

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

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

I.	Introduction.....	1
II.	<i>Hasan</i> is Analogous Art to the '517 Patent	1
	A. <i>Hasan</i> is From the Same Field of Endeavor	2
	B. <i>Hasan</i> is Reasonably Pertinent.....	4
III.	Grounds 1 and 2 Render the Challenged Claims Unpatentable	5
	A. <i>Beaumont-Hasan</i> Renders Obvious the Claimed “Policy” Obtained Via a GUI and Provided to the Network	6
	1. <i>Beaumont-Hasan</i> Discloses a “Policy”	6
	2. <i>Beaumont-Hasan</i> Discloses a GUI to Obtain Policies	10
	3. <i>Beaumont-Hasan</i> Discloses Providing Policy	11
	B. <i>Beaumont-Hasan</i> Renders Obvious a Decision-Tree GUI with Branch Nodes	11
	1. <i>Beaumont-Hasan</i> Discloses a GUI that Uses a Decision Tree	11
	2. <i>Beaumont-Hasan</i> ’s Decision Tree Includes Branch Nodes.....	13
	C. The Petition Established Motivation to Combine	16
IV.	Grounds 3A and 3B Render the Challenged Claims Unpatentable	18
	A. Each GUI Described in the Petition Renders the Claimed Decision Tree Obvious	18
	1. Each GUI Renders the Claimed Resource Node Obvious.....	18
	2. Each GUI Renders the Claimed Branch Nodes Obvious	24
	3. Each GUI Includes a Decision Tree	25

B.	<i>Ben-Shaul</i> Teaches Providing the Policy to the Name Server Network	25
C.	<i>Ben-Shaul</i> Alone Discloses the Claimed Domain Name Server	26
D.	The Petition Established Motivation to Combine <i>Ben-Shaul</i> and <i>Hasan</i>	26
V.	Conclusion	28

I. Introduction

Patent Owner's Response does not overcome the Petition's showing that claims 1-20 of the '517 patent are unpatentable. Patent Owner primarily relies on a flawed challenge to *Hasan*'s analogousness. But *Hasan*, a secondary reference applied in Grounds 1, 2, and 3B, is classified in the same field as the '517 patent and is in any case pertinent to the end-user experience problem facing its inventor.

Patent Owner's scattershot of arguments attacking the disclosures of primary references *Beaumont* and *Ben-Shaul* likewise fail. These arguments mischaracterize the Petition and its arguments, ignoring the actual mappings in favor of snippets, and addressing references in isolation. Ultimately, Patent Owner's Response largely reiterates arguments the Board already found insufficient at institution and does not introduce new evidence or reasoning warranting a different conclusion. For the reasons laid out in the Petition, the Board should reject Patent Owner's arguments and find the challenged claims unpatentable.

II. *Hasan* is Analogous Art to the '517 Patent

Patent Owner attempts to evade Grounds 1, 2, and 3B by incorrectly characterizing *Hasan* as non-analogous art. Resp., 8-16, 39, 67. But, as Patent Owner concedes, *Hasan* is analogous if it is either (1) from the same field of endeavor as the '517 patent, or (2) reasonably pertinent to the particular problem

solved by '517 patent. *Sanofi-Aventis Deutschland GmbH v. Mylan Pharms. Inc.*, 66 F.4th 1373, 1377 (Fed. Cir. 2023). *Hasan* qualifies under either test.

A. *Hasan* is From the Same Field of Endeavor

The '517 patent's inventors characterized its technical field as "network traffic management." EX-1001, 1:36-37. The Office agreed, assigning U.S. and International classifications 709/223 for "Computer Network Managing" and G06F 15/173 for "Using an interconnection network," respectively. *Id.*, cover.

Hasan shares this same field of endeavor. *See Hasan*, cover (entitled "Network Management System"), 1:5-10 (asserting technical field as "management of network services in a data center"). Indeed, the Office classified *Hasan* with *identical* primary classifications as the '517 patent:

U.S. Patent No. 8,645,517 (The '517 Patent)		U.S. Patent No. 7,082,464 (<i>Hasan</i>)	
(51)	Int. Cl. G06F 15/173 (2006.01)	(51)	Int. Cl. G06F 15/173 (2006.01)
(52)	U.S. Cl. 709/223; 709/202; 709/250	(52)	U.S. Cl. USPC 709/223; 709/238; 709/219

Compare EX-1001, cover *with Hasan*, cover.

Patent Owner attempts to exclude *Hasan* by adopting an overly narrow field of endeavor specific to DNS services. *Resp.*, 9. This approach is legally flawed. *Netflix, Inc. v. DivX, LLC*, 80 F.4th 1352, 1359 (Fed. Cir. 2023) ("[T]he field-of-endeavor test does not look to the problem that the patent purports to address."). *Hasan* need not disclose every aspect of the claims to be analogous art from the same

field of endeavor. *See, e.g., Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1001 (Fed. Cir. 2016) (“The field of endeavor of a patent is not limited to the specific point of novelty, the narrowest possible conception of the field, or the particular focus within a given field.”).

