Petitioner's Demonstratives

Google LLC
v.
Sandpiper CDN, LLC

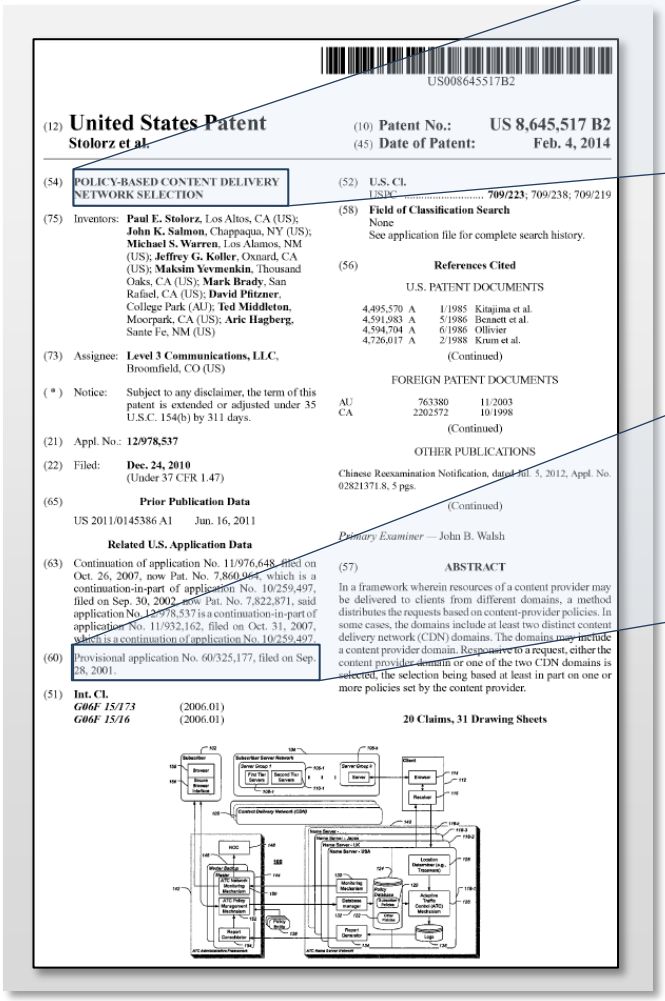
IPR2025-00806
U.S. Patent No. 8,645,517

August 6, 2026

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

GOOGLE EXHIBIT 1031
GOOGLE v. SANDPIPER
IPR2025-00806

’517 Patent Overview



US008645517B2

(12) **United States Patent**
Stolorz et al.

(10) **Patent No.: US 8,645,517 B2**
(45) **Date of Patent: Feb. 4, 2014**

(54) **POLICY-BASED CONTENT DELIVERY NETWORK SELECTION**

(75) Inventors: **Paul E. Stolorz**, Los Altos, CA (US); **John K. Salmon**, Chappaqua, NY (US); **Michael S. Warren**, Los Alamos, NM (US); **Jeffrey G. Koller**, Oxnard, CA (US); **Maksim Yevmenkin**, Thousand Oaks, CA (US); **Mark Brady**, San Rafael, CA (US); **David Pfitzner**, College Park (AU); **Ted Middleton**, Moorpark, CA (US); **Aric Hagberg**, Sante Fe, NM (US)

(73) Assignee: **Level 3 Communications, LLC**, Broomfield, CO (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 311 days.

(21) Appl. No.: **12/978,537**

(22) Filed: **Dec. 24, 2010**
(Under 37 CFR 1.47)

(65) **Prior Publication Data**

US 2011/0145386 A1 Jun. 16, 2011

Related U.S. Application Data

(63) Continuation of application No. 11/976,648, filed on Oct. 26, 2007, now Pat. No. 7,860,964, which is a continuation-in-part of application No. 10/259,497, filed on Sep. 30, 2002, now Pat. No. 7,822,871, said application No. 12/978,537 is a continuation-in-part of application No. 11/932,162, filed on Oct. 31, 2007, which is a continuation of application No. 10/259,497.

(60) Provisional application No. 60/325,177, filed on Sep. 28, 2001.

(51) **Int. Cl.**
G06F 15/173 (2006.01)
G06F 15/16 (2006.01)

(52) **U.S. Cl.**
USPC **709/223**; 709/238; 709/219

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

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Primary Examiner — John B. Walsh

(57) **ABSTRACT**

In a framework wherein resources of a content provider may be delivered to clients from different domains, a method distributes the requests based on content-provider policies. In some cases, the domains include at least two distinct content delivery network (CDN) domains. The domains may include a content provider domain. Responsive to a request, either the content provider domain or one of the two CDN domains is selected, the selection being based at least in part on one or more policies set by the content provider.

20 Claims, 31 Drawing Sheets

Ex. 1001, Cover

POLICY-BASED CONTENT DELIVERY NETWORK SELECTION

Claims priority to provisional filed Sept. 28, 2001

20 Claims
(1, 9, and 17 independent)

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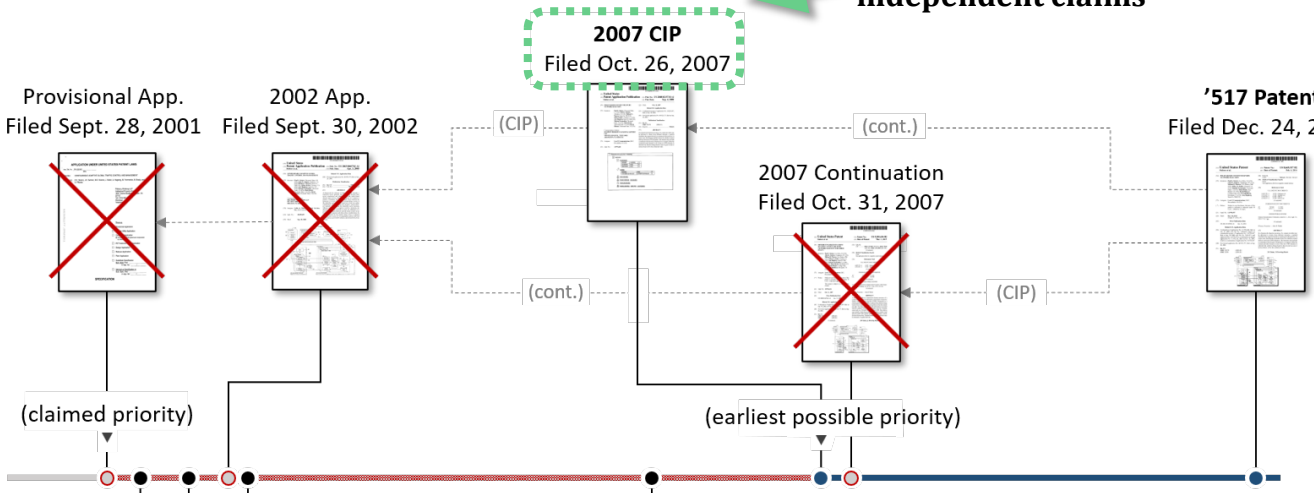
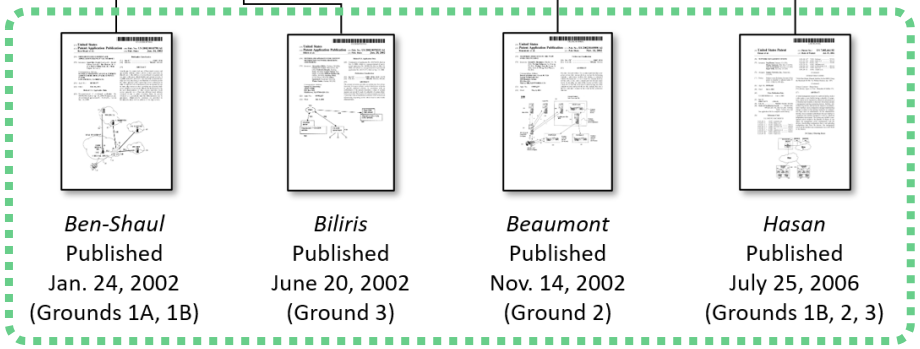
’517 Patent – Priority Date

Earliest priority date
Earliest application disclosing “one or more resource nodes [being] … *mail exchange (MX) records*” as recited in independent claims





All references §102(b) art under earliest priority date

Patent Owner admits all references §102(e) art regardless

Ex. 1001, Cover, 1:7-23, 31:24-34:28; Pet., 5-8; POPR, 12-14; DI, 14; Ex. 1003, ¶47-49; Ex. 2015, ¶54-57.

