Biliris* discloses claim 2. Lin, ¶137-39.

Beaumont’s network uses a content provider DNS that resolves requests for a particular domain. For example, requests for “content provided by content provider, ‘www.foo.com,’” are referred to “content provider DNS 151 which is the local DNS for domain ‘foo.com.’” *Beaumont*, [0018]. Accordingly, the content provider DNS handles requests for all subdomains within that domain. *See id.*, [0003], [0023]; Lin, ¶137.

Like *Beaumont*, *Biliris* describes a content delivery network including DNS servers for directing network traffic. *Biliris*, [0014], [0025]. *Biliris*’s DNS server can serve “an entire domain (e.g. xyz.com)” (similar to *Beaumont*) or part of the site. *Id.*, [0025]. For example, “www.xyz.com may be served by the customer but img.xyz.com might be resolved by the CDN.” *Id.*, [0025], [0004]. Accordingly, *Biliris* discloses redirecting DNS queries (“network traffic”) based on sub-domains of a domain of a subscriber. *Id.*, [0025]; Lin, ¶138. A POSITA would have

understood that directing queries based on sub-domains would be accomplished via a policy. *Biliris*, [0027], [0032], claim 2; Lin, ¶138.

A POSITA would have been motivated to combine *Biliris*'s teachings with *Beaumont* and *Hasan* (§VI.B.1.b), and in the combined *Beaumont-Hasan-Biliris* system, at least one policy would direct network traffic based on sub-domains as disclosed by *Biliris*. Lin, ¶139.

3. Claim 3: “wherein the at least one policy that relates to direction of network traffic based on sub-domains of a domain of the subscriber relates to one or more of the sub-domains: “ftp”, “download”, “www”, and “images””

The combination of *Beaumont*, *Hasan*, and *Biliris* discloses claim 3. Lin, ¶140-42.

Beaumont-Hasan-Biliris teaches a policy for direction of network traffic based on sub-domains. §VI.B.2. One such sub-domain would be “images.”

Biliris expressly discloses a policy relating to an “images” sub-domain. *Biliris*, [0004]. For example, *Biliris* explains a domain “‘www.xyz.com’ may be served by the ‘xyz’ company’s own server but ‘images.xyz.com’ might be resolved by the CDN.” *Id.*; *see also* [0025]-[0027] (discussing redirection of “img.xyz.com”). A POSITA would have been motivated to combine *Biliris*'s teachings with *Beaumont* and *Hasan* (§VI.B.1.b) and in the combined *Beaumont-Hasan-Biliris*

system, at least one policy would direct network traffic based on the “images” sub-domain as disclosed by *Biliris*. Lin, ¶142.

4. Claim 10: “wherein the at least one policy relates to direction of network traffic based on sub-domains of a domain of a subscriber”

As explained for claim 2, *Beaumont* in view of *Hasan* and *Biliris* teaches claim 10. §VI.B.2; Lin, ¶143.

5. Claim 11: “wherein the at least one policy that relates to direction of network traffic based on sub-domains of a domain of the subscriber relates to one or more of the sub-domains: ‘ftp’, ‘download’, ‘www’, and ‘images’”

As explained for claim 3, *Beaumont* in view of *Hasan* and *Biliris* teaches claim 11. §VI.B.3; Lin, ¶144.

C. Grounds 3A and 3B: *Ben-Shaul* Renders Obvious Claims 1-20 and the Combination of *Ben-Shaul* and *Hasan* Renders Obvious Claims 1-20

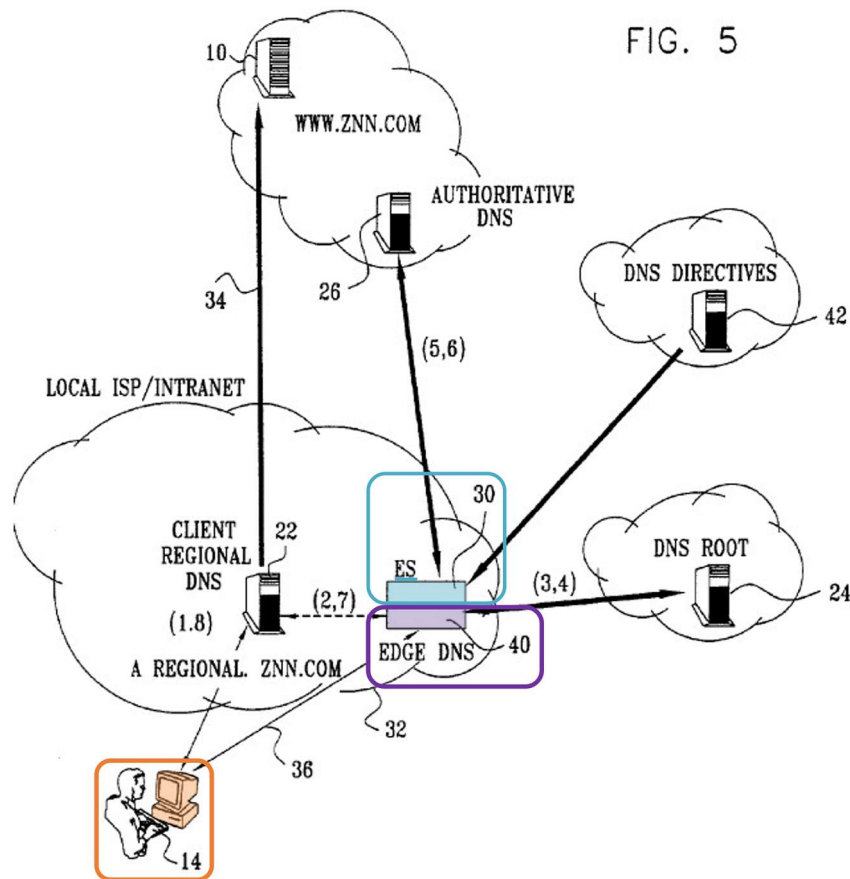
1. Overview of Grounds 3A and 3B

a. *Ben-Shaul*

Ben-Shaul discloses a “centralized and differentiated content and application delivery system” allowing delivery of content “based on regional and temporal preferences, client identity and content priority.” *Ben-Shaul*, Abstract; Lin, ¶61.

Ben-Shaul’s network includes **edge servers** and **EdgeDNS servers**:

FIG. 5



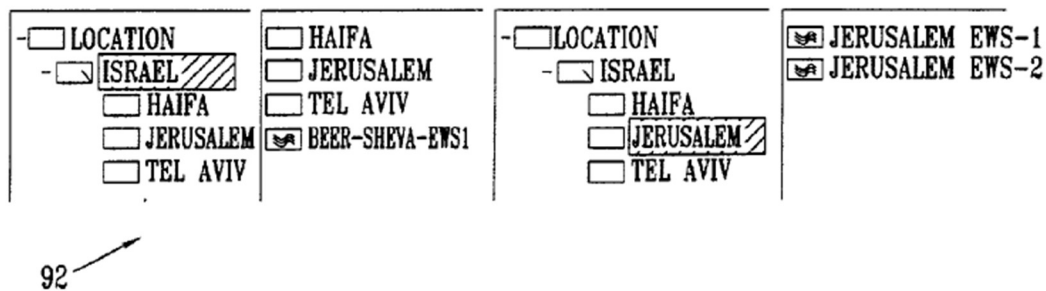
Id., Fig. 5. The **edge servers** are configured to deliver content based on requests from a **client** for selected objects. *Id.*, [0171]. The **EdgeDNS server** resolves DNS requests, returning the IP address of a selected **edge server**. *Id.*, [0041].

Ben-Shaul's DNS requests are resolved based on policies (*id.*, [0040], [0041], [0048], [0177]) defined through one or more directives (e.g., DNS directives) stored on a policy control server (*id.*, [0072], [0176], [0177]). Lin, ¶62. These directives are reflected in service profiles defining which directives apply to which server. *Ben-Shaul*, [0234], [0308]. For example, users may specify groups of

edge servers defining how requests are distributed. *Id.*, [0044], [0081], [0170], [0173], [0309].

Ben-Shaul also discloses various GUIs for specifying these directives. Lin, ¶63-64. For example, *Ben-Shaul* discloses a “highly graphical” CDML editor “that ease[s] the construction of CDML code” and thus the DNS directives (policies). *Ben-Shaul*, [0189], [0182], [0188]. *Ben-Shaul* also describes a front edge tool for defining service profiles containing directives. *Id.*, [0170], [0201], [0211]. The front edge tool includes a “hierarchical view” interface, presenting servers in a hierarchy of nodes, allowing administrators to define groups of edge servers:

FIG. 10



Id., Fig. 10, [0309], [0311], [0312]. The front edge tool further includes a directives editor for editing edge server directives. *Id.*, [0349].

Ben-Shaul further discloses various “statistics collection and reporting” features for collecting and merging relevant statistics from its servers. *Id.*, [0054], [0191], [0282], [0499]; Lin, ¶65.

b. Motivation to Combine *Ben-Shaul* and *Hasan*

As explained below, *Ben-Shaul* discloses or at least suggests every feature of independent claims 1, 9, and 17. Lin, ¶145.

In addition, the combination of *Ben-Shaul* and *Hasan* likewise discloses each of these claimed features. *Id.*, ¶146.