Patent Owner’s attempt to limit the field to DNS services is also contrary to the disclosures of the ’517 patent itself. While the ’517 patent demonstrates “a scenario in which DNS service is provided,” it caveats that this is “for clarity and example only,” envisioning “a number of different scenarios in which the invention might be deployed.” EX-1001, 3:16-20. As the Federal Circuit instructed in *Bigio*, the field of endeavor must account for “explanations of the invention’s subject matter in the patent application.” *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). Patent Owner’s proposed field of endeavor does not do so and should thus be rejected. *See id.*

In any case, DNS services are contemplated by *Hasan*. Like the ’517 patent, *Hasan* clarifies it is *not* limited to any particular type of physical network—the particular type of network is “not germane” to *Hasan*’s invention. *Hasan*, 2:15-20. Nor is *Hasan* limited to data centers. *See, e.g., id.*, Abstract (noting application to “any facility”). Instead, *Hasan* describes using its GUI to manage many different policies, including DNS policies, in different contexts. *See, e.g., id.*, 17:57-63 (describing “chang[ing] appropriate DNS settings”).

Patent Owner complains that “*Hasan* does not disclose a DNS system,” describe specific “DNS policies for directing network traffic,” or itself “implement ‘DNS settings.’” Resp., 12, 13. However, the portion of *Hasan* Patent Owner cites (*Id.*, 12) explains that changes to one service may propagate to other services. *Hasan*, 17:32-65. A VPN service, for example, may allow DNS settings to pass through a firewall. *Id.* Contrary to Patent Owner’s argument, this passage *confirms* that *Hasan* contemplates use of its GUI to manage DNS settings. Patent Owner’s DNS emphasis is misplaced both factually and legally. *Bigio*, 381 F.3d at 1325.

B. *Hasan* is Reasonably Pertinent

Patent Owner’s arguments that *Hasan* is not “reasonably pertinent” also fail. A reference is reasonably pertinent when it “logically would have commended itself to an inventor’s attention in considering his problem.” *In re GPAC Inc.*, 57 F.3d 1573, 1578 (Fed. Cir. 1995) (quoting *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992)).

Patent Owner defines the problem purportedly addressed by the ’517 patent as “how to distribute network requests from end users to the appropriate servers in a manner that provides a good end-user experience.” Resp., 14-15. Even accepting this characterization, an inventor would have reasonably looked to *Hasan* to address it.

Hasan provides a policy editor GUI for managing administrative policies, which a POSITA would have recognized improves user experience. *Hasan*, 6:55-63;

Lin, ¶¶68-71, 145-150. Patent Owner’s argument that *Hasan* is not concerned with delivering traffic to end users misses the mark. Resp., 15, 16. As the Federal Circuit has explained, even where there are “significant differences between a patent and a reference from a different field of endeavor,”¹ a POSITA might nonetheless have consulted the reference “so long as she would understand the portions of the reference relevant to solving her problem.” *Donner Tech., LLC v. Pro Stage Gear, LLC*, 979 F.3d 1353, 1361 (Fed. Cir. 2020). Thus, whether *Hasan* is concerned with network traffic is irrelevant. A POSITA would have reasonably found *Hasan*’s GUI pertinent for managing policies. Lin, ¶59. And regardless, *Hasan* specifically encompasses management of “routing, firewall, ... load balancing, [and] Web caching” tasks, all of which relate to network traffic and content delivery. *Hasan*, 2:42-52.

An inventor would have logically looked to *Hasan* in addressing even the problem outlined by Patent Owner and *Hasan* is thus analogous art. Lin, ¶¶58-59, 68-71, 145-150.

III. Grounds 1 and 2 Render the Challenged Claims Unpatentable

Patent Owner makes three challenges specific to Grounds 1 and 2. First, it argues that *Beaumont-Hasan* lacks the claimed policy and thus cannot disclose the

¹ As noted above, *Hasan* occupies the same field of endeavor as the ’517 patent.

claimed use of a GUI to set the policy, or the claimed providing of the policy to the network as claimed. Second, it argues that *Beaumont-Hasan* does not disclose a decision-tree GUI with nodes as claimed. And third, it argues that there would be no motivation to combine *Beaumont-Hasan*. Each of these arguments fails.

A. *Beaumont-Hasan* Renders Obvious the Claimed “Policy” Obtained Via a GUI and Provided to the Network

Contrary to Patent Owner’s arguments, the combination of *Beaumont* and *Hasan* discloses a policy obtained and provided to the network just like that claimed in the ’517 patent. Pet., 16-22; Lin, ¶¶76-90.

1. *Beaumont-Hasan* Discloses a “Policy”

Beaumont discloses a “policy for direction of network traffic.” As the Petition explains, *Beaumont*’s DNS server resolves DNS requests based on configurable preference values—the user dictates the order in which servers are selected. Pet., 16-17. By imposing a preference order, the user sets rules for direction of network traffic. *Id.*, 16-17, 19-21.

Patent Owner agrees that a policy is a “rule ... to direct traffic of the underlying servers.” Resp., 18. And Patent Owner concedes that *Beaumont* discloses such rules “for selecting the best content delivery server.” *Id.*, 21. But Patent Owner mistakenly argues that the Petition “points solely to *Beaumont*’s ‘configurable preference table,’ which Patent Owner claims “is merely a data structure that stores data.” *Id.*, 19.

That is not Petitioner’s argument. The Petition relies on the underlying rules in *Beaumont*, which are evidenced by the preference table, and which even Patent Owner concedes are policies. *Id.*, 42 (referencing “Beaumont’s DNS rules (or policies)”). Patent Owner’s only support for its interpretation is the Petition’s preamble discussion, which notes that *Beaumont*’s DNS server directs traffic “according to a configurable preference table (policies).” *Id.*, 19 (citing Pet., 15). However, this merely previews that *Beaumont*’s policies are *configurable*, as recited in the preamble. Pet., 15. The Petition’s discussion of the claimed “policies” points to the underlying policies implemented in *Beaumont*, which are informed by the preference values. *See, e.g., id.*, 18 (citing *Beaumont*’s description of “rule[s] for selecting the best content delivery server” in discussion of setting a policy for direction of network traffic), 19 (citing the same in discussion of the claimed branch nodes), 22 (citing *Beaumont*’s “assigning rules” in discussion of claimed decision criteria).