Grounds of Obviousness – All Claims Challenged

Ground	Claims Challenged	References
1	1, 4-9, and 12-20	*Beaumont* + *Hasan*
2	2, 3, 10, and 11	*Beaumont* + *Hasan* + *Biliris*
3A	1-20	*Ben-Shaul*
3B	1-20	*Ben-Shaul* + *Hasan*

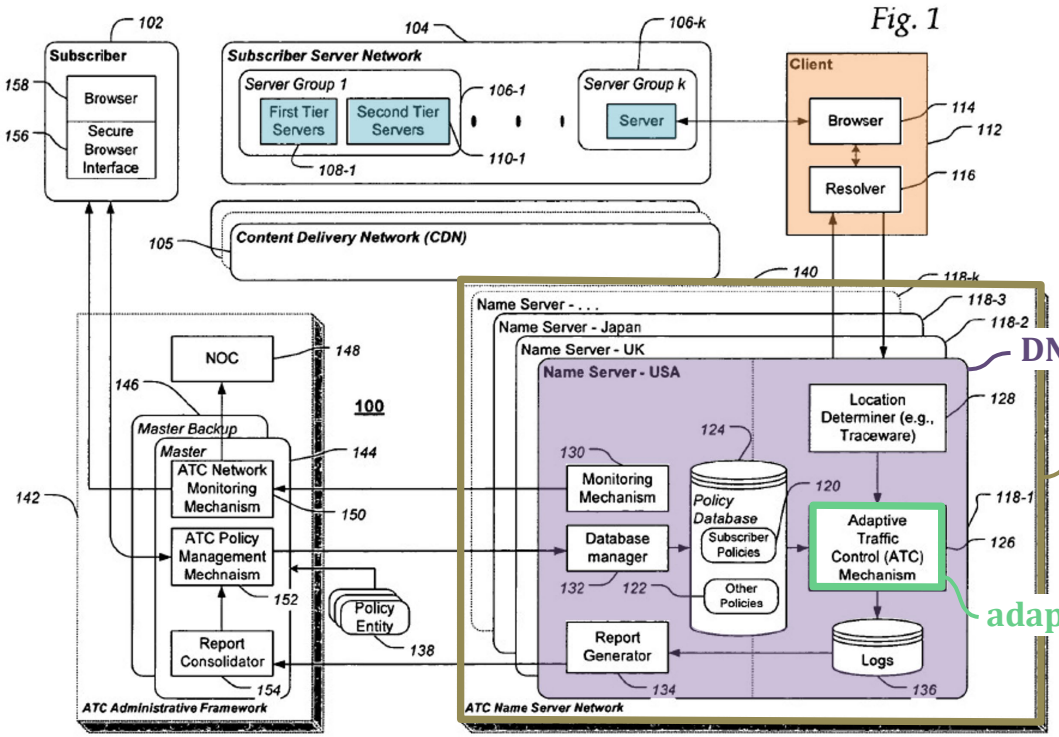
- All claims of the ’517 patent are challenged
- All claims rise or fall with claim 1

Pet., 2; DI, 6.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Overview of Claim 1

[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:



A **client** requests access to content and a **DNS server** returns an address of a **server selected according to policy**

DNS server

name server network

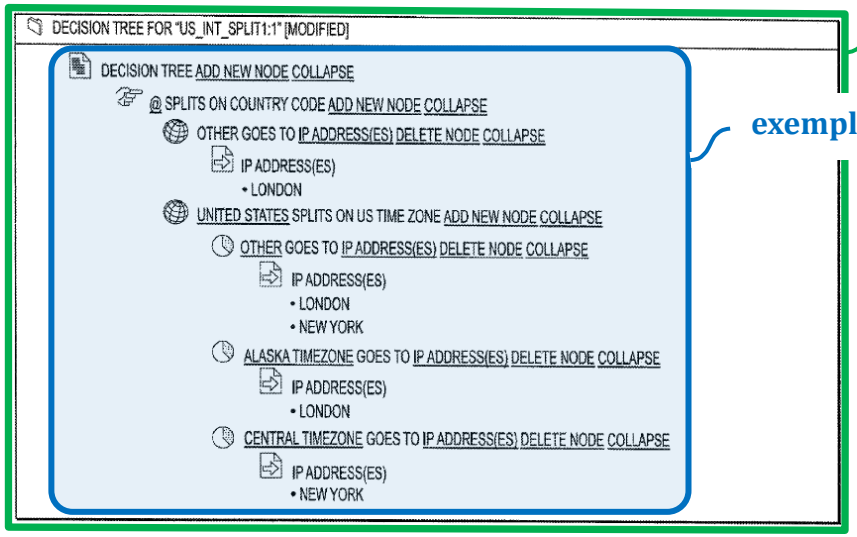
adaptive traffic control policies

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Pet., 3-5; Ex. 1001, 3:57-4:21, 4:35-51, Fig. 1.

Overview of Claim 1

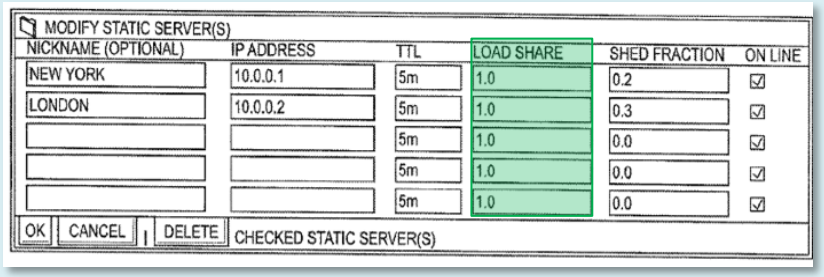
[1.a]	(A)	providing a **graphical user interface (GUI)**;
[1.b]	(B)	**using said GUI to obtain at least one policy for direction of network traffic**, wherein the GUI supports **the setting of said at least one policy using a decision tree representing rules**; and