Ben-Shaul teaches specifying content delivery policies at “various levels of granularity, ranging from a single object, to an entire site.” *Ben-Shaul*, [0182]; Lin, ¶147.

Hasan discloses a GUI for exactly this type of policy specification. Lin, ¶148. Its Java-based, “platform independent” GUI takes the form of a “familiar tree structure.” *Hasan*, Abstract, 8:19-29, 18:9-20. And *Hasan*’s GUI allows administrators to “configure device and service configuration data and policy information.” *Id.*, 7:7-26.

Ben-Shaul too describes the use of a Java-based GUI employing a hierarchical tree structure (*e.g.*, *Ben-Shaul*, [0170], [0349]), and a POSITA would have been motivated to utilize *Hasan*’s GUI teachings with *Ben-Shaul* so that network administrators could easily configure *Ben-Shaul*’s DNS directives at “various levels of granularity,” using an intuitive and familiar tree-structure interface. Lin, ¶149; *Ben-Shaul*, [0182]; *Hasan*, 8:19-29. *Hasan* emphasizes the “platform-independent” nature of its GUI and its benefits, and a POSITA would thus have understood

Hasan's GUI for configuring network objects to be a suitable option for the "highly graphical" tools referenced in *Ben-Shaul* for policy setting, particularly in view of *Ben-Shaul*'s directive to utilize GUIs to ease policy construction. *Hasan*, 6:15-27, 8:30-47; *Ben-Shaul*, [0182]; *Lin*, ¶149; *Intel*, 21 F.4th at 800; *Par*, 773 F.3d at 1197-98.

Combining *Hasan*'s GUI teachings with *Ben-Shaul* would have been straightforward. *Lin*, ¶150. Both references describe editing policies via webpages. *See, e.g., Ben-Shaul*, [0182]; *Hasan*, 6:59-63. And a POSITA would have understood the combination to be a mere combination of known elements according to their known uses. Furthermore, applying *Hasan*'s teaching to *Ben-Shaul* would have been a straightforward use of a known technique to enhance a similar device or method in the same way. *See KSR*, 550 U.S. at 417-18; *Lin*, ¶150.

2. Independent Claim 1

a. [1.pre.i]

Ben-Shaul alone or in view of *Hasan* discloses this limitation. *Lin*, ¶151-52.

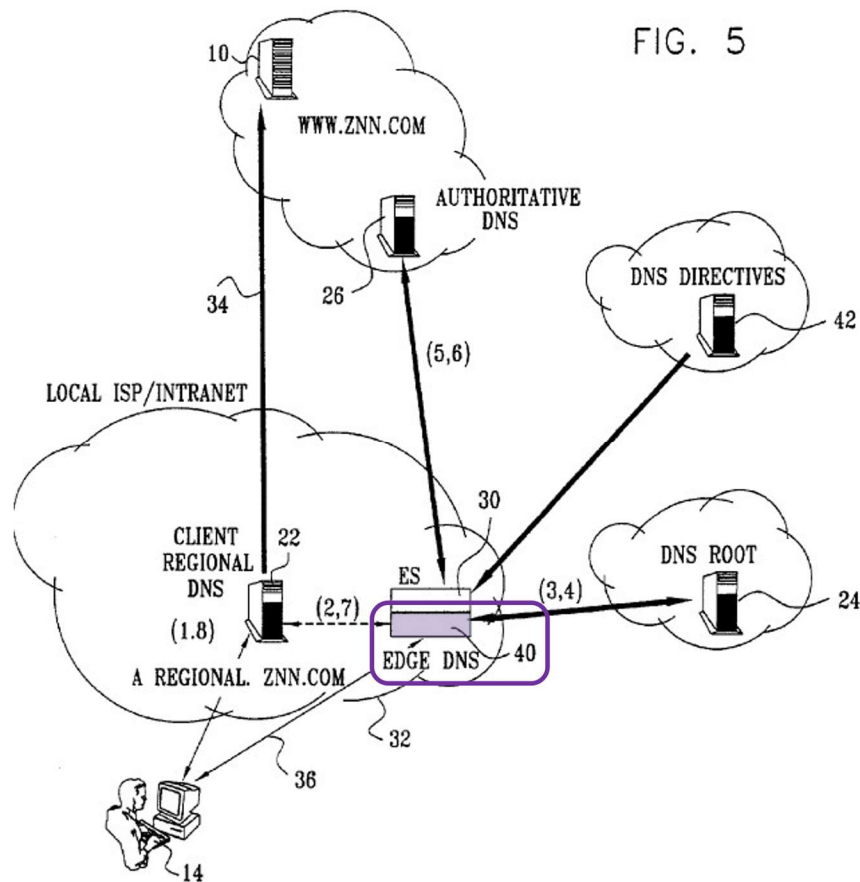
Like the '517 patent, *Ben-Shaul* discloses a method for using a network of EdgeDNS servers for dynamically responding to DNS requests. *Ben-Shaul*, [0119], [0171], [0177]. *Ben-Shaul*'s method operates in a "framework" in which the EdgeDNS servers (adaptive traffic control name servers) direct user content requests (traffic) based on specified policies. *Id.*, [0039], [0119], [0148], [0171], [0177]. *Ben-*

Shaul teaches that these policies may be dynamic, making the EdgeDNS servers “adaptive” in that they respond to changing network conditions and/or changing user directives. *Id.*, [0065], [0070], [0170], [0234]; Lin, ¶152. Combining *Ben-Shaul* with *Hasan* would not alter these teachings. Lin, ¶152.

- b. **[1.pre.ii]: “the name server network comprising at least one domain name server comprising hardware in combination with software and constructed and adapted to provide adaptive policy-based domain name service”**

Ben-Shaul alone or in view of *Hasan* discloses this limitation. Lin, ¶153-56.

Ben-Shaul discloses a network of **EdgeDNS servers** (name servers) for directing DNS requests:



Ben-Shaul, Fig. 5, [0170], [0175]-[0176]. The EdgeDNS is a server and thus includes hardware. Lin, ¶154; *Ben-Shaul*, Fig. 13, [0077] (explaining EdgeDNS is a “standard DNS server”). And *Ben-Shaul* provides specific examples of software executed by the EdgeDNS’s hardware (“hardware in combination with software”). *Ben-Shaul*, [0361]-[0364] (showing pseudocode fragments).

Ben-Shaul’s EdgeDNS servers “provide ... policy-based domain name service.” Each receives DNS requests and “is responsible to return the IP address” of the appropriate content server based on “edge server policy.” *Id.*, [0041], [0177];

Lin, ¶155. This service is “adaptive” in that requests are handled dynamically based on network conditions. *Ben-Shaul*, [0065].

Combining *Ben-Shaul* with *Hasan* would not alter these teachings. Lin, ¶156.

c. [1.a]: “(A) providing a graphical user interface (GUI)”

Ben-Shaul alone or in view of *Hasan* teaches [1.a]. Lin, ¶157-59.

First, *Ben-Shaul* teaches [1.a].

Ben-Shaul explains that the EdgeDNS (name server) selects content servers based on “edge server polic[ies]” originating from policy control servers. *Ben-Shaul*, [0041], [0176]-[0177]. *Ben-Shaul*’s policy is set through one or more GUIs provided to system users. *Id.*, [0182] (describing the graphical “CDML editor 50”), [0186] (same), [0313] (describing “edge server graphical representation” of front edge tool allowing “select[ing] and manipulat[ing]” server hierarchies and groupings), [0349] (describing front edge tool’s “[GUI] editor used for editing the edge server directives”), [0478] (describing edge manager GUI for “creating the hierarchical groups of edge servers”); Lin, ¶158.

Second, *Ben-Shaul* in view of *Hasan* teaches [1.a].

Hasan discloses a “GUI includ[ing] management applications such as a policy editor, a status editor, and a log/alert viewer.” *Hasan*, 6:59-63, Fig. 6A. This GUI is used to “configure device and service configuration data and policy information.”

Id., 7:14-21; 6:59-63. A POSITA would have been motivated to incorporate *Hasan*'s GUI into *Ben-Shaul* to provide a “familiar tree structure” for setting *Ben-Shaul*'s policy directives. §VI.C.1.b; Lin, ¶159. Combining *Ben-Shaul* with *Hasan* would not impact *Ben-Shaul*'s teachings of other limitations. Lin, ¶159.

- d. [1.b]: “(B) using said GUI to obtain at least one policy for direction of network traffic wherein the GUI supports the setting of said at least one policy using a decision tree representing rules”

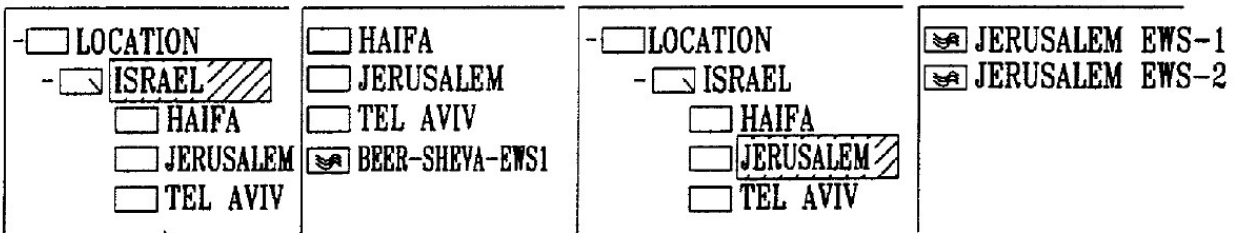
Ben-Shaul alone or in view of *Hasan* teaches [1.b]. Lin, ¶160-68.