Moreover, to the extent Patent Owner argues that tables cannot reflect an underlying policy, that conflicts with the ’517 patent. For example, the ’517 patent explains that “FIGS. 10(a)-10(o) show exemplary subscriber policies.” EX-1001, 3:1. However, much like in *Beaumont*, these policies are illustrated as tables. For example, Fig. 10(e) represents a policy where traffic is directed based on load share values, which are represented in a table:

RESOURCE FOR "EXAMPLE1:2"

RESOURCES

IP ADDRESS(ES)

CNAME(S)

MX RECORD(S)

STATIC SERVER(S)

DYNAMIC SERVER(S) LOAD SHARE(S)

OVERFLOW SERVER(S)

NICKNAME	IP ADDRESS/CNAME	TTL	LOAD SHARE
DL.SUBSCRIBER.COM.C.FOOTPRINT.NET	DL.SUBSCRIBER.COM.C.FOOTPRINT.NET	5M	1

MANAGED SERVER(S) MONITORING LOAD FEEDBACK

NICKNAME	IP ADDRESS	TTL	MONITORED	LOAD FEEDBACK	LOAD SHARE	SHED FRACTION
LONDON	10.0.0.3	5M	YES	NO	1	0
NEW YORK	10.0.0.1	5M	YES	NO	1	0
SAN FRANCISCO	10.0.0.2	5M	YES	NO	2.5	0

NS RECORD(S)

Id., 25:55-67, Fig. 10(e). Fig. 10(j) similarly represents load share values for another policy in a table:

RESOURCES

IP ADDRESS(ES)

CNAME(S)

NICKNAME	CNAME	TTL
INTERNATIONAL.DEMO.COM	INTERNATIONAL.DEMO.COM	5M
US.DEMO.COM	US.DEMO.COM	5M

STATIC SERVER(S)

OVERFLOW SERVER(S)

NICKNAME	IP ADDRESS / CNAME	TTL	LOAD SHARE
DEMO.CDN.COM	DEMO.CDN.COM	5M	1

MANAGED SERVER(S) MONITORING LOAD FEEDBACK

NICKNAME	IP ADDRESS	TTL	MONITORED	LOAD FEEDBACK	LOAD SHARE	SHED FRACTION
NY	10.0.0.2	5M	NO	NO	1	0
SF	10.0.0.1	5M	NO	NO	2	0
UK	10.0.0.3	5M	NO	NO	1	0

NS RECORD(S)

Id., 27:39-45, Fig. 10(j).

Patent Owner's suggestion that the claimed policy cannot have any preexisting framework similarly fails. Patent Owner claims that "preference numbers ... are merely integers input by the user," not policy. *See, e.g.*, Resp., 21; *see also id.*, 25-26. But by changing the preference numbers in *Beaumont*, the user changes the rule—servers are selected differently because of the user's input. Thus,

changing the preference numbers changes the policy. Lin, ¶¶74, 82, 85. There is no requirement in the '517 patent that the user must do more than change variables within an existing framework to impose policy. Indeed, *Beaumont*'s disclosure aligns with how policies are defined in the '517 patent. For example, Fig. 9(a) of the '517 patent shows a user interface “through which a subscriber may define load share and shed fraction policies.”

NICKNAME (OPTIONAL)	IP ADDRESS	TTL	LOAD SHARE	SHED FRACTION	ON LINE
NEW YORK	10.0.0.1	5m	1.0	0.2	☒
LONDON	10.0.0.2	5m	1.0	0.3	☒
		5m	1.0	0.0	☒
		5m	1.0	0.0	☒
		5m	1.0	0.0	☒

OK CANCEL DELETE CHECKED STATIC SERVER(S)

FIG. 9(a)

EX-1001, 2:60-62, Fig. 9(a). To configure these policies, the user enters integers (or decimals) much like in *Beaumont. Id.*, 24:8-18 (“[A] subscriber ... can easily specify changes to existing policies (e.g., changes to load share ...).”), 27:60-64 (“The subscriber may adjust the load share of the servers ... by ... chang[ing] the load share values manually.”). Patent Owner cannot demand more of the prior art than is disclosed in its own specification. *See Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1570 (Fed. Cir. 1997).

2. *Beaumont-Hasan* Discloses a GUI to Obtain Policies

Patent Owner rehashes its policy argument to assert that *Beaumont-Hasan* lacks a GUI used to obtain policy. Resp., 22-26. Patent Owner is wrong.

As the Petition explains, and as noted above, *Beaumont* enables users to manually enter preference values, which define a rule for how DNS requests should be resolved. Pet., 16; *supra*, §III.A.1. The rule imposed by the preference ordering is a policy as claimed. Pet., 16, 19-21; Lin, ¶¶74, 80, 82, 85 *supra*, §III.A.1. The combination of *Beaumont-Hasan* renders obvious use of a GUI to set and obtain policy. *See* Pet., 17-18, 20-22; Lin, ¶¶74-77, 84-90. As even Patent Owner acknowledges, *Beaumont* thus at least suggests a user interface for manually defining preferences. *See* Resp., 22 (“At best, *Beaumont* discloses an interface for manually inputting ‘preference numbers.’”). And, as Patent Owner again concedes, *Hasan* teaches a “GUI for setting policies.” *Id.*, 24. The combination thus teaches a GUI to set policies such as those described in *Beaumont*. Pet., 17-18.