exemplary GUI

exemplary decision tree

Ex-1001, Fig. 10b



Ex-1001, Fig. 9a

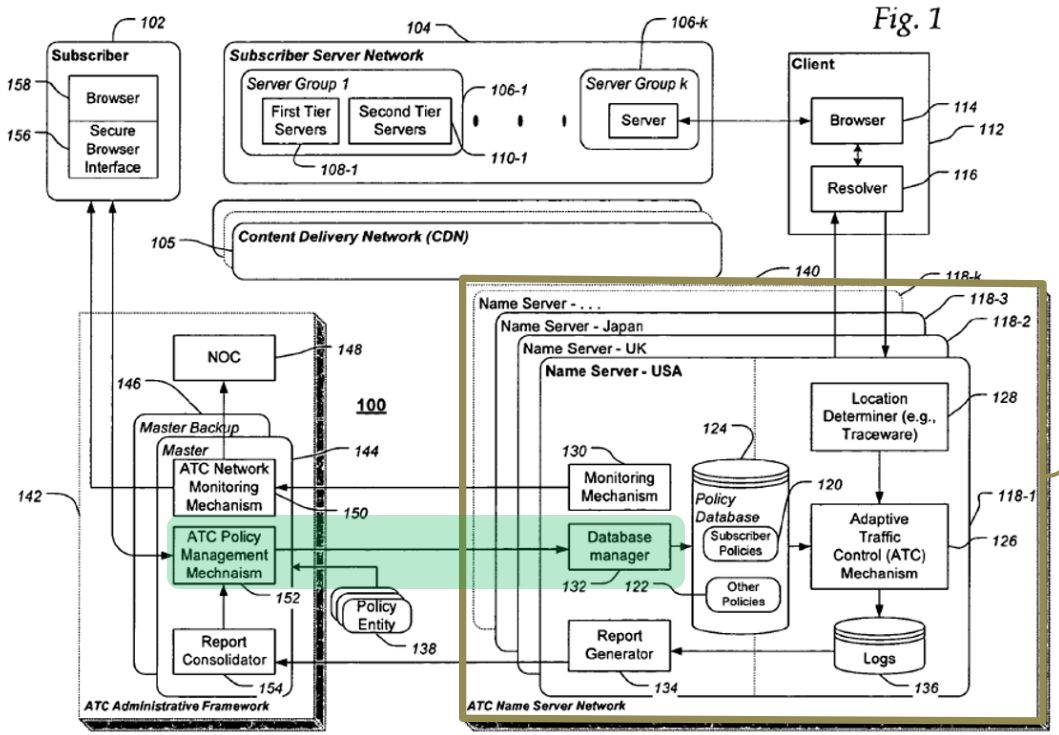
With respect to dynamic servers, with the mechanism of dynamic policies described above, a subscriber or a server can easily specify changes to existing policies (e.g., changes to load share, shed fraction policies and the On-line flag) without having to update an entire ATC policy hierarchy. In addi-

Ex-1001, 24:8-12

Pet., 3-5; Ex. 1001, 9:1-8, 17:33-45, 25:8-25, Fig. 10b.

Overview of Claim 1

[1.c]	(C) **providing said at least one policy** to the **name server network**,



DNS server accesses and stores policies in policy database 124.

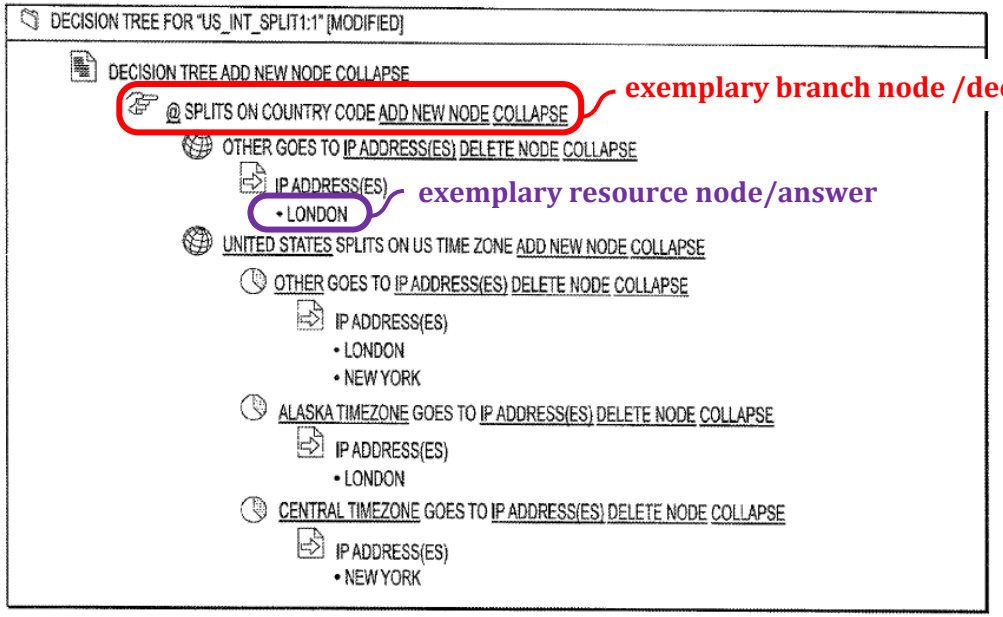
name server network

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Pet., 3-5; Ex. 1001, 4:35-51, Fig. 1.

Overview of Claim 1

[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.



Pet., 3-5; Ex. 1001, 9:1-8, 17:33-45, 25:8-25, Fig. 10b.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Overview of Claim 1

[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.

Decision tree representing rules

Branch nodes	**Resource nodes**
Decision criteria	**Answers to DNS requests**
	Selected from IP addresses, CNAME records, MX records, NS records, load sharing server sets
GUI supports specification of decision criteria selected from: • **World zones** • **Countries** • **States** • **Time zones** • **Blocks of IP addresses**	**GUI supports specification of answers for the resource nodes selected from:** • **IP addresses** • **CNAME records**

Pet., 3-5; Ex. 1001, 9:1-8, 17:33-45, 25:8-25, Fig. 10b.

Disputed Claim Limitations

Element	Representative Independent Claim 1
[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]	wherein the GUI supports the specification of: (i) one or more answers for the one or more resource nodes, and
[1.f]	(ii) one or more decision criteria for the one or more branch nodes,
[1.g]	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.h]	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 wherein the answers are selected from: IP addresses and CNAMEs.

The references teach a **policy**

The references teach setting the policy using a **decision tree GUI**

Hasan is **analogous art**

Pet., 81-82; Ex. 1001, 31:24-56.

Disputed Claim Limitations

Element	Representative Independent Claim 1
[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]	wherein the GUI supports the specification of: (i) one or more answers for the one or more resource nodes, and
[1.f]	(ii) one or more decision criteria for the one or more branch nodes,
[1.g]	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.h]	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 wherein the answers are selected from: IP addresses and CNAMEs.

The references teach **a policy**

The references teach setting the policy using a **decision tree GUI**

Hasan is **analogous art**

Pet., 81-82; Ex. 1001, 31:24-56.

Disputed Combination with *Hasan*

Element	Representative Independent Claim 1
[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]	wherein the GUI supports the specification of: (i) one or more answers for the one or more resource nodes, and
[1.f]	(ii) one or more decision criteria for the one or more branch nodes,
[1.g]	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.h]	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 wherein the answers are selected from: IP addresses and CNAMEs.

The references teach **a policy**

The references teach setting the policy using **a decision tree GUI**

Hasan is **analogous art**

Pet., 81-82; Ex. 1001, 31:24-56.