First, *Ben-Shaul* teaches [1.b].

Ben-Shaul describes one or more GUIs for setting policy governing resolution of domain-name requests. §VI.C.2.c.

At least *Ben-Shaul*'s front edge tool GUI is for direction of network traffic and supports the setting of policies using a decision tree representing rules. *Ben-Shaul*'s front edge tool enables “predefin[ing] meaningful groups of edge servers” (content servers) “to simplify the application of policies applicable to a set of related edge servers.” *Ben-Shaul*, [0309]. The front edge tool is a GUI supporting grouping content servers in a hierarchical tree (supporting the setting of at least one policy) where individual “edge servers are leaves” (*id.*, [0311]), as shown in view 92 of the front edge tool, below:

FIG. 10



Id., Fig. 10, [0309]-[0313], [0352] (describing edge manager GUI for configuring server hierarchies). Because the front edge tool is for “simplify[ing] the application of policies,” including policies related to network traffic, it is for direction of network traffic. *Id.*, [0309], [0039] (describing policies including redirection policies); Lin, ¶162. The front edge tool’s hierarchical map is a “decision tree.” Lin, ¶163; *Ben-Shaul*, Fig. 10. For example, *Ben-Shaul* describes modifying a logical group of servers along with any “subtrees” of the group. *Ben-Shaul*, [0309], [0312]. A POSITA would have understood that the hierarchical map is a “decision” tree representing rules because directives apply based on inclusion of edge servers within the groups. Lin, ¶163.

A POSITA would also have been motivated to combine the various GUIs described in *Ben-Shaul*, and the combined GUI would teach this limitation. *Id.*, ¶164. For example, *Ben-Shaul* explains that the EdgeDNS servers redirect end-user requests to particular content servers based on “DNS and HTTP redirections

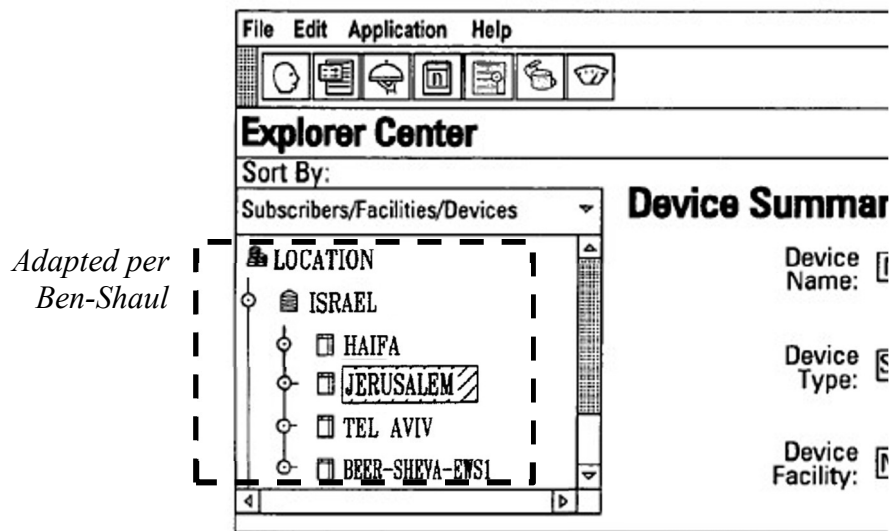
policies” implemented in CDML. *Ben-Shaul*, [0038]-[0039]. These policies are thus for “direction of network traffic” (*id.*), and are set through a graphical CDML editor (GUI) (*Ben-Shaul*, [0182], [0189]). Lin, ¶164. *Ben-Shaul* explains that the policies set through CDML editor 50 may “nest[]” in a hierarchy. *Ben-Shaul*, [0196]. As an example, *Ben-Shaul* describes a “tree” of policies, with, for example, region as a first branch and time as a second branch. *Id.*, [0197]. A POSITA would have understood that this nested structure is a decision tree representing rules—it defines server selection based on, e.g., region and then time. *Id.*; Lin, ¶164.

To the extent they are separate, it would have been obvious to implement *Ben-Shaul*’s front edge tool and CDML editor as a single GUI. Lin, ¶165. Both tools are used to edit CDML code (*Ben-Shaul*, [0350], [0431]), both are implemented at the same origin server (*id.*, [0211], [0182]), and both are used to shape policy for direction of network traffic (*id.*, [0038]-[0039], [0182], [0189], [0196]-[0197], [0309]-[0312]). Combining the tools into a single GUI (“the *Ben-Shaul* single GUI”) would streamline policy setting, and a POSITA would have understood the benefits of providing policy setters with a single easy-to-use interface such as the front edge tool’s tree structure. *Id.*, Fig. 10; Lin, ¶165. In the *Ben-Shaul* single GUI, policy setters could both define groups of servers as described in relation to the front edge tool (*Ben-Shaul*, [0309]-[0313]) and set the policy for network traffic direction applicable to each group of servers as described in relation to the CDML editor (*id.*,

[0038]-[0039], [0182], [0189], [0196]-[0197]). Lin, ¶165. The *Ben-Shaul* single GUI would thus allow defining “meaningful grouping[s] of edge servers” specifying which “policies [are] applicable to a set of related edge servers” and thus would “support[] the setting of said at least one policy using a decision tree representing rules” for the same reasons the front edge tool does. *Ben-Shaul*, [0309]. And the *Ben-Shaul* single GUI would be “us[ed] ... to obtain at least one policy for direction of network traffic” because it enables editing of the directives in CDML code. *Id.*, [0182].

Second, *Ben-Shaul* in view of *Hasan* teaches [1.b].

Like *Ben-Shaul*, *Hasan* describes a GUI used to edit policy. *Hasan*, 6:59-63; §VI.C.2.c. As previously explained, a POSITA would have been motivated to incorporate *Hasan*’s GUI into *Ben-Shaul* to provide a “familiar tree structure” in setting policy directives in *Ben-Shaul*. §VI.C.1.c; Lin, ¶166. And a POSITA would have recognized that *Hasan*’s “familiar tree structure” GUI could readily be implemented for setting policy directives in *Ben-Shaul*. Lin, ¶166. For example, *Hasan*’s GUI could be used to set policy for the network described in Fig. 10 of *Ben-Shaul*:



Id. (showing combination of *Hasan*, Fig. 6a and *Ben-Shaul*, Fig. 10).

In the combined *Ben-Shaul-Hasan* GUI, the policy setter could select an object, e.g., “Jerusalem” and edit the policy applicable to that server (or group of servers). *Hasan*, 8:30-37, 10:25-34, 10:53-67. The combined GUI would thus allow editing *Ben-Shaul*’s CDML-based policies and would be “us[ed] ... to obtain at least one policy for direction of network traffic.” Lin, ¶167.

Further, *Hasan* teaches that its GUI allows users to add or remove objects to various subbranches of the hierarchy. *Hasan*, 17:11-13. Accordingly, the combined *Ben-Shaul-Hasan* GUI would enable defining groups of edge servers, thus affecting which policies apply to which servers, as described in *Ben-Shaul*. *Ben-Shaul*, [0173]. A POSITA would thus have recognized that the combined GUI “supports the setting of said at least one policy” through defining which policies apply to which servers. Lin, ¶168. And the combined GUI uses “a decision tree representing rules” because

it is a listing of applicable policies presented in a “familiar tree structure.” *Id.* Incorporating *Hasan*’s GUI would not impact *Ben-Shaul*’s teachings discussed for other limitations. *Id.*

e. [1.c]: “(C) providing said at least one policy to the name server network”

Ben-Shaul alone or in view of *Hasan* teaches [1.c]. Lin, ¶169-70.

The policies defined in *Ben-Shaul* may be stored “in the origin web server 46 under a special CDML directory, or in a policy control server 42.” *Ben-Shaul*, [0188]. Each EdgeDNS server receives the policy directives from policy control server 42 and is therefore provided “at least one policy.” *Id.*, [0177].

f. [1.d]: “wherein the decision tree comprises one or more resource nodes, and one or more branch nodes, wherein the one or more resource nodes specify one or more answers to be provided in response to a Domain Name Service (DNS) request, and wherein the one or more branch nodes specify one or more decision criteria to be applied”

Ben-Shaul alone or in view of *Hasan* teaches [1.d]. Lin, ¶171-80.