Patent Owner raises several challenges to this conclusion. Resp., 22-27. But each of those challenges assumes that *Beaumont* does not disclose a policy. As already explained, Patent Owner is incorrect—*Beaumont* discloses a policy. *See supra*, §III.A.1. It is accordingly irrelevant that *Beaumont* does not expressly disclose a GUI, Resp., 22-23, or that *Hasan* does not disclose DNS policies, *id.*, 24. The Petition relies on *Beaumont*’s DNS policies and *Hasan*’s policy editor, not any

DNS-specific functions. Pet., 16. The combination discloses use of a GUI (and all limitations of the challenged claims).

3. *Beaumont-Hasan* Discloses Providing Policy

Patent Owner similarly argues that because the combination lacks a policy set with a GUI (it does not) the combination cannot teach “providing said at least one policy to the name server network.” Resp., 26-27. As explained, however, Patent Owner is incorrect; *Beaumont-Hasan* describes both a policy and a GUI as claimed. *See supra*, §§III.A.1, III.A.2. Petitioner’s “providing” arguments fail for the same reasons.

B. *Beaumont-Hasan* Renders Obvious a Decision-Tree GUI with Branch Nodes

The combination of *Beaumont* and *Hasan* achieves a GUI structure as claimed in the ’517 patent.

1. *Beaumont-Hasan* Discloses a GUI that Uses a Decision Tree

As explained in the Petition, the combined *Beaumont-Hasan* GUI “supports the setting of at least one policy using a decision tree representing rules” through its “familiar tree structure.” Pet., 18. *Beaumont* describes hierarchical policies for controlling network traffic. *Id.*, 18-20. For example, *Beaumont* teaches (1) identifying servers mapped to the client domain and then (2) selecting a particular one of those servers based on, e.g., geography, and/or other selection rules, including preference values. *See id.*, 10, 19-21. *Beaumont* expressly suggests

organizing this hierarchy of rules as a tree. *Id.*, 17-18. And at least one of *Beaumont*’s rules—preference—is user-configurable. *Id.* Coupled with *Hasan*’s policy-setting GUI, the combined disclosure of the references teaches the claimed GUI that “supports the setting of at least one policy using a decision tree representing rules.” *Id.*; Lin, ¶¶76-77.

Patent Owner disagrees. Resp., 28-33. It urges that a “topological layout in which users input respective preference values for each server is not a decision tree for setting a policy hierarchy.” *Id.*, 32. But that argument mischaracterizes both the Petition and the combined functionality of *Beaumont* and *Hasan*. As explained in the Petition, the *Beaumont-Hasan* GUI would allow users to input preferences and group servers within a decision-tree structure, altering the logical flow of server selection (the claimed policies) at multiple levels. *See, e.g.*, Pet., 21. This is consistent with the teachings of both *Beaumont*, which suggests entry of preference numbers (*Beaumont*, [0031], [0034]), and *Hasan*, which teaches that its GUI allows the user to add or remove objects to various subbranches of the tree hierarchy (*Hasan*, 17:11-13). Patent Owner’s contention that the combined GUI merely provides a “topology of servers” is thus contrary to the teachings of *Hasan* and

Beaumont and ignores the argument made in the Petition regarding how those teachings would be applied and combined.²

2. *Beaumont-Hasan's* Decision Tree Includes Branch Nodes

In addition, *Beaumont-Hasan* teaches that its GUI includes branch nodes as claimed. *Beaumont* teaches a number of “branch node” decision criteria, including server health and destination domain. *See* Pet., 19. And in the tree structure of the combined *Beaumont-Hasan* GUI, servers would be grouped according to these decision criteria. *Id.*, 19-20.

Patent Owner again disagrees. It argues again that information in the preference table is not a rule and presupposes a requirement that users must be able to specify what decision criterion is applied. Resp., 33-38. Patent Owner also argues

² Indeed, much of the Response attacks the individual teachings of *Hasan* and *Beaumont*. *See, e.g.*, Resp., 28-31. But the issue is whether the Petition’s “particular combination” meets the claims, not whether any isolated teaching from the individual references would. *See Palo Alto Networks, Inc. v. Centripetal Networks, LLC*, 122 F.4th 1378, 1386 (Fed. Cir. 2024); *see also Power Integrations, Inc. v. Lee*, 797 F.3d 1318, 1325 (Fed. Cir. 2015) (vacating and remanding where the Board “focused on a red herring” and “failed to adequately evaluate [the petitioner’s] primary argument”).

that the asserted branch nodes fail to specify decision criteria. *Id.*, 38. None of Patent Owner’s challenges have merit.

Patent Owner first argues *Beaumont-Hasan* does not include the claimed branch nodes because in the ’517 patent, “[t]he decision criteria represents the actual rule, not just the parameters upon which the rule is applied,” such as a rule “to branch or split ... based on the location parameters of the requesting user.” *Id.*, 34-35. But *Beaumont*’s rules do exactly that: they determine whether to “branch or split” based on server location. Pet., 19 (explaining “*Beaumont*’s system first identifies working servers sharing the destination domain of the client”). Patent Owner concedes this, acknowledging that “*Beaumont*’s underlying logic, separate and distinct from the preference table, implements the criteria used to select the servers.” Resp., 34. Accordingly, this is another variant of the same argument that “rules are not stored in the preference table.” *Id.* That *Beaumont*—like the ’517 patent—illustrates rules as a table does not change that *Beaumont* discloses decision criteria. *Supra*, §III.A.1.