Ground 1
Section 103: *Beaumont* + *Hasan*

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Beaumont + *Hasan* Policy

***Beaumont* client requests access to content;**
DNS server returns address of server selected according to policy

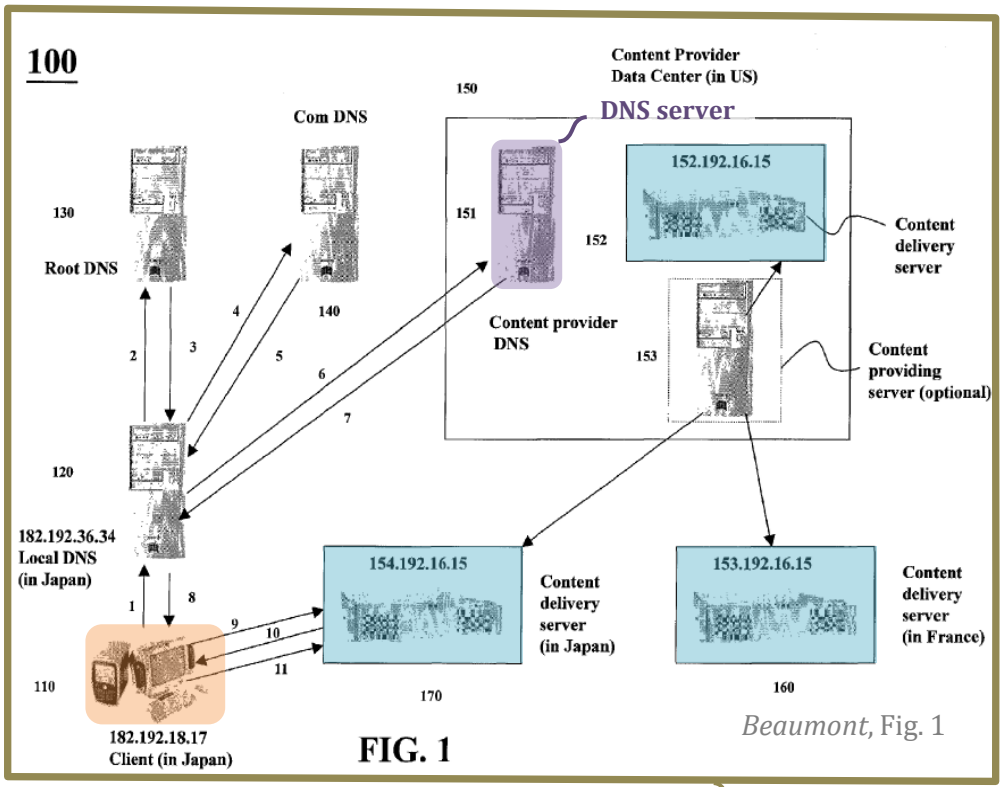


FIG. 1

Beaumont, Fig. 1

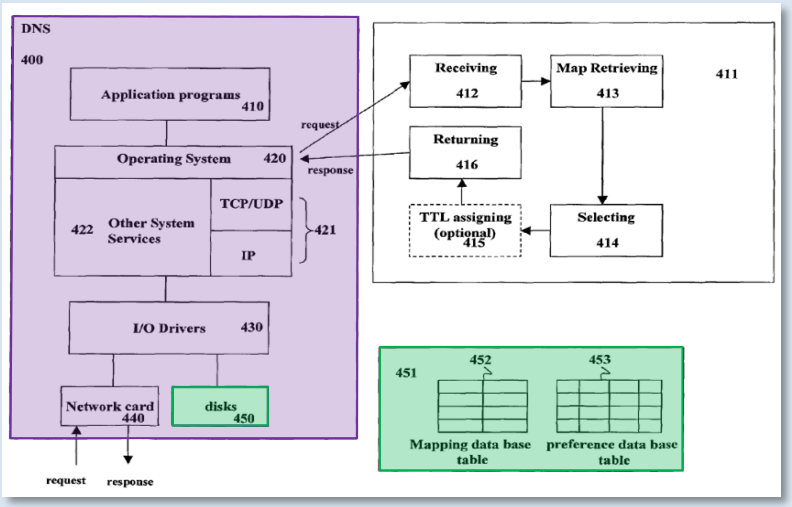
name server network

***Beaumont's* rules are set through preference numbers and these rules are stored at the DNS server**

Beaumont

[0031] Although as illustrated above, the rule for selecting the best content delivery server in accordance with the principles of the invention is the shortest estimated distance to the client, other rules such as selecting one based on user preferences can be used as well. For example, a preference number can be assigned to each content delivery server and a destination domain, and the content delivery server with the highest retrieved preference number is selected. FIG. 3

Beaumont, [0031]



Beaumont, Fig.4

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Pet., 9-11, 15-16, 18; Ex. 1003, ¶78.

Beaumont + *Hasan* Decision Tree GUI

Users enter preference numbers used by rules in *Beaumont* table, which "can be a tree" like Hasan's "familiar tree structure" GUI

Beaumont

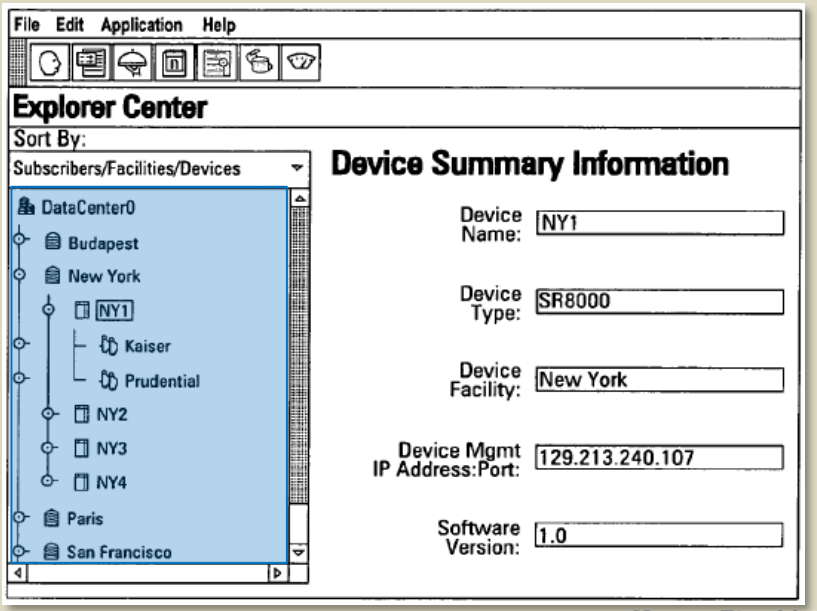
erence database table. A preference number as illustrated is entered manually. However, other methods can be used as

Beaumont, [0031]

in the table. Although presented as a table, other data structures such as a tree can be used as well. Those skilled

Beaumont, [0023]

Hasan



Hasan, Fig. 6A

its facilities, subscriber, devices and/or log servers. A view is normally shown as the familiar tree structure, with the root being the data center, and the branches being the facilities, subscribers, devices and log servers. It will be recognized

Hasan, 8:22-25

A POSITA would have been motivated to combine *Beaumont* and *Hasan* to incorporate *Hasan*'s GUI for setting policies and rules

management. *Hasan*, 6:44–45; *Beaumont*, [0017]. In view of *Beaumont*'s teaching that a user could manually enter preferences for applying rules (*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, ¶ 69

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

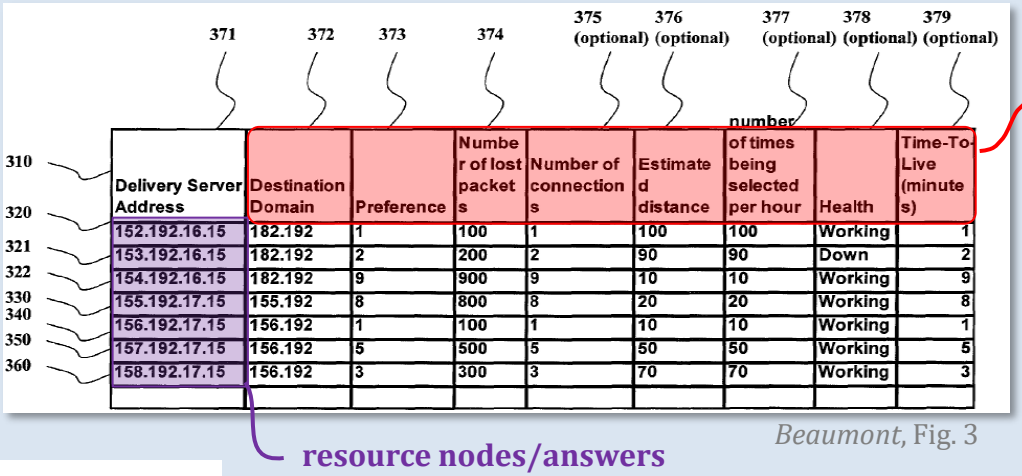
Pet., 13-14, 16-18; Reply, 10-11, 16-18.