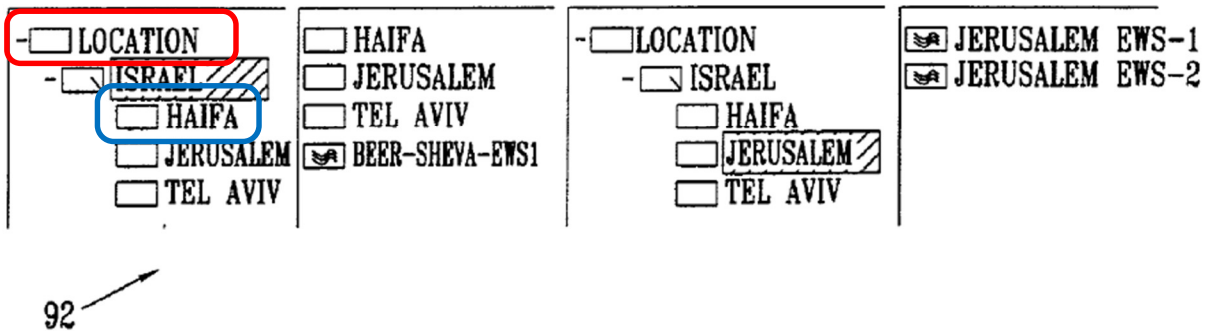
First, *Ben-Shaul* teaches [1.d].

Ben-Shaul’s front edge tool uses the same form of decision tree described in the ’517 patent. §III.B; Lin, ¶172. Both the front edge tool itself and the *Ben-Shaul* single GUI would utilize this structure. §VI.C.2.d.

Both the front edge tool and the *Ben-Shaul* single GUI allow administrators to construct hierarchies of edge servers (a “decision tree”) for effecting directives.

Ben-Shaul, [0309]; §VI.C.2.d. In this tree, “the **edge servers** are leaves [(“resource nodes”)] and **internal nodes** [(“branch nodes”)] represent logical aggregations of nodes”:

FIG. 10



Ben-Shaul, [0311], Fig. 10; Lin, ¶173. Administrators may construct a group based, e.g., on region, as shown in Fig. 10 (*id.*, [0039], [0309]) such that policies are applied to any edge server within the group (*id.*, [0285], [0289], [0308], [0309]).

The groups defined by the internal nodes “specify one or more decision criteria to be applied,” because they “represent logical aggregations of nodes” based on a particular decision criteria, e.g., location. *Id.*, [0310]-[0311]; Lin, ¶174. A DNS request is thus directed to an edge server based on that server’s association with the group. *Ben-Shaul*, [0044].

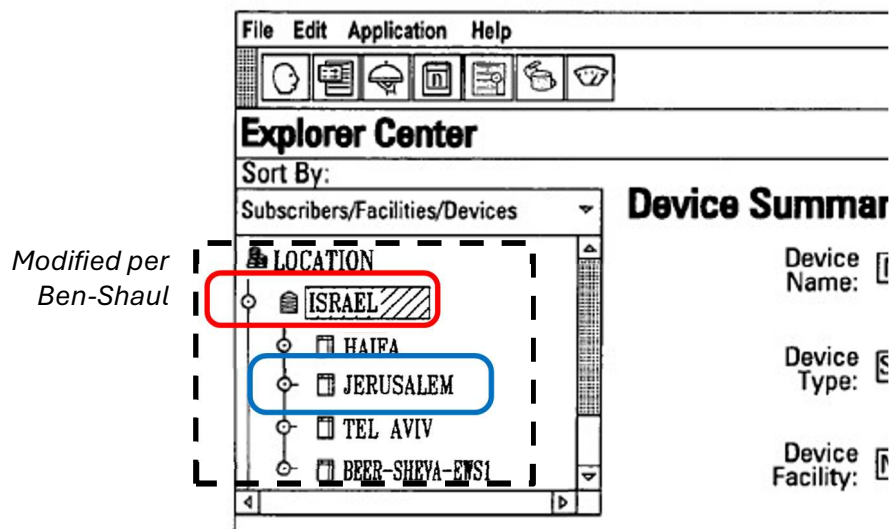
The edge server “leaves” “specify one or more answers to be provided in response to a Domain Name Service (DNS) request” because an IP address for a selected server is provided as an answer to a DNS request. *Id.*, [0041].

In the example above, the IP address for the server “Haifa” (“one or more answers”) may be returned based on its location in Israel (“one or more decision criteria”). *Id.*, Fig. 10; Lin, ¶175.

Second, the combination of *Ben-Shaul* and *Hasan* teaches [1.d].

A POSITA would have been motivated to combine *Hasan*’s GUI teachings with *Ben-Shaul* to provide a GUI for setting policies. §VI.C.2.d. The combined *Ben-Shaul-Hasan* GUI includes a decision tree with resource nodes and branch nodes as claimed. Lin, ¶176.

As *Hasan* explains, its GUI may show “a hierarchical layout of [a] data center” in “the familiar tree structure, with ... the branches being the facilities, subscribers, devices and log servers.” *Hasan*, 8:19-29. In the combined GUI, **higher-level branches** (“branch nodes”) may represent regions or groups, such as Israel, where **subbranches** (“resource nodes”) are edge servers:



Lin, ¶177 (showing combination of *Hasan*, Fig. 6A and *Ben-Shaul*, Fig. 10); *Ben-Shaul*, [0044].

A POSITA would have recognized the edge server leaves “specify one or more answers to be provided in response to a Domain Name Service (DNS) request” because each leaf specifies the IP address for an edge server, e.g., in a particular city. *Ben-Shaul*, [0041]-[0042], [0044] (describing “differentiat[ing] delivery based on the location or the organization membership of the edge server”); Lin, ¶178. The higher-level branches “specify one or more decision criteria to be applied,” because DNS requests may be routed according to group characteristics of edge servers such as “region, language, interest, organization type, security level, edge server specification and capabilities, communication speeds, subgroups, type of events, etc.” *Ben-Shaul*, [0039], [0044]. This functionality would remain intact when incorporating *Hasan*’s GUI. Lin, ¶179.

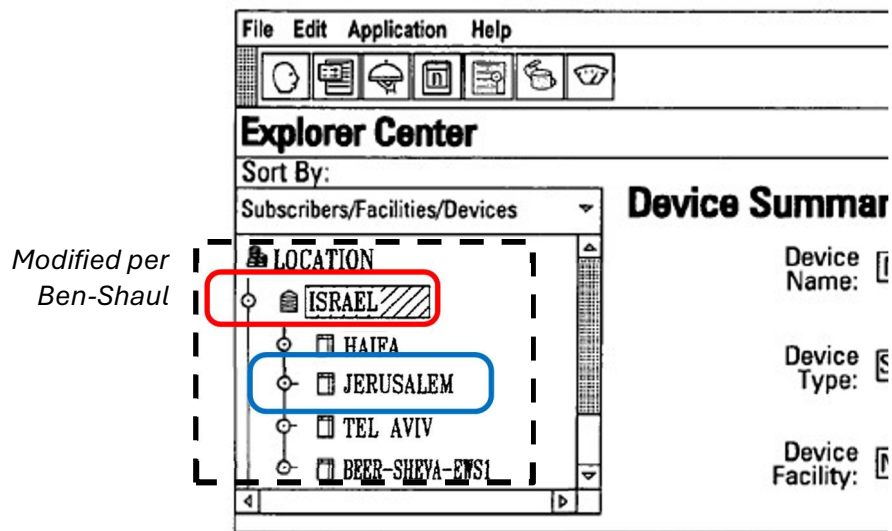
g. [1.e.i]: “wherein the GUI supports the specification of: (i) one or more answers for the one or more resource nodes”

Ben-Shaul alone or in view of *Hasan* teaches [1.e.i]. Lin, ¶180-83.

In both *Ben-Shaul* and *Ben-Shaul-Hasan*, the edge server leaves represent “one or more answers” because an IP address for a selected server is provided as an answer to a DNS request. §VI.C.2.f.

First, regarding *Ben-Shaul* alone, both the front edge tool and the *Ben-Shaul* single GUI (§VI.C.2.d) support specification of a particular edge server (an answer) for the one or more resource nodes. Lin, ¶182. For example, the front edge tool and the *Ben-Shaul* single GUI allow policy setters to “construct hierarchies of edge servers” (*Ben-Shaul*, [0309]) and “manipulate the hierarchies in an easy and intuitive manner” (*id.*, [0313]), which would include identifying the edge server that should be returned under particular conditions (*id.*, [0041], [0055], [0119], [0177], [0313], Fig. 10). Lin, ¶182.

Second, the combined *Ben-Shaul-Hasan* GUI supports the specification of these answers because it allows the user to specify an edge server IP address to be returned based on, for example, that edge server’s location. *Hasan*, 8:19-46; *Ben-Shaul*, [0044]; Lin, ¶183; §VI.C.2.f. *Hasan*’s GUI enables users to add or remove objects (e.g., edge servers) from various subbranches, which allows specification of “answers” in those subbranches. *Hasan*, 17:11-13; Lin, ¶183. For example, the policy setter could specify which servers are available as “answers” under each “country”:



Lin, ¶183 (showing combination of *Hasan*, Fig. 6A and *Ben-Shaul*, Fig. 10); *Ben-Shaul*, [0044].

- h. [1.e.ii]: “wherein the GUI supports the specification of: ... (ii) one or more decision criteria for the one or more branch nodes, wherein the one or more criteria are selected from criteria related to: world zones, countries, states, time zones, and blocks of Internet Protocol (IP) addresses”

Ben-Shaul alone or in view of *Hasan* teaches [1.e.ii]. Lin, ¶184-86.