Patent Owner next argues that *Beaumont-Hasan* does not teach the claimed GUI because *Beaumont* “allows only manual entry of the preference values.” Resp., 35. But the claims require only that “the GUI supports the specification of:

... one or more decision criteria,” not that *all* criteria be user-specified.³ EX-1001, 31:43-56. As Patent Owner acknowledges, at least the preference values are user-specified. Resp., 35; *see Beaumont*, [0031] (describing “other rules such as selecting [a server] based on user preferences”). Contrary to Patent Owner’s footnote argument (Resp., 35, n.2), the Petition indeed contemplates the preference values as decision criteria, explaining that *Beaumont*’s system “selects a server from within [a] set to handle the request based on a distance or other preferences.” Pet., 19.

Patent Owner finally argues that the combined GUI does not allow specifying decision criteria because “arranging the servers in different manners using the GUI would have no effect on the underlying decision criteria to be applied.” Resp., 36-37, 38 (“*Beaumont* does not allow the user to specify such decision criteria.”). This again demands more than what the claims require—nothing in the claims requires the decision criteria to be changeable as Patent Owner suggests. EX-1001, 31:24-56. Indeed, the Board previously rejected Patent Owner’s argument, “declin[ing] to add a requirement that the branch node has to include instructions (rules or policy) that

³ Regardless, nothing Patent Owner cites in *Beaumont* (Resp., 35) would prevent *Beaumont*’s destination domains and server health from being user-assigned, for example, to facilitate overrides for outages or upgrades.

are used to make decisions, such as where ‘Splits’ are required actions.”
Paper 14, 24. Patent Owner does not even address this prior finding.

C. The Petition Established Motivation to Combine

As explained in the Petition, a POSITA would have been motivated to incorporate *Hasan*’s GUI for configuring *Beaumont*’s policies. Pet., 13-14.

Patent Owner purports to challenge both whether a POSITA would have combined *Beaumont* and *Hasan* in the first instance and whether a POSITA would have combined the references as proposed in the Petition. Resp., 39-43. Both arguments fail.

Patent Owner’s general challenge to the combination of *Beaumont* and *Hasan* merely repeats its incorrect argument that the references are not analogous. *Id.*, 39-41. And to the extent Patent Owner urges that there would be no motivation to combine the references because *Hasan* “does not address the problem to which *Beaumont* relates,” *id.*, 40, that is not the test. *See, e.g., Google LLC v. Virentem Ventures, LLC*, IPR2019-01247, Paper No. 34 at 35-36 (P.T.A.B. March 5, 2021) (“[T]he motivation to combine inquiry focuses on whether one of ordinary skill would have been motivated to combine the teachings of both references as a whole, not whether the problems solved by the prior art are the same.”). Regardless, Patent Owner acknowledges that *Beaumont* aims to improve the process for selecting servers (Resp., 40) and that it does so by implementing

various policies (*id.*, 21, 42). *Hasan* provides a GUI of general applicability for specifying these policies. *Hasan*, 6:59-63. A POSITA thus would have looked to *Hasan* to improve the system in *Beaumont*. Pet., 13-14; *see also supra*, §§II.A, II.B.

Patent Owner’s argument regarding the specific combination appears to rest on the premise that a POSITA would not have applied *Hasan*’s GUI to *Beaumont* because *Beaumont*’s server-selection inputs are purportedly “gathered automatically and dynamically” and thus are not user-configurable. Resp., 41. That premise is incorrect. *Beaumont* expressly contemplates that the information comprising its preference table may be obtained through “various reporting mechanisms,” including manual input. *See Beaumont*, [0027], [0031]. In other words, *Beaumont* does not require exclusively automatic or dynamic updates, and instead allows user-provided inputs to influence server selection. Accordingly, there is no incompatibility between *Beaumont* and *Hasan*. Nor does *Beaumont* teach away from the use of a GUI; to the contrary, its reliance on configurable preference values would have motivated a POSITA to implement a structured interface—such as *Hasan*’s GUI—to manage those inputs more effectively. *See* Pet., 13-14.

Patent Owner’s further arguments that *Beaumont* does not allow users to input policies and that “*Hasan* is not directed to DNS systems,” Resp., 40-43, merely recycle Patent Owner’s arguments regarding analogousness and whether the combination would achieve the claimed conventions. *See, e.g., id.* (“*Beaumont* does

not allow users to input policies”; “Hasan does not disclose a GUI for configuring DNS services”; “Beaumont does not teach a manual entry of rules or policies—only preference numbers”). They are incorrect as discussed above. *Supra*, §§II.A, III.A.1, III.A.2.

IV. Grounds 3A and 3B Render the Challenged Claims Unpatentable

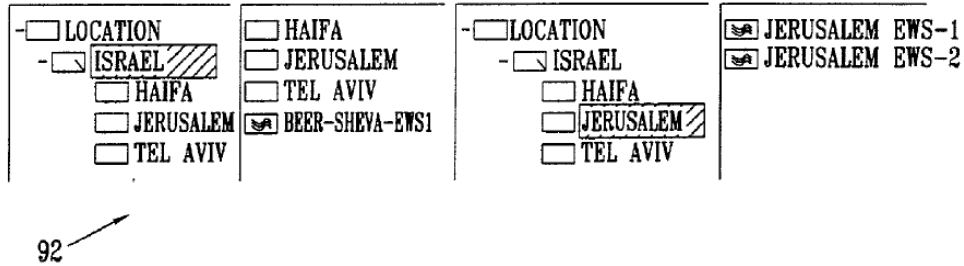
A. Each GUI Described in the Petition Renders the Claimed Decision Tree Obvious

As the Petition explains, *Ben-Shaul* discloses a hierarchical front edge tool GUI that supports setting policies. Pet., 47-48. The Petition further explains that a POSITA would have been motivated to implement *Ben-Shaul*’s CDML editor in the same hierarchical format as the front edge tool (the *Ben-Shaul* Single GUI), which would likewise enable editing policy directives. *Id.*, 49-50. The Petition also discussed a third *Ben-Shaul-Hasan* GUI, which incorporates *Hasan*’s familiar tree structure. *Id.*, 50-52.