Beaumont + *Hasan* Decision Tree GUI

Inputting preference numbers in *Beaumont-Hasan* decision-tree GUI "supports the specification" of

- **branch nodes/decision criteria, including geographical areas and IP address blocks**
- **resource nodes/answers, including IP addresses**

Beaumont



Beaumont, Fig. 3

converted into a binary number. The model of interaction between two hosts generally is the client-server model in which a client host ("hereinafter "client") sends a request to a server host (hereinafter "server") and the server returns a response to the client using the above-mentioned IP addresses.

Beaumont, [0003]

saved. The last alternative selection rule is to select one based on a function of at least two factors such as preference, number of lost packets per unit time, number of connections, and estimated distance. For example, a weighted sum is computed for each mapped address and the one with the smallest sum is selected. As an example, if the weights for

Beaumont, [0031]

area. More than one address block may be mapped to a geographical area. A content provider DNS uses the IP address of a client, finds the corresponding geographical area according to the IP address space mapping, and selects a content delivery server in the same geographical area.

Beaumont, [0024]

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petitioner's *Beaumont* Arguments Are Not New

[1.b] "using said GUI to obtain at least one policy for direction of network traffic"

Petitioner has consistently cited *Beaumont*'s "rule[s]" as the claimed policy — this is not a new argument

Patent Owner Sur-Reply

"Petitioner's Reply **argues for the first time** that Beaumont's **separate 'rule[s]** for selecting the best content delivery server' **are actually the claimed policies**." Sur-reply, 6-7

> 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.

Pet., 22

> 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.*

Pet., 18

> management. *Hasan*, 6:44–45; *Beaumont*, [0017]. In view of *Beaumont*'s teaching that a user could manually enter preferences for applying rules (*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, ¶ 69

> server") "comprise[] hardware … and software." *Id.*, [0032], Fig. 4. The content provider DNS server forwards DNS requests according to values in a preference database, which reflect "assigning rules" and thus "provide[s] … policy-based domain name service." *Id.*, [0030]–[0031]. *Beaumont*'s DNS servers are "adaptive"

Lin, ¶ 73

> 10:25–34; *Beaumont*, Figs. 2, 3, [0029]–[0031]. A POSITA would thus have recognized the combined GUI to "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

> 90. Further, *Beaumont* envisions that various rules may be applied by the content delivery DNS, and it further suggests that the DNS server may weight these rules. *Beaumont*, [0031]. *Hasan* expressly discloses using its GUI to alter policies.

Lin, ¶ 90

Pet. 16-22; Reply, 6-9.

Changing *Beaumont*'s Preferences Changes the Policy

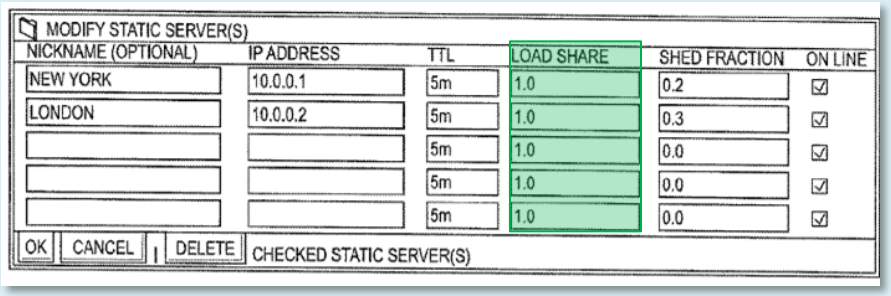
[1.b] "using said GUI to obtain at least one policy for direction of network traffic"

Patent Owner Sur-Reply

"**Inputting preference numbers … does not change the rule**; it merely changes variables used in applying the rule." Sur-reply, 9.

The '517 patent supports setting policies by changing underlying values in the same way

'517 Patent



Ex-1001, Fig. 9a

With respect to dynamic servers, with the mechanism of dynamic policies described above, a subscriber or a server can easily specify changes to existing policies (e.g., changes to load share, shed fraction policies and the On-line flag) without having to update an entire ATC policy hierarchy. In addi-

Ex-1001, 24:8-12

server has returned). The subscriber may adjust the load share of the servers as in the earlier examples (either by logging in to the ATC to change the load share values manually, or by

Ex-1001, 27:60-64

Beaumont

Delivery Server Address	Destination Domain	Preference	Number of lost packets	Number of connections	Estimated distance	of times being selected per hour	Health	Time-To-Live (minutes)
152.192.16.15	182.192	1	100	1	100	100	Working	1
153.192.16.15	182.192	2	200	2	90	90	Down	2
154.192.16.15	182.192	9	900	9	10	10	Working	9
155.192.17.15	155.192	8	800	8	20	20	Working	8
156.192.17.15	156.192	1	100	1	10	10	Working	1
157.192.17.15	156.192	5	500	5	50	50	Working	5
158.192.17.15	156.192	3	300	3	70	70	Working	3

Beaumont, Fig. 3

Pet. 16-22; Reply, 6-9.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Patent Owner Mischaracterizes *Beaumont-Hasan*

[1.b] "wherein the GUI supports the setting of said at least one policy using a decision tree representing rules"

Patent Owner's *Beaumont-Hasan* arguments ignore the combination

Patent Owner Response

"Hasan's GUI **does not represent rules, nor does it have any underlying logic** for implementing a decision tree. … Rather, the tree merely provides a convenient 'view' of the data center objects." POR, 30.

Patent Owner Sur-Reply

"Simply arranging servers in a GUI does not satisfy this requirement. … [G]rouping servers in the Beaumont-Hasan GUI **affects only the topology of the servers** within the GUI, **not the logic** that governs server selection." Sur-reply, 16.

***Beaumont* teaches the underlying logic and decision tree**

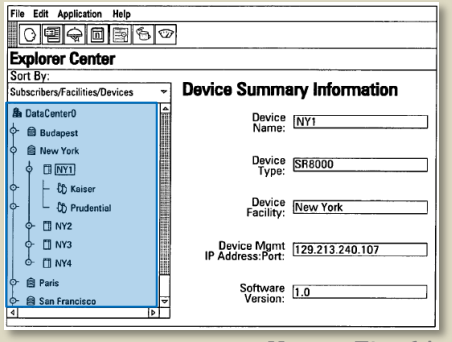
***Hasan* provides a GUI for grouping servers and specifying preferences**

Beaumont

	371	372	373	374	375 (optional)	376 (optional)	377 (optional)	378 (optional)	379 (optional)
310	Delivery Server Address	Destination Domain	Preference	Number of lost packets	Number of connections	Estimated distance	number of times being selected per hour	Health	Time-To-Live (minutes)
320	152.192.16.15	182.192	1	100	1	100	100	Working	1
321	153.192.16.15	182.192	2	200	2	90	90	Down	2
322	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

Beaumont, Fig. 3

Hasan



Hasan, Fig. 6A

Pet. 17-20; Reply, 11-13.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Patent Owner Demands More than Claimed

[1.b] "wherein the GUI supports the setting of said at least one policy using a decision tree representing rules"

Patent Owner attempts to read additional limitations into the claims

Patent Owner Response

"Hasan's GUI at most allows users to edit policies for respective data center objects. **The policies themselves are not hierarchical.** They are not related nor do they depend on one another." POR, 30.

"The structure of the topology (e.g., the tree structure) **does not itself represent a policy hierarchy**, nor does it represent any rules, as required by the claims." POR, 30.

The claims do not require a "policy hierarchy"

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Pet. 17-20; Reply, 11-13.

Patent Owner Demands More than Claimed

[1.b] "wherein the GUI supports the setting of said at least one policy using a decision tree representing rules"

Patent Owner attempts to read additional limitations into the claims

Patent Owner Sur-Reply

"The combined GUI does not enable users to **specify rules or logic that govern server selection**. … As explained, **server selection is governed by Beaumont's separate, fixed software** that is not user configurable." Sur-reply, 15.