First, both *Ben-Shaul*’s front edge tool and the *Ben-Shaul* single GUI (§VI.C.2.d) further support specification of one or more decision criteria through the definition of edge server groups. *Ben-Shaul*, [0313]; Lin, ¶185. These groups allow for “[r]egional and group differentiation” for translating a URL “depending on the region or organization in which the request is made.” *Ben-Shaul*, [0044], [0082]. These groups are decision criteria because policy application hinges on which of the groups is implicated. §VI.C.2.f. *Ben-Shaul* expressly discloses decision criteria

based on world zones (*id.*, [0082] (“geographical region”)) and countries (*id.*, Fig. 10 (example “Israel” group)). As another example, *Ben-Shaul* discloses local time as a primary policy determinant, thus disclosing time zones as a decision criterion. *Id.*, [0196]-[0197]. The criteria further includes “internet location,” which a POSITA would have understood to include blocks of IP addresses. *Id.*, [0044]; Lin, ¶185.

Second, the combined *Ben-Shaul-Hasan* GUI would allow for defining groups based on at least the same decision criteria described in *Ben-Shaul* and thus *Ben-Shaul* combined with *Hasan* also discloses [1.e.ii]. Lin, ¶186; *see Hasan*, Fig. 6A.

- i. **[1.f]: “wherein the one or more resource nodes are selected from: IP addresses, canonical name (CNAME) records, mail exchange (MX) records, name server (NS) records, and load sharing server sets”**

Ben-Shaul alone or in view of *Hasan* teaches [1.f]. Lin, ¶187-89.

First, in *Ben-Shaul*’s front edge tool and single GUI, the “leaves” (“resource nodes”) are edge servers. *Ben-Shaul*, [0311]; Lin, ¶188; §VI.C.2.e; *see* EX-1001, 9:30-31. *Ben-Shaul* expressly discloses representing the edge servers as IP addresses because within the front edge tool, administrators may “add [and] ... remove edge servers” and “modify ... edge server properties, e.g., IP address[es].” *Ben-Shaul*, [0328]. The functionality would persist in the *Ben-Shaul* single GUI. Lin, ¶188. *Ben-*

Shaul also expressly identifies CNAME, NS, and MX as alternative record types. *Ben-Shaul*, [0011].

Second, the combined *Ben-Shaul-Hasan* GUI applies *Hasan*'s GUI teachings to *Ben-Shaul*, and the combined system would likewise represent edge servers as IP addresses, CNAMEs, NS records, or MX records as suggested in *Ben-Shaul*. Lin, ¶189; *see Hasan*, 8:61-64, 17:41-55.

j. [1.g]: “wherein the answers are selected from: IP addresses and CNAMEs.”

Ben-Shaul alone or in view of *Hasan* teaches [1.g]. Lin, ¶190-92.

The resource nodes in *Ben-Shaul* (in both the front edge tool and the single GUI) and the combined *Ben-Shaul-Hasan* GUI are composed of individual servers that may be represented by IP addresses or CNAMEs. §VI.C.2.i. Indeed, *Ben-Shaul* explicitly discloses IP addresses and CNAMEs as answers to DNS requests, and a POSITA would similarly have used IP addresses to answer DNS requests when combining *Ben-Shaul* and *Hasan*. *Ben-Shaul*, [0041] (“EdgeDNS is responsible to return the IP address of ... the edge server”), [0009], [0016], [0119], [0177], [0373]; *Hasan*, 8:61-64, 17:41-55; Lin, ¶191-92.

3. Claim 2: “wherein the at least one policy relates to direction of network traffic based on sub-domains of a domain of a subscriber”

Ben-Shaul alone or in view of *Hasan* teaches claim 2. Lin, ¶193-95.

Ben-Shaul discloses policies set through a GUI. §VI.C.2.d. As one example, these policies allow for a “subdomain delegation” process, in which “responsibility ... for some part of [a] domain” is assigned “to other Authoritative Name Servers.” *Ben-Shaul*, [0170]. Though an EdgeDNS may typically act as an authoritative DNS server for a particular zone (*id.*, [0177]), through subdomain delegation, portions of the zone may be delegated to other DNS servers. *Id.* A zone thus contains “all the domain names and data of a domain, except for domain names and data in delegated subdomains of that domain.” *Id.* These policies therefore relate to direction of network traffic based on subdomains. *Id.*, [0041], [0053], [0177]; Lin, ¶194.

A POSITA would have understood this subdomain delegation to be configurable through the GUI, irrespective of whether that GUI was *Ben-Shaul*’s front edge tool, the *Ben-Shaul* single GUI, or the *Ben-Shaul-Hasan* GUI. Lin, ¶195. Policies in *Ben-Shaul* are defined using CDML code, which is editable through a GUI. §VI.C.2.d; *Ben-Shaul*, [0182]. And *Ben-Shaul*’s subdomain delegation directives are included in this CDML code. *Id.*, [0496], [0203]-[0204] (providing sample CDML file including subdomain delegation directive).

4. **Claim 3: “wherein the at least one policy that relates to direction of network traffic based on sub-domains of a domain of the subscriber relates to one or more of the sub-domains: ‘ftp’, ‘download’, ‘www’, and ‘images’”**

Ben-Shaul alone or in view of *Hasan* teaches claim 3. Lin, ¶196-97.

Ben-Shaul discloses policies delegating custom lists of subdomains. *Id.*, [0204], [0170] (subdomain “test.versedge.com”). A POSITA would have understood these user-defined lists could encompass any sub-domain and thus includes “ftp,” “download,” “www,” and “images.” Lin, ¶197. *Ben-Shaul* explicitly lists “www” as an example subdomain. *Ben-Shaul*, [0203] (“www.intra.versedge.com”).

A POSITA would have understood these policies are configured through the GUI (either *Ben-Shaul*’s front edge tool, the *Ben-Shaul* single GUI, or the *Ben-Shaul-Hasan* GUI). §VI.C.3; Lin, ¶197.

5. Claim 4: “further comprising: (D) generating reports based on information gathered from the name server network; and (E) providing said reports”

Ben-Shaul alone or in view of *Hasan* teaches claim 4. Lin, ¶198-205.

First, *Ben-Shaul* teaches claim 4.

Ben-Shaul describes “collecti[ng] and reporting” relevant statistics from servers (*Ben-Shaul*, [0054], [0191], [0282]), which a POSITA would have understood apply equally to the EdgeDNS servers (the name server network). Lin, ¶199; *Ben-Shaul*, [0369] (describing monitoring the EdgeDNS (name) servers for failure recovery). A POSITA would have recognized that the same logging process could be equally applied to the EdgeDNS servers in order to facilitate status

monitoring, and a POSITA would have been motivated to do so in view of *Ben-Shaul*'s description. Lin, ¶199.

Ben-Shaul discloses that the server reports include various log information, such as “connections, requests, replies, errors, cache actions, translations, etc.,” which a POSITA would have understood to include “information gathered from the name server network.” *Ben-Shaul*, [0499]; Lin, ¶200.

Ben-Shaul further discloses providing the “report to the origin web server.” *Ben-Shaul*, [0282], [0500]. This origin server provides a “computer graphics interface program” to “accept and process” the logged information, indicating user accessibility. *Id.*, [0282]; Lin, ¶201.

Second, *Ben-Shaul* in view of *Hasan* teaches claim 4.

Hasan discloses “reporting facilities” for presenting detected event logs. *Hasan*, 15:9-12. For example, *Hasan* describes “[l]ogging and monitoring servers ... to record events ... and provide standard format output reports to the administrator.” *Id.*, 6:64-67. These logs are viewable through *Hasan*'s tree-structure GUI. *Id.*, 10:53-67, 11:11-15. *Hasan* thus discloses “generating reports based on information gathered from [a] network; and ... providing said reports.” Lin, ¶202. When combined with *Ben-Shaul*, this network would be a name server network.

§VI.C.2.d.

When incorporating *Hasan*'s GUI teachings into *Ben-Shaul*, a POSITA would have been motivated to include these report logging and viewing aspects for presenting relevant information in an intuitive manner. For example, *Hasan*'s GUI includes a "log event application, which reports log events and alerts within the scope of the object selected in the component tree pane." *Hasan*, 10:53-67. Accordingly, the combined GUI would allow an administrator in *Ben-Shaul*'s system to view log information associated with a particular edge server. And *Ben-Shaul*'s network already supports collecting and reporting log information. *See, e.g., Ben-Shaul*, [0054], [0191], [0282]. Accordingly, combining *Ben-Shaul* and *Hasan* would have amounted to application of known techniques to achieve predictable results. Lin, ¶203.

6. Claim 5: "wherein the information gathered from the name server network comprises: DNS log summaries from the at least one domain name server in the name server network"

Ben-Shaul alone or in view of *Hasan* teaches claim 5. Lin, ¶204-06.

As described above, *Ben-Shaul* alone or in combination with *Hasan* describes logging and reporting edge server information. §VI.C.5.

A POSITA would have been motivated to include DNS log summaries in this information. Lin, ¶205. The information gathered from servers includes "connections, requests, [and] replies." *Ben-Shaul*, [0499]. And rather than "ship[ping] raw data," the server may "process and summarize the statistics data

before sending it.” *Id.*, [0500]. As explained, these summaries would include EdgeDNS server data. §VI.C.5.