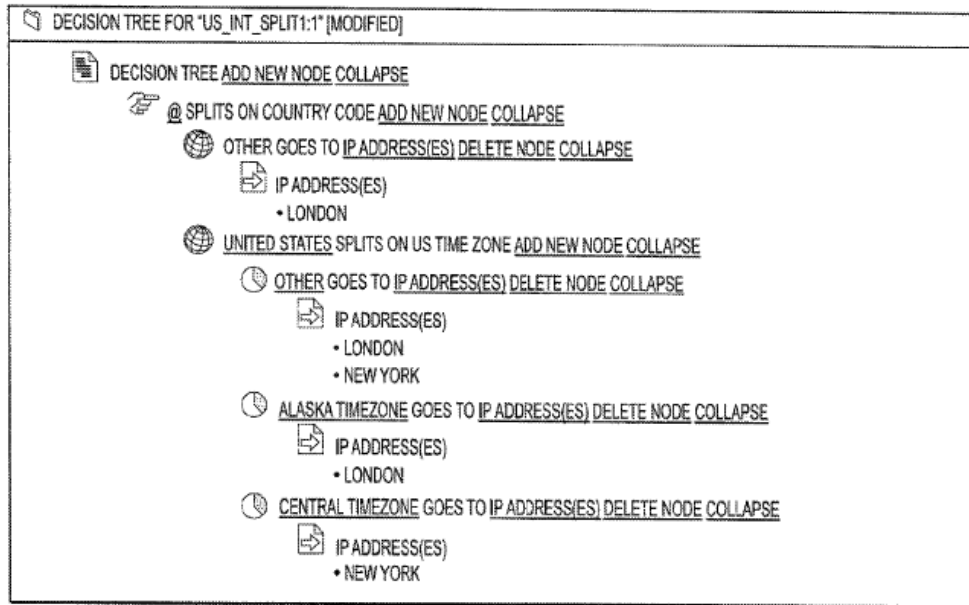
Patent Owner argues that these GUIs lack the requisite “resource nodes,” Resp., 53-58, and “branch nodes,” *id.*, 59-62, but the Petition establishes otherwise.

1. Each GUI Renders the Claimed Resource Node Obvious

As explained in the Petition, *Ben-Shaul*’s front edge tool and the *Ben-Shaul* single GUI enable users to define “meaningful groups of edge servers.” Pet., 47-48; *Ben-Shaul*, [0309]. *Ben-Shaul* explicitly states the edge servers are “leaves” within the tool’s hierarchical structure, as illustrated in Fig. 10 below:



Id., [0311], Fig. 10. This is the same form of decision tree depicted in Fig. 10(b) of the '517 patent:



EX-1001, Fig. 10(b). The *Ben-Shaul* single GUI allows users to specify DNS directives under the same structure. Pet., 47-57. And the combined *Ben-Shaul-Hasan* GUI includes a similar hierarchical layout. *Id.*

Patent Owner disagrees, arguing for all three GUIs that (1) that *Ben-Shaul* uses GUIs for defining *edge server* policies rather than EdgeDNS policies; (2) that *Ben-Shaul* does not disclose EdgeDNS policies at all; and (3) that *Ben-Shaul*'s edge

servers are not leaves because *Ben-Shaul* does not consider edge server locations in responding to DNS requests. Resp., 53-58. Patent Owner is wrong.

First, Patent Owner’s argument that in *Ben-Shaul*, GUIs “are used to write edge server policies,” not EdgeDNS policies, is incorrect. *Id.*, 53-54. To be sure, *Ben-Shaul* explains that its front edge tool includes a “directives editor 122 ... for editing the edge server directives.” *Ben-Shaul*, [0349]. But *Ben-Shaul*’s EdgeDNS policies are also implemented through DNS directives, which are also editable using the front edge tool. *Id.*, [0176]. Indeed, these DNS directives originate from the same policy control servers as edge server directives. *Id.*, [0176], [0136], [0182]. Moreover, the front edge tool allows users to define groups of edge servers and thus specify which directives apply to which servers. Pet., 53.

Patent Owner also fails to properly address the *Ben-Shaul* single GUI, repeating its misstep from its preliminary response. See Paper 14, 31 (“Patent Owner’s arguments ... do not address Petitioner’s contentions relating to the implementation of the front edge tool with CDML”). The Petition explains the benefits of combining *Ben-Shaul*’s front edge tool and its CDML editor into a single GUI. See Pet., 49-50. And *Ben-Shaul* expressly teaches that CDML is used for “specification of the DNS and HTTP redirections policies” (i.e., direction of network traffic by the EdgeDNS servers). See *id.*, 48-49; *Ben-Shaul*, [0039]. These same functionalities would remain in the combined GUI. Pet., 55.