The claims do not require that every policy be coded from scratch or entirely input through the GUI

'517 Patent

With respect to dynamic servers, with the mechanism of dynamic policies described above, a subscriber or a server can easily specify changes to existing policies (e.g., changes to load share, shed fraction policies and the On-line flag) without having to update an entire ATC policy hierarchy. In addi-

Ex-1001, 24:8-12

The '517 patent confirms that updating preference values or setting groupings is enough

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Pet. 17-20; Reply, 11-13.

Patent Owner's Sur-Reply Arguments Fail

[1.b] "wherein the GUI supports the setting of said at least one policy using a decision tree representing rules"

Patent Owner's complaint that Petitioner relies on the preference values for multiple elements is factually and legally incorrect

Patent Owner's Sur-Reply

"The claimed policy, decision criteria, and answers are distinct claim elements. … By pointing to the preference values for each element, Petitioner fails to show that the Beaumont-Hasan GUI teaches these three distinct elements." Sur-reply, 19

***Google LLC v. Pers. Audio, LLC*, 743 F. App'x 978, 985 (Fed. Cir. 2018)**

Affirming "the principle that in infringement or obviousness analysis, **a single element, feature, or mechanism can ordinarily satisfy multiple claim limitations**, including by performing multiple claimed functions"

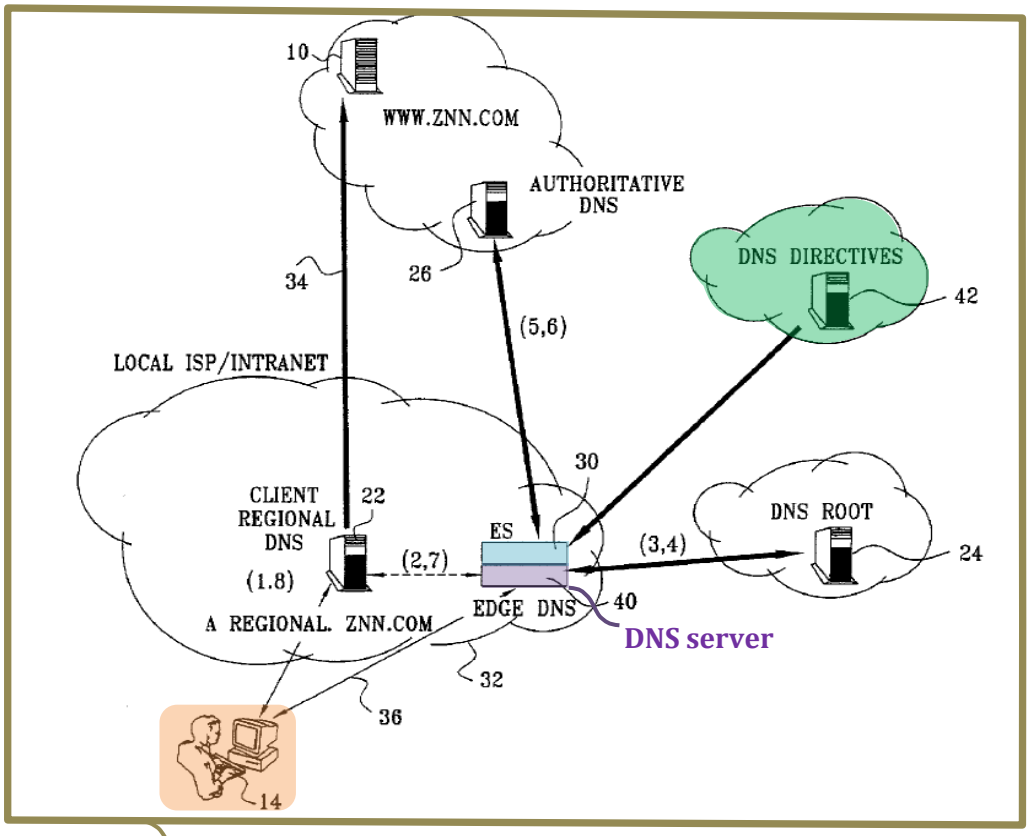
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Grounds 3A and 3B
Section 103: *Ben-Shaul* (+ *Hasan*)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ben-Shaul (+ *Hasan*) Policy

***Ben-Shaul*'s client requests access to content; the EdgeDNS server returns address of an edge server selected according to DNS directives (policy)**



Ben-Shaul

special local DNS entity termed the EdgeDNS. The EdgeDNS is responsible to return the IP address of either the edge server or another server for resources that whose URL resides in these domains. The control over which resources zones are directed to the edge servers may be controlled via the edge server policy.

Ben-Shaul, [0041]

in the root DNS server system. The configuration of the EdgeDNS **40** and its coordination with the client regional DNS server **22** is controlled by DNS directives that originate from one or more policy control servers **42**. In addition each

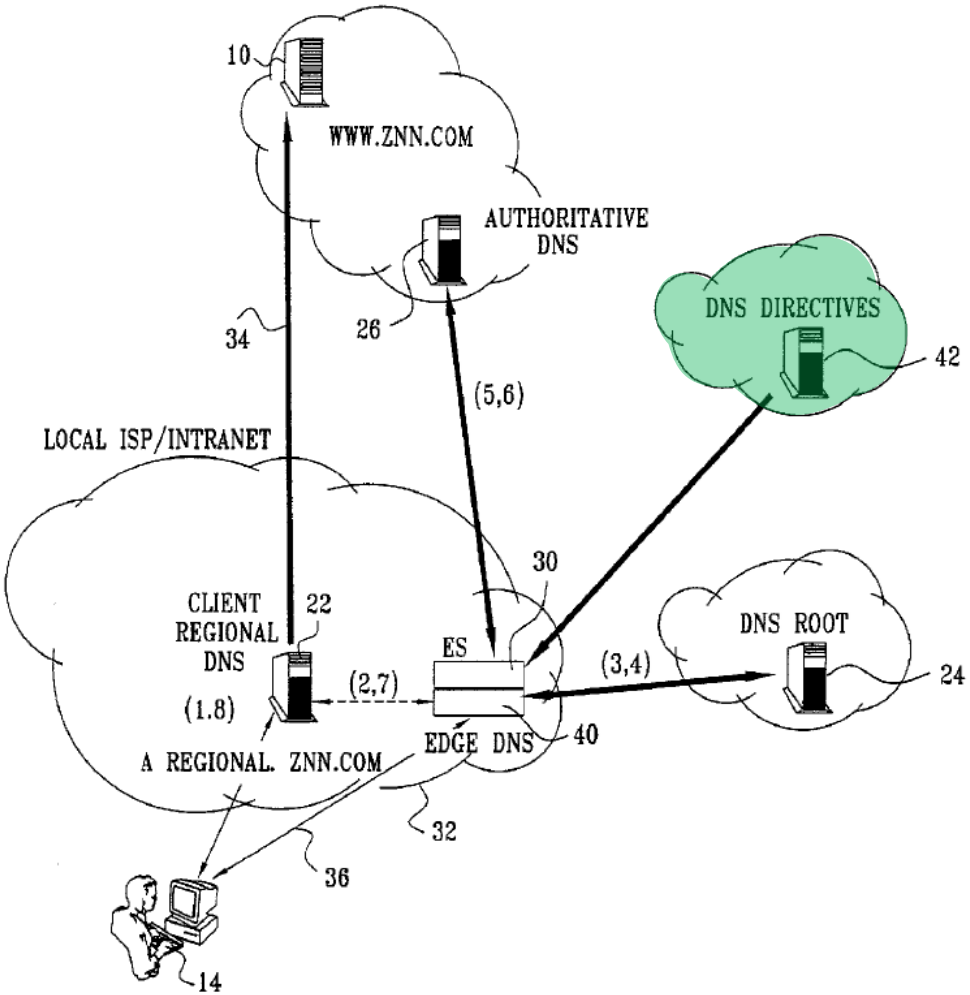
Ben-Shaul, [0177]