Further, *Hasan* likewise discloses “accumulat[ing] ... raw event information reported by the infrastructure devices” and “convert[ing the raw information] into useful reports,” which a POSITA would have understood to be a summary. *Hasan*, 9:15-40; Lin, ¶206. In *Ben-Shaul-Hasan*, these infrastructure devices would include EdgeDNS servers. Lin, ¶206. A POSITA would have been motivated to incorporate these DNS log summaries of *Hasan* into *Ben-Shaul* to enable viewing of “useful reports” in an intuitive manner. *Id.*

7. Claim 6: “wherein the information includes a number of requests directed to particular servers in a given time period”

Ben-Shaul alone or in view of *Hasan* teaches claim 6. Lin, ¶207-08.

Ben-Shaul and *Hasan* both describe logging and reporting network information. §VI.C.5. *Ben-Shaul* suggests logging requests received at each edge server (requests directed to particular servers). *Ben-Shaul*, [0499]. *Ben-Shaul* further explains reporting information periodically (e.g., at configurable intervals). *Id.*, [0282]. Because the reports would include requests logged during the reporting interval, a POSITA would have recognized that the reported information in *Ben-Shaul* (alone or combined with *Hasan*) represents a number of requests in a given time period (reporting interval). Lin, ¶208; *see Hasan*, 13:51-53.

8. Claim 7: “wherein the reports are made available via a secure web-based GUI”

Ben-Shaul alone or in combination with *Hasan* teaches claim 7. Lin, ¶209-11.

As described above, *Ben-Shaul* alone or in combination with *Hasan* describes logging and reporting network information. §VI.C.5.

Further, *Ben-Shaul* suggests transmitting these reports to an origin server. *Ben-Shaul*, [0282]. This origin server provides a “computer graphics interface program” (web-based GUI) to “accept and process” the logged information and allows administrators to configure the “reporting frequency and the level of detail of the reports.” *Id.* To restrict access to administrators, a POSITA would have secured the GUI, and techniques for securing access were well-known in the art. Lin, ¶210. Indeed, *Ben-Shaul* describes “secured authenticated access to profile data” at the origin web site. *Ben-Shaul*, [0333], [0337].

Hasan similarly provides a “Java based graphical user interface” via a web browser (web-based GUI). *Hasan*, 6:59-63, 13:39-43, 21:30-31. *Hasan*’s GUI is “secure” because access is restricted to specific administrators. *Id.*, 8:41-47, 9:14-16, 10:31-34, 13:17-20. To the extent not already disclosed in *Ben-Shaul*, a POSITA would have been motivated to incorporate the secure web-based GUI of *Hasan* to enable secure and convenient viewing of reported data. Lin, ¶211.

9. Claim 8: “wherein the act (C) comprises: providing said at least one policy to the name server network as an XML file”

Ben-Shaul alone or in view of *Hasan* teaches claim 8. Lin, ¶212-13.

Ben-Shaul’s policies are specified in an XML-based content delivery markup language (CDML). *Ben-Shaul*, [0037], [0074], [0196]; Lin, ¶213. Its policy directives are stored in XML files. *Ben-Shaul*, [0432]-[0433]. To the extent not explicitly disclosed, it would have been simple and straightforward for a POSITA to distribute the policies as XML files. Lin, ¶213; *Ben-Shaul*, [0432]. Combining *Ben-Shaul* with *Hasan* would not alter these teachings. Lin, ¶213; *Hasan*, 13:44-50.

10. Independent Claim 9

a. [9.pre.i]: “An administrative agent, operable in a framework in which an adaptive traffic control name server network implements policy-based traffic direction”

Ben-Shaul alone or in view of *Hasan*, discloses this limitation. Lin, ¶214-16.

As explained for [1.pre.i], *Ben-Shaul*, alone or in view of *Hasan*, discloses a “framework in which an adaptive traffic control name server network implements policy-based traffic direction.” §VI.C.2.a; Lin, ¶215.

Ben-Shaul further discloses an administrative agent operable in this framework. Its system includes an origination component 116 (administrative agent) that “resides in the origin web server.” *Ben-Shaul*, [0345]. The origination component includes the directives editor 122 (part of the front edge tool) and thus

implements the hierarchical GUI discussed for [1.b]. *Id.*, [0349], [0431], [0434]; *see id.*, [0182] (describing similar content delivery manager in conjunction with the CDML editor). Combining *Ben-Shaul* with *Hasan* would not alter these teachings. Lin, ¶216.

- b. **[9.pre.ii]: “the name server network comprising at least one domain name server comprising hardware in combination with software and constructed and adapted to provide adaptive policy-based domain name service, said administrative agent comprising hardware in combination with software:”**

Ben-Shaul alone or in view of *Hasan* discloses this limitation. Lin, ¶217-19.

As explained for [1.pre.ii], *Ben-Shaul*, alone or in view of *Hasan*, discloses a “name server network comprising at least one domain name server comprising hardware in combination with software and constructed and adapted to provide adaptive policy-based domain name service.” §VI.C.2.b; Lin, ¶218.

Ben-Shaul’s origination component (administrative agent) is implemented at the origin server and thus includes hardware in combination with software. *Ben-Shaul*, [0281], Fig. 12; Lin, ¶219. Combining *Ben-Shaul* with *Hasan* would not alter these teachings. Lin, ¶219.

- c. **[9.a]: “constructed and adapted to: (a) provide a graphical user interface (GUI)”**

As explained for [1.a], *Ben-Shaul* alone or in view of *Hasan* teaches providing a GUI. §VI.C.2.c. In either *Ben-Shaul* or *Ben-Shaul-Hasan*, this GUI is provided by

the origination component (administrative agent) (§VI.C.10.a) and thus *Ben-Shaul* alone or in view of *Hasan* also teaches [9.a]. *Ben-Shaul*, [0346]; Lin, ¶220.

- d. [9.b]: “(b) use said GUI to obtain at least one policy for direction of network traffic, wherein the GUI supports the setting of said at least one policy using a decision tree representing rules”**

As explained for [1.b], *Ben-Shaul* alone or in view of *Hasan* teaches “us[ing] said GUI to obtain at least one policy for direction of network traffic, wherein the GUI supports the setting of said at least one policy using a decision tree representing rules.” §VI.C.2.d. In either *Ben-Shaul* or *Ben-Shaul-Hasan*, the origination component (administrative agent) uses the GUI to obtain and set a policy as claimed, and thus *Ben-Shaul* alone or in view of *Hasan* also teaches [9.b]. *Ben-Shaul*, [0349]; Lin, ¶221.

- e. [9.c]: “(c) provide said at least one policy to the name server network”**

As explained for [1.c], *Ben-Shaul* alone or in view of *Hasan* teaches “provid[ing] said at least one policy to the name server network.” §VI.C.2.e. *Ben-Shaul*’s origination component (administrative agent) “is responsible for creating and deploying the directives” (policies), and thus *Ben-Shaul* alone or in view of *Hasan* also teaches [9.c]. *Ben-Shaul*, [0345]-[0346]; Lin, ¶222.

- f. [9.d]: “wherein the decision tree comprises one or more resource nodes, and one or more branch nodes, wherein the one or more resource nodes specify one or more answers to be provided in response to a**

Domain Name Service (DNS) request, and wherein the one or more branch nodes specify one or more decision criteria to be applied”

As explained for [1.d], *Ben-Shaul* alone or in view of *Hasan* teaches [9.d].

§VI.C.2.f; Lin, ¶223.

- g. [9.e.i]: “wherein the GUI supports the specification of: (i) one or more answers for the one or more resource nodes”**

As explained for [1.e.i], *Ben-Shaul* alone or in view of *Hasan* teaches [9.e.i].

§VI.C.2.g; Lin, ¶224.

- h. [9.e.ii]: “wherein the GUI supports the specification of: ... (ii) one or more decision criteria for the one or more branch nodes, wherein the one or more criteria are selected from criteria related to: world zones, countries, states, time zones, and blocks of Internet Protocol (IP) addresses”**

As explained for [1.e.ii], *Ben-Shaul* alone or in view of *Hasan* teaches [9.e.ii].

§VI.C.2.h; Lin, ¶225.

- i. [9.f]: “wherein the one or more resource nodes are selected from: IP addresses, canonical name (CNAME) records, mail exchange (MX) records, name server (NS) records, and load sharing server sets”**

As explained for [1.f], *Ben-Shaul* alone or in view of *Hasan* teaches [9.f].

§VI.C.2.i; Lin, ¶226.

j. [9.g]: “wherein the answers are selected from: IP addresses and CNAMEs.”

As explained for [1.g], *Ben-Shaul* alone or in view of *Hasan* teaches [9.g].

§VI.C.2.j; Lin, ¶227.

11. Claim 10: “wherein the at least one policy relates to direction of network traffic based on sub-domains of a domain of a subscriber”

As explained for claim 2, *Ben-Shaul* alone or in view of *Hasan* teaches claim 10. §VI.C.3; Lin, ¶228.

12. Claim 11: “wherein the at least one policy that relates to direction of network traffic based on sub-domains of a domain of the subscriber relates to one or more of the sub-domains: ‘ftp’, ‘download’, ‘www’, and ‘images’”

As explained for claim 3, *Ben-Shaul* alone or in view of *Hasan* teaches claim 11. §VI.C.4; Lin, ¶229.

13. Claim 12: “wherein said administrative agent comprises hardware in combination with software and constructed and adapted to: (d) generate reports based on information gathered from the name server network; and (e) provide said reports”

As explained for claim 4, *Ben-Shaul* alone or in view of *Hasan* teaches claim 12. §VI.C.5; Lin, ¶230.

14. Claim 13: “wherein the information gathered from the name server network comprises: DNS log summaries from

the at least one domain name server in the name server network”

As explained for claim 5, *Ben-Shaul* alone or in view of *Hasan* teaches claim 13. §VI.C.6; Lin, ¶231.

15. Claim 14: “wherein the information includes a number of requests directed to particular servers in a given time period”

As explained for claim 6, *Ben-Shaul* alone or in view of *Hasan* teaches claim 14. §VI.C.7; Lin, ¶232.

16. Claim 15: “wherein the reports are made available via a secure web-based GUI”

As explained for claim 7, *Ben-Shaul* alone or in view of *Hasan* teaches claim 15. §VI.C.8; Lin, ¶233.

17. Claim 16: “wherein said at least one policy is provided to the name server network as an XML file”

As explained for claim 8, *Ben-Shaul* alone or in view of *Hasan* teaches claim 16. §VI.C.9; Lin, ¶234.

18. Independent Claim 17

a. [17.pre.i]: “A system comprising: (A) an adaptive traffic control name server network comprising at least one domain name server comprising hardware in combination with software and constructed and adapted to provide adaptive policy-based domain name service”

As explained for [9.pre.ii], *Ben-Shaul* alone or in view of *Hasan* teaches an adaptive traffic control name server network as claimed. §VI.C.2.b; Lin, ¶235.

- b. **[17.pre.ii]: “A system comprising: ... (B) an administrative agent comprising hardware in combination with software:”**

As explained for [9.pre.i], *Ben-Shaul* alone or in view of *Hasan* teaches an administrative agent residing in an origin server. §VI.C.10.a; Lin, ¶236.

- c. **[17.a]: “constructed and adapted to: (a) provide a graphical user interface (GUI)”**

As explained for [9.a], *Ben-Shaul* alone or in view of *Hasan* teaches [17.a] §VI.C.10.c; Lin, ¶237.

- d. **[17.b]: “(b) use said GUI to obtain at least one policy for direction of network traffic, wherein the GUI supports the setting of said at least one policy using a decision tree representing rules”**

As explained for [9.b], *Ben-Shaul* alone or in view of *Hasan* teaches [17.b]. §VI.C.10.d; Lin, ¶238.

- e. **[17.c]: “(c) provide said at least one policy to the name server network”**

As explained for [9.c], *Ben-Shaul* alone or in view of *Hasan* teaches [17.c]. §VI.C.10.e; Lin, ¶239.

- f. **[17.d]: “wherein the decision tree comprises one or more resource nodes, and one or more branch nodes, wherein the one or more resource nodes specify one or more answers to be provided in response to a Domain Name Service (DNS) request, and wherein**

the one or more branch nodes specify one or more decision criteria to be applied”

As explained for [9.d], *Ben-Shaul* alone or in view of *Hasan* teaches [17.d].

§VI.C.2.f; Lin, ¶240.

- g. [17.e.i]: “wherein the GUI supports the specification of: (i) one or more answers for the one or more resource nodes”**

As explained for [9.e.i], *Ben-Shaul* alone or in view of *Hasan* teaches [17.e.i].

§VI.C.2.g; Lin, ¶241.

- h. [17.e.ii]: “wherein the GUI supports the specification of: ... (ii) one or more decision criteria for the one or more branch nodes, wherein the one or more criteria are selected from criteria related to: world zones, countries, states, time zones, and blocks of Internet Protocol (IP) addresses”**

As explained for [9.e.ii], *Ben-Shaul* alone or in view of *Hasan* teaches

[17.e.ii]. §VI.C.2.h; Lin, ¶242.

- i. [17.f]: “wherein the one or more resource nodes are selected from: IP addresses, canonical name (CNAME) records, mail exchange (MX) records, name server (NS) records, and load sharing server sets”**

As explained for [9.f], *Ben-Shaul* alone or in view of *Hasan* teaches [17.f].

§VI.C.2.i; Lin, ¶243.

j. [17.g]: “wherein the answers are selected from: IP addresses and CNAMEs.”

As explained for [9.g], *Ben-Shaul* alone or in view of *Hasan* teaches [17.g].

§VI.C.2.j; Lin, ¶244.

19. Claim 18: “wherein said administrative agent comprises hardware in combination with software and constructed and adapted to: (d) generate reports based on information gathered from the name server network; and (e) provide said reports”

As explained for claim 4, *Ben-Shaul* alone or in view of *Hasan* teaches claim 18. §VI.C.5; Lin, ¶245.

20. Claim 19: “wherein the information gathered from the name server network comprises: DNS log summaries from the at least one domain name server in the name server network”

As explained for claim 5, *Ben-Shaul* alone or in view of *Hasan* teaches claim 19. §VI.C.6; Lin, ¶246.

21. Claim 20: “wherein the information includes a number of requests directed to particular servers in a given time period”

As explained for claim 6, *Ben-Shaul* alone or in view of *Hasan* teaches claim 20. §VI.C.7; Lin, ¶247.

VII. The Board Should Institute Review

A. 35 U.S.C. §325(d) Denial Is Improper

The factors in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17-18 (P.T.A.B. Dec. 15, 2017) favor institution. *See also*

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8-11 (P.T.A.B. Feb. 13, 2020) (precedential).

Advanced Bionics, step 1, and *Becton, Dickinson* factors (a), (b), and (d) favor institution because none of the asserted references served as the basis for any rejection during prosecution. EX-1002, 65-72. While *Biliris* and *Ben-Shaul* were cited by the Applicant in an Information Disclosure Statement (“IDS”), the Examiner merely initialed the references in bulk (*Id.*, 74, 85) and there is no evidence the Examiner ever considered the particular disclosures relative to the claims of the ’517 patent. See *Microsoft Corp. v. Parallel Networks Licensing LLC*, IPR2015-00486, Paper 10 at 15-20 (P.T.A.B. July 15, 2015) (granting institution when “there [was] no evidence that the Examiner considered the particular disclosures cited” in an IDS). While *Ben-Shaul* was considered during examination of the earlier 2002 Application, the Examiner cited to different portions of *Ben-Shaul* in reference to different claims. EX-1014, 185-196; Lin, ¶66. In any event, neither *Biliris* nor *Ben-Shaul* was considered in combination with the additional references cited in Grounds 2 and 3, respectively. EX-1002, 65-72. The Examiner also did not have the benefit of Dr. Lin’s declaration during prosecution. The references are also not cumulative of the prosecution prior art because the cited art teaches and renders obvious all challenged claims.

B. *Fintiv* Denial Is Improper

The *Fintiv* factors weigh strongly in favor of institution.

Factor 1 is neutral because, although Petitioner will move to stay the litigation (*see* §XIII.B) before institution, the district court has not considered or ruled on any stay motion. *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 14 (P.T.A.B. Dec. 1, 2020) (precedential).

Factor 2 is neutral. The trial is presently scheduled for September 28, 2026, which aligns closely with the Board’s anticipated Final Written Decision in this case. EX-1015, 4. Assuming Patent Owner files a preliminary response three months from this Petition (July 2025) and the Board institutes review three months later (October 2025), the Board’s anticipated Final Written Decision will be October 2026—a matter days from current trial date.

Factor 3 favors institution because the Court and the parties have expended few resources in litigation. Fact discovery opened in March 2025 and the Markman hearing is not until September 12, 2025. *Id.* Petitioners promptly brought this challenge approximately three months after receiving infringement contentions (and notice of the asserted claims) on January 14, 2025. *CoolIT Sys., Inc. v. Asetek Danmark A/S*, IPR2021-01195, Paper 10 at 11-14 (P.T.A.B. Dec. 28, 2021); *Sotera*, Paper 12 at 16-17 (petition filed two months after infringement contentions and two weeks before the statutory deadline deemed reasonable).

Factor 4 favors institution. This Petition challenges twenty claims, which will be greater than the number of claims tried (which will be no more than six based on the infringement contentions). Resolving invalidity questions here would mitigate duplicative efforts in this litigation and in any future cases. Petitioner also stipulates that, if this Petition is instituted, it will not pursue in district court the grounds identified in this Petition or that could have been reasonably raised in the IPR (i.e., any ground that reasonably could have been raised under 35 U.S.C. §§ 102 or 103 on the basis of prior art patents or printed publications) with respect to the claims subject to institution. EX-1016; *Sotera*, at Paper 12 at 18-19 (finding this “mitigates any concerns of duplicative efforts between the district court and the Board, as well as concerns of potentially conflicting decisions”).

Under Factor 5, Petitioner is the defendant in the litigation.

Factor 6 favors institution. To Petitioner’s knowledge, no other party has sought the Office’s review of the ’517 patent, and indeed, Petitioner is aware of no other party likely to do so, minimizing any likelihood of serial or parallel petitions. Petitioner relies on prior art that the Office never applied, present significantly different invalidity grounds, and rely on Dr. Lin’s declaration explaining each claim’s invalidity. *Supra*, §VII.A. The significant public interest against “leaving bad patents enforceable” further supports institution under this Factor. *Thryv, Inc v. Click-To-Call Techs., LP*, 140 S. Ct. 1367, 1374 (2020).

VIII. Mandatory Notices

A. Real Party-in-Interest

The Petitioner and real party-in-interest is Google LLC.¹

B. Related Matters

Sandpiper asserted the '517 patent in the following litigation:

- *Sandpiper CDN, LLC v. Google LLC*, No. 2:24-cv-03951 (C.D. Cal., May 10, 2024).

¹ Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

C. Lead and Back-Up Counsel, and Service Information

Lead Counsel	Back-up Counsel
Erika H. Arner, (Reg. No. 57,540) erika.arners@finnegan.com Finnegan, Henderson, Farabow, Garrett, & Dunner LLP 1875 Explorer Street, Suite 800 Reston, VA 20190-6023 Tel: 571-203-2754 Fax: 202-408-4400	Kara A. Specht (Reg. No. 69,560) kara.specht@finnegan.com Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 271 17th Street, NW Suite 1400 Atlanta, GA 30363-6209 Tel: 404-653-6481 Fax: 404-653-6444 Cara R. Regan (Reg. No. 70,209) cara.regan@finnegan.com Sydney R. Kestle (Reg. No. 78,725) Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 901 New York Avenue, NW Washington, DC 20001-4413 Tel: 202-408-4315 Fax: 202-408-4400 Daniel C. Tucker (Reg. No. 62,781) Christopher B. Anderson (Reg. No. 77,898) christopher.anderson@finnegan.com Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 1875 Explorer St, Suite 800 Reston, VA 20190-6023 Tel: 571-203-2765 Fax: 202-408-4400

Petitioner consents to electronic service at the following email address:

Google-Sandpiper-IPRs@finnegan.com.

IX. Grounds for Standing

Petitioner certifies the '517 patent is available for IPR and that Petitioner is not barred or estopped.

X. Conclusion

Petitioner requests institution of *inter partes* review and cancelation of the challenged claims.

Respectfully submitted,

Dated: April 14, 2025

By: /Erika H. Arner/
Erika H. Arner (Reg. No. 57,540)
Lead Counsel

CLAIM APPENDIX

- [1.pre.i] 1. A method, operable in a framework in which an adaptive traffic control name server network implements policy-based traffic direction,
- [1.pre.ii] the name server network comprising at least one domain name server comprising hardware in combination with software and constructed and adapted to provide adaptive policy-based domain name service, the method comprising:
- [1.a] (A) providing a graphical user interface (GUI);
- [1.b] (B) using said GUI to obtain at least one policy for direction of network traffic, wherein the GUI supports the setting of said at least one policy using a decision tree representing rules; and
- [1.c] (C) providing said at least one policy to the name server network,
- [1.d] wherein the decision tree comprises one or more resource nodes, and one or more branch nodes, wherein the one or more resource nodes specify one or more answers to be provided in response to a Domain Name Service (DNS)

request, and wherein the one or more branch nodes
specify one or more decision criteria to be applied, and

[1.e.i]

wherein the GUI supports the specification of:

(i) one or more answers for the one or more
resource nodes, and

[1.e.ii]

(ii) one or more decision criteria for the one or
more branch nodes, wherein the one or more
criteria are selected from criteria related to:
world zones, countries, states, time zones,
and blocks of Internet Protocol (IP)
addresses, and

[1.f]

wherein the one or more resource nodes are
selected from: IP addresses, canonical name
(CNAME) records, mail exchange (MX)
records, name server (NS) records, and load
sharing server sets; and

[1.g]

wherein the answers are selected from: IP
addresses and CNAMEs.

- [2] 2. The method of claim 1 wherein the at least one policy relates to direction of network traffic based on sub-domains of a domain of a subscriber.
- [3] 3. The method of claim 2 wherein the at least one policy that relates to direction of network traffic based on sub-domains of a domain of the subscriber relates to one or more of the sub-domains: “ftp”, “download”, “www”, and “images”.
- [4] 4. The method of claim 1 further comprising:
(D) generating reports based on information gathered from the name server network; and
(E) providing said reports.
- [5] 5. The method of claim 4 wherein the information gathered from the name server network comprises: DNS log summaries from the at least one domain name server in the name server network.
- [6] 6. The method of claim 5 wherein the information includes a number of requests directed to particular servers in a given time period.

- [7] 7. The method of claim 4 wherein the reports are made available via a secure web-based GUI.
- [8] 8. The method of claim 1 wherein the act (C) comprises:
providing said at least one policy to the name server network as
an XML file.
- [9.pre.i] 9. An administrative agent, operable in a framework in which an adaptive traffic control name server network implements policy-based traffic direction,
- [9.pre.ii] the name server network comprising at least one domain name server comprising hardware in combination with software and constructed and adapted to provide adaptive policy-based domain name service, said administrative agent comprising hardware in combination with software and constructed and adapted to:
- [9.a] (a) provide a graphical user interface (GUI);
- [9.b] (b) use said GUI to obtain at least one policy for direction of
network traffic, wherein the GUI supports the setting of
said at least one policy using a decision tree representing
rules; and
- [9.c] (c) provide said at least one policy to the name server network,

[9.d] wherein the decision tree comprises one or more resource nodes, and one or more branch nodes, wherein the one or more resource nodes specify one or more answers to be provided in response to a Domain Name Service (DNS) request, and wherein the one or more branch nodes specify one or more decision criteria to be applied, and

[9.e.i] wherein the GUI supports the specification of:

(i) one or more answers for the one or more resource nodes, and

[9.e.ii] (ii) one or more decision criteria for the one or more branch nodes, wherein the one or more criteria are selected from criteria related to: world zones, countries, states, time zones, and blocks of Internet Protocol (IP) addresses, and

[9.f] wherein the one or more resource nodes are selected from: IP addresses, canonical name (CNAME) records, mail exchange (MX) records, name server (NS) records, and load sharing server sets; and

summaries from the at least one domain name server in the name server network.

[14] 14. The administrative agent of claim 12 wherein the information includes a number of requests directed to particular servers in a given time period.

[15] 15. The administrative agent of claim 12 wherein the reports are made available via a secure web-based GUI.

[16] 16. The administrative agent of claim 9 wherein said at least one policy is provided to the name server network as an XML file.

[17.pre.i] 17. A system comprising:
(A) an adaptive traffic control name server network comprising at least one domain name server comprising hardware in combination with software and constructed and adapted to provide adaptive policy-based domain name service, and

[17.pre.ii] (B) an administrative agent comprising hardware in combination with software and constructed and adapted to:

[17.a] (a) provide a graphical user interface (GUI);

[17.b] (b) use said GUI to obtain at least one policy for direction of network traffic, wherein the GUI supports the setting of

said at least one policy using a decision tree representing rules; and

[17.c] (c) provide said at least one policy to the name server network,

[17.d] wherein the decision tree comprises one or more resource nodes, and one or more branch nodes,

wherein the one or more resource nodes specify one or more answers to be provided in response to a Domain Name Service (DNS) request, and

wherein the one or more branch nodes specify one or more decision criteria to be applied, and

[17.e.i] wherein the GUI supports the specification of:

(i) one or more answers for the one or more resource nodes, and

[17.e.ii] (ii) one or more decision criteria for the one or more branch nodes, wherein the one or more criteria are selected from criteria related to: world zones, countries, states, time zones, and blocks of Internet Protocol (IP) addresses, and

- [17.f] wherein the one or more resource nodes are selected from: IP addresses, canonical name (CNAME) records, mail exchange (MX) records, name server (NS) records, and load sharing server sets; and
- [17.g] wherein the answers are selected from: IP addresses and CNAMEs.
- [18] 18. The system of claim 17 wherein said administrative agent comprises hardware in combination with software and constructed and adapted to:
- (d) generate reports based on information gathered from the name server network; and
 - (e) provide said reports.
- [19] 19. The system of claim 18 wherein the information gathered from the name server network comprises: DNS log summaries from the at least one domain name server in the name server network.
- [20] 20. The system of claim 18 wherein the information includes a number of requests directed to particular servers in a given time period.

CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that the foregoing **Petition for *Inter Partes* Review** contains 13,960 words, excluding those portions identified in 37 C.F.R. §42.24(a), as measured by the word-processing system used to prepare this paper.

Dated: April 14, 2025

/Erika H. Arner/

Erika H. Arner (Reg. No. 57,540)

Lead Counsel

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 8,645,517, the associated Power of Attorney, and Exhibits 1001 through 1016 were served on April 14, 2025 by FedEx Priority Overnight® on the correspondence address of record indicated in the Patent Office's Patent Center system for U.S. Patent No. 8,645,517.

ATTN: Patent Docketing
Level 3 Communications, LLC
931 14th St.
Denver, CO 80202

Dated: April 14, 2025

/Daniel E. Doku/
Daniel E. Doku
Senior Litigation Legal Assistant
Finnegan, Henderson, Farabow,
Garrett & Dunner, LLP