Second, Patent Owner's argument that *Ben-Shaul's* EdgeDNS does not resolve DNS requests using policies or by considering server locations or groups is incorrect. Resp., 54-57. Patent Owner's argument is premised on an oversimplified explanation of how EdgeDNS directs requests, focusing on descriptions of cache writing and replacement techniques. *Id.*, 48-50. For example, Patent Owner cites a process for DNS cache writing that "enabl[es] dynamic redirection of requests without the involvement of the root DNS system." *Id.*, 49 (citing *Ben-Shaul*, [0176]). But this same paragraph in *Ben-Shaul* describes "[s]ubsequent intermediate data flow between the client regional DNS server 22 and the EdgeDNS 38," and explains that "[t]he configuration of the EdgeDNS 38 and its coordination with the client regional DNS server 22 ... is controlled by DNS directives *that originate from one or more policy control servers.*" *Ben-Shaul*, [0176] (emphasis added).

Patent Owner further cites a portion of *Ben-Shaul* describing techniques for local cache replacement. Resp., 50-51. But this is described as a "specialized" feature of the EdgeDNS server (*Ben-Shaul*, [0358]), which *Ben-Shaul* clarifies is separate from the EdgeDNS' other tasks of "accept[ing] and handl[ing] queries from clients, manag[ing] a local cache of DNS queries, [and] maintain[ing] zones" (*id.*, [0359]).

None of the disclosures Patent Owner cherry-picks negates *Ben-Shaul's* explicit disclosure that the EdgeDNS server operates based on policies, including

policies that consider location. *Id.*, [0041], [0044], [0176], [0177]. For example, *Ben-Shaul* explains its “EdgeDNS is responsible to return the IP address of ... the edge server,” (*id.*, [0041]), and that it differentiates based on regions and groups (*id.*, [0042], [0044]). *Ben-Shaul* further confirms that the EdgeDNS server applies location-based policies when directing requests, explaining that it “suppl[ies] different responses to a given request or query, depending on the *location of the query*, and the status of the edge server in the zone from which the request was made.” *Id.*, [0360] (emphasis added); *see also id.*, [0039], [0309].⁴

And while Patent Owner claims that Petitioner’s expert, Dr. Lin, offered testimony supporting Patent Owner’s positions, he did not. For instance, his testimony does not support Patent Owner’s argument that *Ben-Shaul*’s group and regional differentiation is an edge server functionality. *See* Resp., 56 (citing EX-2018). Rather, Dr. Lin clarified that the Edge server ultimately returns the content. EX-2018, 229:5-9. Dr. Lin likewise did not testify that *Ben-Shaul*’s

⁴ Patent Owner’s attack on paragraphs 0041 and 0044 of *Ben-Shaul*, Resp., 55-56, ignores how these disclosures are actually discussed in the Petition, which cites them to explain how DNS requests are directed and answered based on the server’s characteristics. *See* Pet., 53-55. Patent Owner also fails to address the related *Ben-Shaul* disclosures that the Petition discusses alongside those paragraphs.

EdgeDNS does not use policies. Resp., 54. Rather, he merely declined to characterize the specific cache replacement functionality discussed by Patent Owner as a policy. EX-2018, 214:18-215:4 (stating “on first glance, this section appears to be about cache replacements,” not “the implementation of policy”). Nor did Dr. Lin fail to identify location or GUI-based policy in *Ben-Shaul*. Resp., 54, 56. Quite the contrary, Dr. Lin repeatedly confirmed that the EdgeDNS server performs regional and group differentiation to select the Edge server. EX-2018, 230:7-15, 231:10-20, 233:11-21. And Dr. Lin indeed identified a DNS policy created using a GUI in his declaration. Lin, ¶162 (citing *Ben-Shaul*, [0309]-[0313]). When asked about this during his deposition, he referred to his declaration. EX 2018, 251:16-252:1.

Third, Patent Owner’s argument that the front edge tool is merely a hierarchical view allowing users to browse the edge server map is incorrect. Resp., 57. Patent Owner ignores *Ben-Shaul*’s disclosure that administrators may “construct hierarchies of edge servers, which are later used by profile editors in order to apply a particular service directive to a collection of edge servers.” *Ben-Shaul*, [0309]. As explained in the Petition, these groupings are used to direct requests. *Id.*, [0044]; Pet., 48, 51, 53.

2. Each GUI Renders the Claimed Branch Nodes Obvious

In any of the front edge tool, the Single GUI, or the combined *Ben-Shaul-Hasan* GUI, administrators construct hierarchies of edge servers, thereby creating branch nodes. Pet., 52-55, 57-58.

Patent Owner disputes that understanding. Resp., 59-62. It again argues that, in *Ben-Shaul*, GUIs do not allow users to specify DNS policy and that the EdgeDNS does not apply grouping- or location-based policy. *Id.* As discussed above, *supra*, §III.A.1, those arguments are incorrect.

Patent Owner also argues that *Ben-Shaul* lacks branch nodes because the directives applicable to the server groups are distinct from the groups themselves and are applied only “subsequent to” the formation of the groups. Resp., 60. Patent Owner is incorrect. Membership in a group determines what directives apply to what servers—that is why these groups are created. Pet., 53. And requests are directed to particular edge servers based on their group associations. *Id.* Further, as *Ben-Shaul* teaches, users can dynamically create, remove, add, delete, move, and rename edge servers and downstream nodes, allowing a user to alter the directives dynamically. *Ben-Shaul*, [0312].

Moreover, as already noted, the Board previously “decline[d] to add a requirement that the branch node has to include instructions (rules or policy) that are used to make decisions, such as where ‘Splits’ are required actions.” Paper 14, 24.

The same reasoning applies here. The Board should decline Patent Owner’s implicit invitation to construe the claim language to require the directives themselves to define the groups.

3. Each GUI Includes a Decision Tree

Patent Owner finally argues that *Ben-Shaul* fails to teach a decision tree at all. Resp., 62-64. But these arguments depend on the same flawed premise that the EdgeDNS does not direct requests based on regions or groups. *See id.*, 62-63 (“*Ben-Shaul*’s hierarchical map merely provides a ‘hierarchical view’ of the edge servers), 63 (“[T]he edge server groups in the hierarchical map do not represent any rules.”). They fail for the same reasons explained above. *Supra*, §IV.A.1. As the Petition explains, each of the Petition’s asserted GUIs comprises a decision tree representing a hierarchical structure of servers, which can be used to set policies for directing requests based on groups of servers. Pet., 47-48, 54-55.

B. *Ben-Shaul* Teaches Providing the Policy to the Name Server Network

As outlined in the Petition, *Ben-Shaul* provides the claimed policy because *Ben-Shaul*’s DNS directives are provided to the EdgeDNS servers via a policy control server. *Id.*, 52.

Patent Owner disputes this, repurposing its earlier arguments to argue that because *Ben-Shaul* (with or without *Hasan*) allegedly lacks the claimed GUI, it cannot provide a policy created using a GUI to the network. Resp., 65. But, as

explained, Patent Owner is wrong. *Ben-Shaul* enables users to define EdgeDNS policies via a GUI. *Supra*, §IV.A.1. And regardless of which GUI is used to create the policy, as explained in the Petition, policies would be stored in *Ben-Shaul*'s policy control server and provided to the EdgeDNS. Pet., 52; *supra*, §IV.A.1.

C. *Ben-Shaul* Alone Discloses the Claimed Domain Name Server

Patent Owner also argues that *Ben-Shaul*'s EdgeDNS does not provide *adaptive* DNS. Resp., 65-67. Patent Owner is wrong. *Ben-Shaul* teaches that its system adapts to current network conditions. Pet., 43-44 (citing *Ben-Shaul*, [0065]). While paragraph [0065] refers to “pre-fetch[ing] content” by the edge server, it nonetheless demonstrates that the system responds to requests dynamically. And contrary to Patent Owner's assertion (Resp., 66), the Petition cites other portions of *Ben-Shaul* describing adaptive DNS policies (Pet., 43-44). For example, *Ben-Shaul* explains that through CDML, policies “may change dynamically” as they are updated by users. *Ben-Shaul*, [0070]. *Ben-Shaul* further confirms its DNS directs requests differently “depending on ... the status of the edge server,” *id.*, [0360], indicating it responds to dynamic conditions. *Ben-Shaul* thus provides “adaptive policy-based” DNS.

D. The Petition Established Motivation to Combine *Ben-Shaul* and *Hasan*

Finally, as explained in the Petition, a POSITA would have been motivated to incorporate *Hasan*'s GUI for configuring *Ben-Shaul*'s DNS directives.

Pet., 42-43, 54. *Ben-Shaul* contemplates configuring and managing DNS directives that control how requests are routed to edge servers. *Ben-Shaul*, [0176]. *Hasan* discloses a GUI specifically designed to configure “device and service configuration data and policy information” across network elements. *Hasan*, 7:19-21. A POSITA would have been motivated to apply *Hasan*’s GUI to *Ben-Shaul* to improve usability, reduce configuration errors, and enable scalable management of DNS policies. Pet., 42-43. Patent Owner’s contrary argument—that “*Hasan* is not directed to DNS systems and does not address content delivery to users” (Resp., 68) misses the point. *Hasan*’s GUI is expressly directed to network service configuration and is readily applicable to the policy-driven DNS framework disclosed in *Ben-Shaul*. *Supra*, §§II.A, II.B.

Patent Owner’s argument that there would be no motivation to combine the references because *Hasan* “does not address the problem to which *Ben-Shaul* relates” (Resp., 68) is legally incorrect, as explained for Patent Owner’s analysis regarding *Beaumont*. *Supra*, §III.C. And whether *Hasan* is analogous (Resp., 67, 68) is a distinct inquiry from whether a POSITA would have combined the references. *See Google*, IPR2019-01247, Paper No. 34 at 35-36.

V. Conclusion

For the foregoing reasons, Petitioner respectfully requests that the Board find the challenged claims unpatentable.

Dated: May 11, 2026

Respectfully submitted,

/Erika H. Arner/
Erika H. Arner, Lead Counsel
Reg. No. 57,540

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(c)(1), the undersigned hereby certifies that the foregoing REPLY TO PATENT OWNER'S RESPONSE contains 5,564 words, excluding the parts exempted under 37 C.F.R. § 42.24(c), as measured by the word-processing system used to prepare this paper.

/Erika H. Arner/

Erika H. Arner, Lead Counsel

Reg. No. 57,540

CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing **Petitioner's Reply to Patent Owner's Response** was served electronically via email on May 11, 2026, in its entirety on the following:

Jason D. Eisenberg
jasone-PTAB@sternekessler.com

Daniel S. Block
dblock-PTAB@sternekessler.com

Kristina Caggiano Kelly
kckelly-PTAB@sternekessler.com

Xinxiang Zhang
xzhang-PTAB@sternekessler.com

Steven M. Pappas
spappas-PTAB@sternekessler.com

David Haars
dhaars-PTAB@sternekessler.com

PTAB@sternekessler.com

Dated: May 11, 2026

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