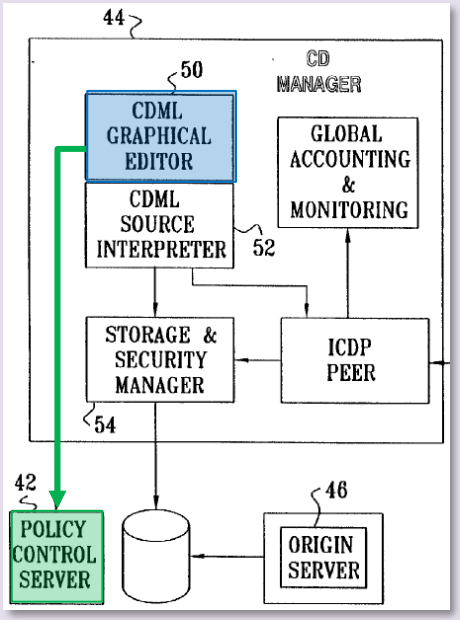
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Pet., 39-41, 43-46, 46-52; Reply 18-23.

Ben-Shaul (+ *Hasan*) Policy

***Ben-Shaul*'s DNS directives are provided to the DNS network by policy control server 42**





Ben-Shaul, Fig. 6

FIG. 6. The content delivery manager **44** is associated with an origin web server **46**, and optionally with a policy control server **42**, although it does not have to reside in the same server **42**. The content delivery manager **44** is responsible for specifying content delivery policies, preferably using CDML, and for embedding CDML in the content, either

Ben-Shaul, [0182]

in the root DNS server system. The configuration of the EdgeDNS **40** and its coordination with the client regional DNS server **22** is controlled by DNS directives that originate from one or more policy control servers **42**. In addition each

Ben-Shaul, [0177], Fig. 4

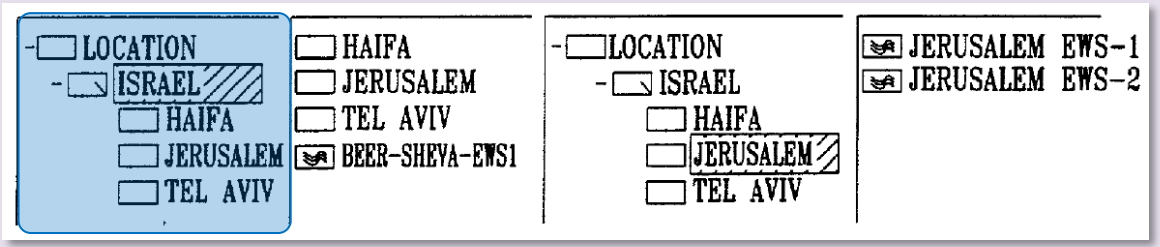
Pet., 52; Reply, 25-26.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ben-Shaul (+ *Hasan*) Decision Tree GUI

***Ben-Shaul* alone or with *Hasan* discloses multiple GUIs that support setting policy using a decision tree**

Ben-Shaul's Front Edge Tool



Ben-Shaul, Fig. 10

[0309] The system **80** supports the capability to predefine meaningful grouping of edge servers, in order to simplify the application of policies applicable to a set of related edge servers. For example, edge servers may be organized by region, organization, or common interest. The edge server

Ben-Shaul, [0309]

Ben-Shaul's CDML Editor

representatively as edge server **48**. Implementation of CDML is accomplished using the CDML editor **50** and the source interpreter **52**. The CDML editor **50** is a graphical editor that eases the construction of CDML code and the modification of URLs to regional DNS names. The editor

Ben-Shaul, [0182]

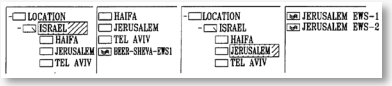
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Pet., 46-52; Reply, 18-23.

Ben-Shaul (+ *Hasan*) Decision Tree GUI

The Petition asserts three GUIs:

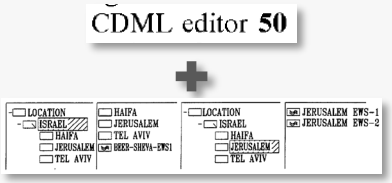
1 ***Ben-Shaul*'s Front Edge Tool**



***Ben-Shaul*'s front edge tool GUI supports the setting of policies.**

Lin, ¶ 162

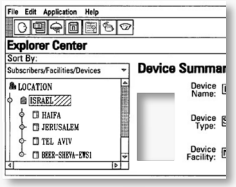
2 ***Ben-Shaul* "Single GUI"**



A POSITA would have been motivated to implement *Ben-Shaul*'s CDML editor in the same hierarchical format as the front edge tool

Lin, ¶ 164

3 ***Ben-Shaul-Hasan* GUI**



A POSITA would have been motivated to incorporate *Hasan*'s GUI into *Ben-Shaul* to provide a "familiar tree structure" in setting policy directives

Lin, ¶¶ 166-168

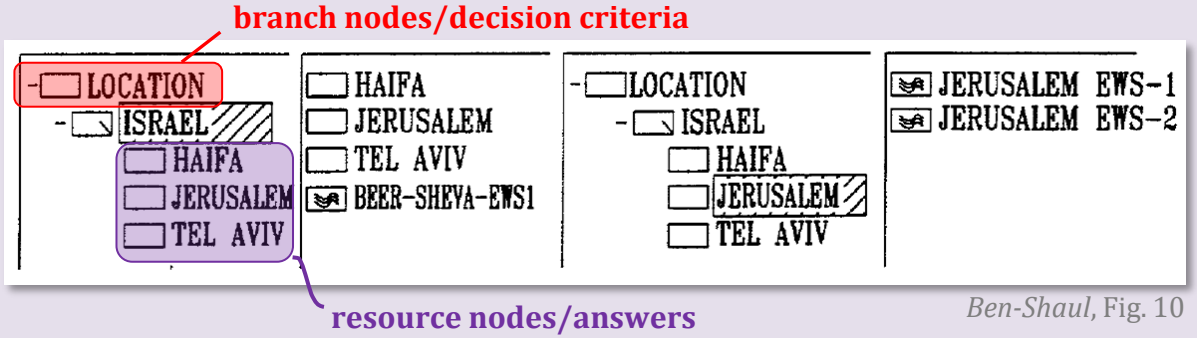
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Pet., 46-52; Reply, 18-23.

Ben-Shaul (+ *Hasan*) Decision Tree GUI

***Ben-Shaul*'s front edge tool enables forming a decision tree of "logical aggregations of nodes" for regional and group differentiation in which the edge servers are "leaves"**

Ben-Shaul



Ben-Shaul, Fig. 10

Grouping servers through *Ben-Shaul*'s GUIs supports the specification of:

decision criteria that differentiate delivery based on geographical regions and server groupings, and

[0082] According to a further aspect of the invention, the description of an edge server group includes information concerning at least one of an organization type, geographical region, language, business relation to the origin web site, edge server hardware capabilities, edge server software capabilities, edge server security specifications, internet location, and internet connection speed of members of the edge server group.

Ben-Shaul, [0082]

answers in the form of IP addresses

special local DNS entity termed the EdgeDNS. The EdgeDNS is responsible to return the IP address of either the edge server or another server for resources that whose URL resides in these domains. The control over which resources

Ben-Shaul, [0041]

Pet., 52-58; Reply, 18-25.

The *Ben-Shaul-Hasan* GUIs Set DNS Policy

[1.b] "using said GUI to obtain at least one policy for direction of network traffic"

The additional DNS functions Patent Owner cites are superfluous at best

Patent Owner Response

DNS cache registration:

"The EdgeDNS **stores resource records that map IP addresses to domains** … [and] accesses these resource records to resolve DNS requests." POR, 49 (citing ***Ben-Shaul*, [0176]**).

This description confirms the EdgeDNS is controlled by DNS directives

Ben-Shaul

[0176] 1. This alternative is termed DNS cache registration and is explained with reference to **FIG. 4**. Concurrent notation **(2, 3)**. The configuration of the EdgeDNS **38** and its coordination with the client regional DNS server **22**, the root DNS server **24**, and the authoritative DNS server **26** is controlled by DNS directives that originate from one or more policy control servers.

Ben-Shaul, [0176]

Dynamic cache replacement:

"In response to receiving a DNS request, the **EdgeDNS merely accesses these resource records to determine the IP address** mapped to the requested domain." POR, 51-52.

Described as a "special service[]," separate from DNS duties

[0359] The DNS name server **134** also acts as a conventional DNS Name Server. For example it accepts and handles queries from clients, manages a local cache of DNS queries, maintains zones.

[0360] The three special services provided by the DNS name server **134** are: (1) dynamic cache replacement, as

Ben-Shaul, [0359]-[0360]

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Pet. 47-52; Reply, 18-23.

Ben-Shaul Teaches Adaptive Policy-based DNS

[1.d] "at least one domain name server … constructed and adapted to provide adaptive policy-based domain name service"

Patent Owner mischaracterizes the Petition in arguing Ben-Shaul does not apply adaptive policies

Patent Owner Response

Petitioner "**cites only to Ben-Shaul paragraph 65** for support. … But paragraph 65 describes conditions for when an edge server may pre-fetch content from its corresponding origin server. It does not describe domain name service functionality." POR, 60.

(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

Pet., 44

Ben-Shaul

[0070] An important characteristic of differentiated content and application delivery policy is its adaptability. Policies for a given content may change dynamically, and can be immediately applied. The differentiated content and appli-

Ben-Shaul, [0070]

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Pet. 43-46; Reply, 26.

Ben-Shaul Teaches GUIs for Setting Policy

[1.b] "using said GUI to obtain at least one policy for direction of network traffic"

Dr. Lin's testimony does not support Patent Owner's arguments

Patent Owner Response

Paragraph 44 "describes *edge server* functionality … . It **does not describe techniques for resolving DNS requests**." POR, 56 (citing Dr. Lin's testimony for support).

"[A]s Dr. Lin acknowledged, Ben-Shaul's **EdgeDNS does not resolve DNS requests using policies**." POR, 54 (citing EX2018, 213:1-215:4).

Dr. Lin

A I think it does, in the same way that it does for 43. I think it is the DNS server that returns which edge server is used to respond to a request. And so an EdgeDNS server is -- is used to resolve part of this regional and group differentiation.

Ex-2018, 230, 10-15

I didn't say that this is the portion that shows policy.

review. But on -- on first glance, this section appears to be about cache replacements, clearly not entries. And it's not talking about policy or even the implementation of policy.

Ex-2018, 214:18-215:4

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Hasan Is Analogous Art

Independent Claims

Element	Representative Independent Claim 1
[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]	wherein the GUI supports the specification of:
[	
[	
[1	server (NS) records, and load sharing server sets; and wherein the answers are selected from: IP addresses and CNAMEs.

The references teach **a policy**

The references teach setting the policy using **a decision tree GUI**

Hasan is **analogous art**

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 the '517 patent.

***Sanofi-Aventis Deutschland GmbH v. Mylan Pharms. Inc.*, 66 F.4th 1373, 1377 (Fed. Cir. 2023).**

Pet., 81-82; Ex. 1001, 31:24-56.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Hasan Is from the Same Field of Endeavor

Patent Owner's asserted field specific to DNS services is overly narrow

Patent Owner Response

"The '517 patent's field of endeavor is thus ***DNS services* for directing network traffic**." POR, 9.

Patent Owner Sur-Reply

"Although the specification contemplates 'a number of different scenarios in which the invention might be deployed,' these scenarios merely describe **different deployment contexts for the same DNS-based traffic direction techniques**." Sur-reply, 3.

'517 Patent

There are many potential uses for the invention. One use is to provide a stand-alone service directing traffic exclusively to a set of designated servers managed by a single organization. The invention may also be used in more general ways—for example, one or more of the designated destinations can refer to servers (or server collections) outside the organization's control. The latter case includes, for example, Content Delivery Networks (CDNs), as well as local load-balancing servers, as potential destinations. The invention can also be used, e.g., to provide the DNS (Domain Name Service) component of a Content Delivery Network itself It can be deployed as a service on behalf of subscribers, or it can be deployed as software to be used directly by subscribers themselves.

Not DNS

DNS

Ex-1001, 2:8-21

different scenarios in which the invention might be deployed, this description will focus, for clarity and example only, on a scenario in which DNS service is provided by a third party on behalf of a content or applications provider.

Ex-1001, 3:16-20

***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."

Pet., 11-14; Reply, 2-4.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Hasan Is from the Same Field of Endeavor

Even if the field of endeavor is DNS services, *Hasan* discloses a VPN application allowing protocols to pass through to change DNS settings

Hasan

More specifically, in implementing a VPN, access though a packet filtering firewall is required. In addition, static mappings in a NAT service allowing users to point a VPN client at a given address for access to the servers of the subscriber are required. In this example, a subscriber level

Hasan, 17:42-46

In one embodiment, this is implemented using each content services application. The content services application for the VPN, for example, will search through rules to allow appropriate settings for protocols, such as IPSec and IKE, to pass through a firewall implementation, and change appropriate DNS settings, both of which are implemented by other systems to implement a VPN. Similarly, the VPN application may make changes to NAT settings implemented by the NAT service application

Hasan, 17:57-65

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Pet., 11-14; Reply, 4-5.

Hasan Is Nonetheless "Reasonably Pertinent"

Hasan is at least "reasonably pertinent" to directing network requests.

Patent Owner Response

"The '517 patent thus addresses the problem of **how to distribute network requests** from end users to the appropriate servers in a manner that provides a good end-user experience." POR, 14-15

Patent Owner Sur-Reply

"Hasan is not reasonably pertinent to the problem addressed by the '517 patent because it **does not contemplate directing network requests to appropriate servers**." Sur-reply, 5.

All related to distributing network requests

Hasan

In general, in the typical data center case, the subscribers service equipment is designed with one subscriber in mind and hence, a data center providing outsourced management services to many subscribers must provide a separate set of infrastructure equipment for each subscriber. This equipment can come from many different vendors. The cages may include network appliances dedicated to one or more of the following tasks: routing, firewall, network address translation (NAT), SSL acceleration, virtual private networking, public key infrastructure (PKI), load balancing, Web caching, or the like. As a result, the management of all subscrib-

Hasan, 2:42-52

***Donner Tech., LLC v. Pro Stage Gear, LLC*, 979 F.3d 1353, 1361 (Fed. Cir. 2020)**

Even where there are "significant differences between a patent and a reference from a different field of endeavor," a POSITA might nonetheless have consulted the reference "so long as she would understand the portions of the reference relevant to solving her problem."

Pet., 11-14; Reply, 4-5.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Motivation to Combine

Patent Owner's motivation to combine assertions rehash the same analogousness arguments and are incorrect

Beaumont + Hasan

Patent Owner Response

"A POSA would not have combined Beaumont and Hasan…. As explained in Section VI.A, **Hasan is not directed to DNS systems and does not address content delivery to users**." POR, 40

Ben-Shaul + Hasan

Patent Owner Response

"As explained in Section VI.A, Hasan is not analogous art to the '517 patent because it is not directed to delivering content to end users over a network. For similar reasons, **it is also not analogous to Ben-Shaul**." POR, 67

Patent Owner applies the incorrect test for motivation to combine

***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**."

Pet., 13-14, 42-43; Reply, 26-27.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE