

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Google LLC,

Petitioner,

v.

Sandpiper CDN, LLC,

Patent Owner.

Case: IPR2025-01010

U.S. Patent No. 10,057,322

Issue Date: August 21, 2018

Title: Network Address Resolution

PETITION FOR *INTER PARTES* REVIEW

TABLE OF CONTENTS

I.	PRELIMINARY STATEMENT	1
II.	OVERVIEW OF PRIOR ART	1
	A. Verma	1
	B. Raciborski.....	3
	C. Draï	4
	D. HTML Documents with Embedded Objects and Tags.	5
	E. Lewin.....	7
III.	OVERVIEW OF THE '322 PATENT	7
	A. Specification.....	7
	B. Prosecution History	9
	C. Claim Construction.....	9
IV.	LEVEL OF ORDINARY SKILL IN THE ART (POSITA)	10
V.	PRECISE RELIEF REQUESTED	10
VI.	FOUNDATIONS 1A/1B: VERMA	10
	A. Independent Claim 15	10
	B. Independent Claim 11	28
	1. [11a] at least one processor in communication with a non-transitory computer readable medium including computer readable instructions for:	28
	2. [11pre], [11b]-[11g].....	29
	C. Claim 12: The content delivery network of claim 11 wherein the computer readable instructions are further for replacing the embedded resource with the modified embedded resource in a resource.....	30

D.	Claim 14: The content delivery network of claim 11 wherein the modified embedded resource includes at least one of an IP address to facilitate communication with the node to obtain the content associated with the embedded resource, a virtual IP address to facilitate communication with the node to obtain the content associated with the embedded resource, and one or more absolute uniform resource locators to facilitate communication with the node to obtain the content associated with the embedded resource.....	33
VII.	GROUND 2: VERMA AND RACIBORSKI	34
A.	Independent Claim 15	34
B.	Independent Claim 11	40
C.	Claim 12	41
D.	Claim 14	43
VIII.	GROUND 3: VERMA AND LEWIN	43
A.	Independent Claim 1	43
B.	Claim 8: The content delivery method of claim 1 wherein the tag is a unique tag.....	60
C.	Claim 10: The content delivery method of claim 1 wherein the content resource is a hypertext markup language (HTML) document and the embedded resource is a link.....	62
D.	Claim 13: The content delivery network of claim 11 wherein the resource is an HTML document and the modified embedded resource is a link.....	62
IX.	GROUND 4: VERMA, LEWIN, AND RACIBORSKI.....	63
A.	Claim 2	63
B.	Claim 4: The content delivery method of claim 2 wherein the parameter is a delivery protocol parameter.....	72

C.	Claim 5: The content delivery method of claim 2 wherein the information is the IP address.....	75
D.	Claim 7: The content delivery method of claim 2 wherein the location information includes at least one of an IP address, a virtual IP address, one or more absolute uniform resource locators.	76
E.	Claim 9	76
1.	[9a] The content delivery method of claim 1 wherein the request is over an http connection and the at least one delivery parameter is a location identifier for the client device, the method further comprising:	76
2.	[9b] passing, by the origin system, the location identifier to an application programming interface (API) of the content delivery network to generate the modified embedded resource relating to the node.	77
F.	Claim 13	77
X.	GROUND 5: VERMA, LEWIN, RACIBORSKI, AND DRAI	77
A.	Claim 3: The content delivery method of claim 2 wherein the parameter is a popularity parameter.	77
B.	Claim 6: The content delivery method of claim 2 wherein the information is geographic information.....	80
XI.	STANDING	83
XII.	§ 314 DOES NOT FAVOR DENIAL	83
XIII.	§ 325 DOES NOT FAVOR DENIAL	84
XIV.	MANDATORY NOTICES 37 C.F.R. § 42.8.....	85
A.	Real Party-in-Interest	85
B.	Related Matters.....	85
C.	Lead and Backup Counsel Information.....	85

XV. CONCLUSION.....	87
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TABLE OF AUTHORITIES

	Page(s)
Borad Decisions	
<i>Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH,</i> IPR2019-01469, Paper 6 (P.T.A.B. Feb. 13, 2020).....	84
<i>Becton, Dickinson & Co. v. B. Braun Melsungen AG,</i> IPR2017-01586, Paper 8 (P.T.A.B. Dec. 15, 2017)	84
<i>Sotera Wireless, Inc. v. Masimo Corp.,</i> IPR2020-01019, Paper 12 (P.T.A.B. Dec. 1, 2020).....	83-84
Federal Regulaions	
C.F.R. § 42.8	85
C.F.R. § 42.24(a)(1)(i)	88
37 C.F.R. § 42.200(b)	9

LIST OF EXHIBITS

Exhibit	Description
EX-1001	U.S. Patent No. 10,057,322 (“the ’322 patent”)
EX-1002	Prosecution History of the ’322 patent
EX-1003	Declaration of Todd C. Mowry, Ph.D.
EX-1004	Curriculum Vitae of Todd C. Mowry, Ph.D.
EX-1005	U.S. Patent Application Publication No. 2009/0132640 to Verma (“Verma”)
EX-1006	U.S. Patent Application Publication No. 2007/0067424 to Raciborski (“Raciborski”)
EX-1007	U.S. Patent Application Publication No. 2014/0052811 to Lewin (“Lewin”)
EX-1008	U.S. Patent Application Publication No. 2009/0172167 to Draï (“Draï”)
EX-1009	U.S. Patent No. 6,108,703 to Leighton (“Leighton”)
EX-1010	U.S. Patent No. 8,364,541 to Roth (“Roth”)
EX-1011	U.S. Patent No. 5,835,712 to DuFresne (“DuFresne”)
EX-1012	U.S. Patent No. 6,314,439 to Bates (“Bates”)
EX-1013	U.S. Patent No. 7,210,099 to Rohrabauh (“Rohrabauh”)
EX-1014	U.S. Patent No. 7,299,291 to Shaw (“Shaw”)
EX-1015	U.S. Patent No. 6,542,964 to Scharber (“Scharber”)
EX-1016	U.S. Patent No. 6,119,155 to Rossmann (“Rossmann”)
EX-1017	Order Granting Stipulation Regarding Amended Complaint and Case Schedule, <i>Sandpiper CDN, LLC v. Google LLC</i> , 2:24-cv-03951, Dkt. 54 (C.D. Cal. Jan. 21, 2025)
EX-1018	Sandpiper’s Disclosures of Asserted Claims & Infringement Contentions dated Jan. 14, 2025 in <i>Sandpiper CDN, LLC v. Google LLC</i> , 2:24-cv-03951
EX-1019	Exhibit E to Sandpiper’s Disclosures of Asserted Claims & Infringement Contentions dated Jan. 14, 2025 in <i>Sandpiper CDN, LLC v. Google LLC</i> , 2:24-cv-03951
EX-1020	Letter to Robert H. Reckers <i>re Sandpiper CDN LLC v. Google LLC</i> , No. 2:24-3951-AB-RAO (C.D. Cal.) (May 22, 2025)

CLAIM LISTING

Independent Claim 1

[1pre]	A content delivery method comprising:
[1a]	receiving, by an origin system, a request from a client device for a content resource, the content resource including at least one embedded resource with a tag;
[1b]	upon identification of the tag, using at least one delivery parameter to obtain, by the origin system, a modified embedded resource from a content delivery network that is separate from the origin system; and
[1c]	delivering, by the origin system, the content resource to the client device with the modified embedded resource, wherein the modified embedded resource includes a direct link to a node within the content delivery network that can deliver content associated with the embedded resource.

Dependent Claim 2

[2pre]	The content delivery method of claim 1 wherein the request is received over an http connection and the at least one delivery parameter includes an IP address of the client device, and further comprising:
[2a]	passing information based on the client IP address to an application programming interface (API) of the content delivery network;
[2b]	in association with the API, obtaining a parameter associated with the embedded resource;
[2c]	identifying, based on the IP address and the parameter, location information for the node in the content delivery network that can serve the content associated with the embedded resource; and
[2d]	generating the modified embedded resource to include the direct link to the node.

Dependent Claim 3

3	The content delivery method of claim 2 wherein the parameter is a popularity parameter.
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Dependent Claim 4

4	The content delivery method of claim 2 wherein the parameter is a delivery protocol parameter.
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Dependent Claim 5

5	The content delivery method of claim 2 wherein the information is the IP address.
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Dependent Claim 6

6	The content delivery method of claim 2 wherein the information is geographic information.
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Dependent Claim 7

7	The content delivery method of claim 2 wherein the location information includes at least one of an IP address, a virtual IP address, one or more absolute uniform resource locators.
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Dependent Claim 8

8	The content delivery method of claim 1 wherein the tag is a unique tag.
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Dependent Claim 9

9a	The content delivery method of claim 1 wherein the request is over an http connection and the at least one delivery parameter is a location identifier for the client device, the method further comprising:
9b	passing, by the origin system, the location identifier to an application programming interface (API) of the content delivery network to generate the modified embedded resource relating to the node.

Dependent Claim 10

10	The content delivery method of claim 1 wherein the content resource is a hypertext markup language (HTML) document and the embedded resource is a link.
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Independent Claim 11

[11pre]	A content delivery network comprising:
[11a]	at least one processor in communication with a non-transitory computer readable medium including computer readable instructions for:
[11b]	providing an application programming interface (API);
[11c]	at the API, receiving, from an origin system that is separate from the content delivery network, an embedded resource and at least one parameter associated with the embedded resource;
[11d]	generating a modified embedded resource providing a direct link to a node within the content delivery network for obtaining content associated with the embedded resource;
[11e]	delivering, by the content delivery network, the modified embedded resource to the origin system;
[11f]	receiving, at the node, a request from a client device to obtain the content; and
[11g]	providing the content to the client device.

Dependent Claim 12

12	The content delivery network of claim 11 wherein the computer readable instructions are further for replacing the embedded resource with the modified embedded resource in a resource.
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Dependent Claim 13

13	The content delivery network of claim 11 wherein the resource is an HTML document and the modified embedded resource is a link.
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Dependent Claim 14

14	The content delivery network of claim 11 wherein the modified embedded resource includes at least one of an IP address to facilitate communication with the node to obtain the content associated with the embedded resource, a virtual IP address to facilitate communication with the node to obtain the content associated with the embedded resource, and one or more absolute uniform resource locators to facilitate communication with the node to obtain the content associated with the embedded resource.
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Independent Claim 15

[15pre]	A method comprising:
[15a]	providing, at a content delivery network, an application programming interface (API);
[15b]	at the API, receiving, from an origin system that is separate from the content delivery network, an embedded resource and at least one parameter associated with the embedded resource;
[15c]	generating a modified embedded resource providing a direct link to a node within the content delivery network for obtaining content associated with the embedded resource;
[15d]	delivering, by the content delivery network, the modified embedded resource to the origin system;
[15e]	receiving, at the node, a request from a client device to obtain the content; and
[15f]	providing the content to the client device.

I. PRELIMINARY STATEMENT

Petitioner seeks IPR of claims 1-15 of U.S. Patent No. 10,057,322. The '322 patent relates to “systems and methods for selecting an edge server” “in a content delivery network” (“CDN”) to serve content. EX-1001, 3:6-9. During prosecution, Applicant tried to capture an “origin server communicat[ing] with the CDN to obtain a direct link to a CDN node” and “provid[ing] that direct link to the client” to serve content. EX-1002, 56-59, 68-73. But those ideas were known. Petitioner requests the Board institute review and cancel claims 1-15.

II. OVERVIEW OF PRIOR ART

Reference	Published	Filed	Prior Art Basis (AIA)
U.S. 2009/0132640 (“Verma”)	May 21, 2009	November 19, 2007	§§102(a)(1), 102(a)(2)
U.S. 2007/0067424 (“Raciborski”)	March 22, 2007	August 1, 2005	§§102(a)(1), 102(a)(2)
U.S. 2009/0172167 (“Drai”)	July 2, 2009	December 28, 2008	§§102(a)(1), 102(a)(2)
U.S. 2014/0052811 (“Lewin”)	February 20, 2014	October 28, 2013	§§102(a)(1), 102(a)(2)

A. Verma

Verma discloses a “computer method” and apparatus for “delivering content.” EX-1005, Abstract, [0010]-[0011]. Verma’s method includes modifying a resource

link—based on client location and content availability—to direct requests to a cache server node in a network. EX-1003 ¶¶66-67. Figure 1 shows Verma’s CDN:

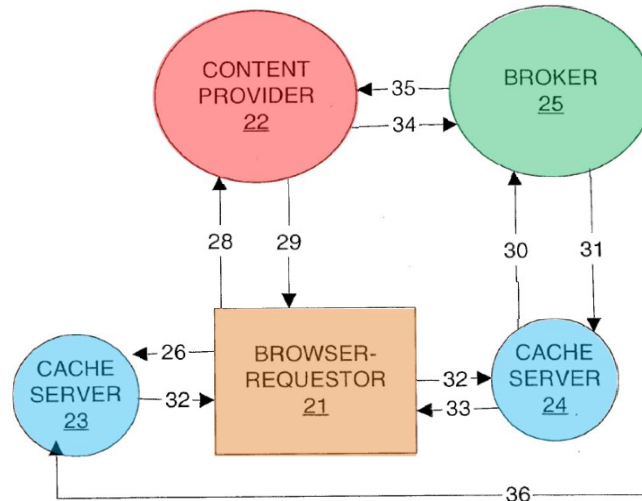


FIG. 1

EX-1005, FIG. 1 (annotated).¹ This network includes a client running “**browser**,” a “**content provider**,” a “**content delivery network broker**,” and “**a set of cache servers**.” *Id.*, [0025]. **Browser 21** requests content “by sending a URL 28 to a **content provider**.” *Id.* That request “comprise[s] delay tolerance information.” *Id.*, [0018]. The request is “forward[ed]” from the **content provider** to a **content delivery network broker** that “manages” “a set of **cache servers**.” *Id.*, claim 9, [0025]. **Content provider 22** “request[s]” **broker 25** “for a content file delivery to a location close to the client.” *Id.*, [0026]. The **broker 25** selects the **cache server** to serve the content and returns a

¹ Annotations added unless otherwise noted.

“re-written URL to the **content server**” identifying the relevant cache server. *Id.*, [0012], [0026]-[0027]. The **content server** provides that re-written URL to the **client**, who “requests the content file from the appropriate **cache server**” directly. *Id.*, [0037]; EX-1003 ¶¶66-67.

B. Raciborski

Raciborski discloses a content delivery network for delivering content objects “from a content provider to a recipient,” EX-1006, Abstract:

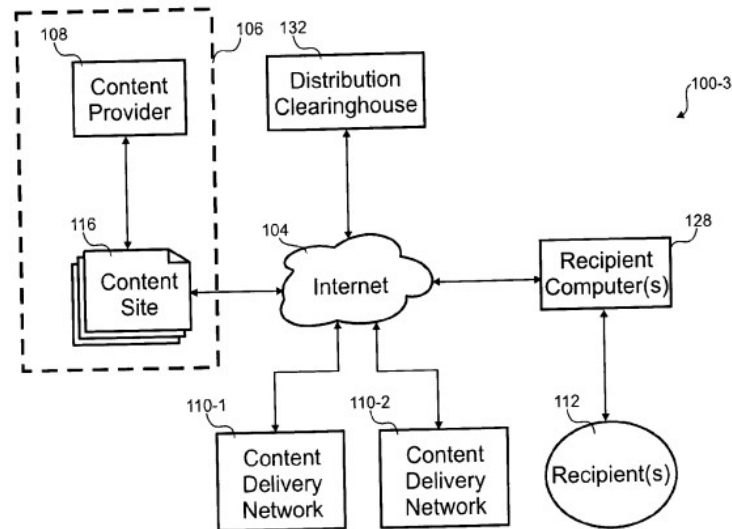


Fig. 1C

Id., FIG. 1C. In this network, the “content provider” sends a bid message containing “information”—“IP address of the recipient computer,” “if delivery can be delayed,” “protocol used to deliver the content”—to one or more CDNs to select an optimal delivery path. *Id.*, [0026], [0055]-[0056]. Table 1 shows this bid message:

TABLE I

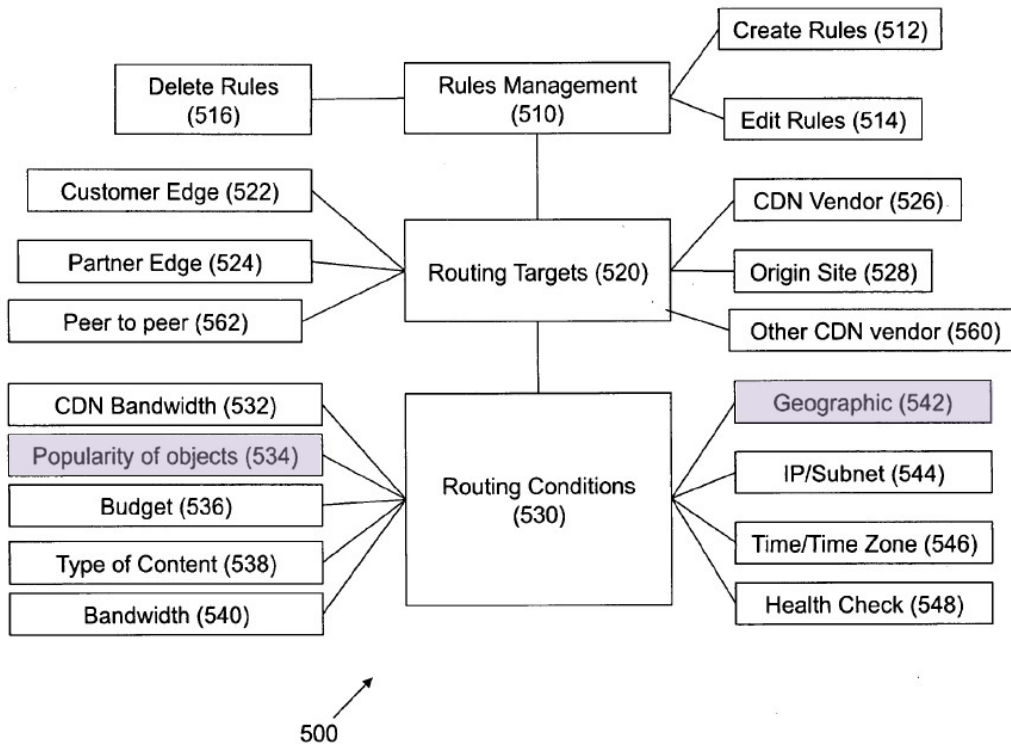
Real Time Bid Message Example	
Field	Example
Bid Identifier	34sd89732k
Recipient IP Address	69.93.18.222
Domain of Content Object	LLNW.com
Path of Content Object	/press/2005releases/
File Name of Content Object	routemark.mp4
Format	MPEG4
Bitrate	200 Kbps
Latency Options	3
QoS Level(s)	3
Packet Loss Options	2
Buffer Duration	24 hours
Max. Volume	1000

Id., [0055]-[0056], Table 1; EX-1003 ¶¶68-70.

C. Draí

Draí manages “resources for content distribution.” EX-1008, [0002]. “Central manager 500” manages content distribution “according to the interaction of three main modules: rules management 510, routing targets 520[,] and routing conditions 530.” *Id.*, [0105]-[0106]. The routing targets include “edge” servers. *Id.*, [0109]. The routing conditions “include[] geographic routing” and “popularity based routing.” *Id.*, [0108]. These modules are shown below:

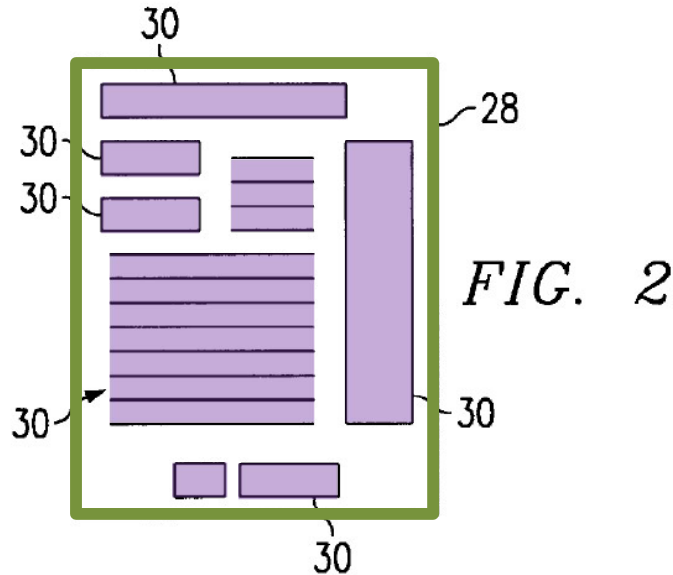
Figure 5



Id., FIG. 5; EX-1003 ¶¶71-72.

D. HTML Documents with Embedded Objects and Tags.

By 2014, using HTML documents for webpages, and requesting those HTML pages from a client browser, was well-known, routine, and conventional technology. EX-1003 ¶¶73-78. A “typical Web page comprises a markup language (e.g. HTML) master or base document 28, and many embedded objects (e.g., images, audio, video, or the like)”:



EX-1009, FIG. 2, 5:23-27. Common behavior for “a Web client” “is to fetch the base HTML document, and then immediately fetch the embedded objects.” *Id.*, 5:29-31; EX-1014, 3:13-15; EX-1013, 15:20-25; EX-1003 ¶¶73-78.

It was well known that “HTML is a standardized language that describes the layout of content on a webpage, and attributes of that content.” EX-1013, 7:44-51; EX-1009, 1:15-30, 5:23-31; EX-1010, 6:19-32, 6:63-67; EX-1003, ¶¶79-80. This information is “defined by a set of tags contained in HTML code corresponding to the page.” EX-1013, 7:44-51. And these “tags define” “HTML layout and display information,” such as “tables, paragraph boundaries, graphic image positions.” *Id.* A POSITA would have understood that HTML tags specify URLs, or links, in HTML documents to access content. EX-1003 ¶¶79-80; EX-1013, 15:21-27. Using tags was well-known, routine, and conventional by 2014. EX-1010, 4:13-19 (“implemented using conventional HTML tags”); EX-1011, 8:66-9:2; EX-1012, 14:6-7 (“headings

are identified using conventional HTML tags that are well-known in the art”); EX-1013, 15:21-27; EX-1003 ¶¶79-80.

E. Lewin

Lewin discloses an HTML page. EX-1007, [0012]. “[D]irectives [] are placed in HTML pages” and “evaluated on a server before th[at] page is served.” *Id.*, [0028]. These “directives,” or “dynamic assembly instructions,” could be “URLs for HTML chunks to be incorporated in the final HTML page.” *Id.*, [0049]. URLs are specified by “tags,” identified when the server “parses the HTML page.” *Id.*; EX-1003 ¶¶81-82.

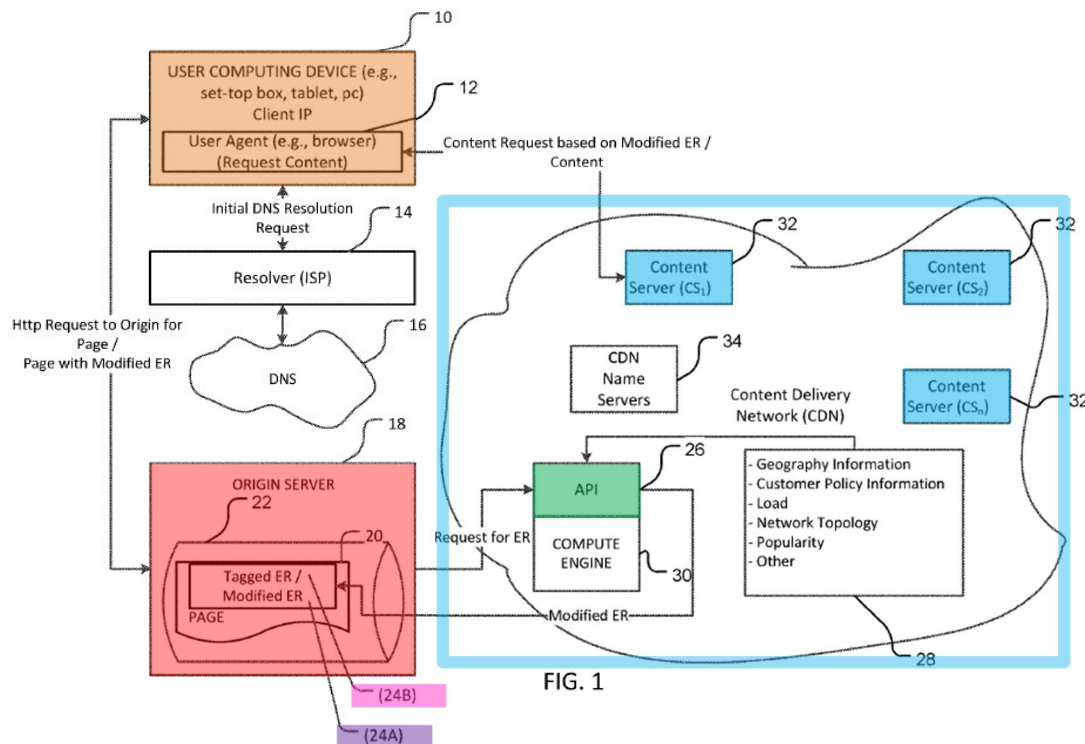
III. OVERVIEW OF THE '322 PATENT

A. Specification

The '322 patent discloses “systems and methods for selecting an edge server” “in a **content delivery network (CDN)**, to serve content to a **client**.” EX-1001, 3:6-9. A **client** uses “a **computing device 10**” operating “a **browser**.” *Id.*, 3:50-53. To obtain content, like an “HTML document,” the **client** establishes a TCP connection “with the **origin server 18**,” which is a “device (or collection of devices) maintaining original copies of content.” *Id.*, 4:12-18. **Origin server 18** can then deliver an HTML document “that will render the Web page in the **browser**.” *Id.*, 4:10-12.

“The HTML document” may include “**embedded resource 24A**[, which] is a link to some form of content that the user can obtain by selecting the link when the Web page is displayed.” *Id.*, 4:24-31. Some embedded resources may be “identified

for modification.” *Id.*, 6:29-30. A “tag” “causes the **origin server 18** to call the **API**,” which in turn “cause[s] the creation of an **embedded resource 24B** (also referred to as a **modified embedded resource**) that will direct the client” to a “**node**.” *Id.*, 4:40-48, 5:1-4. After “a **modified embedded resource** is generated and substituted for the resource,” the HTML document with the **modified [e]mbedded resource** is “returned to the **client**.” *Id.*, 5:12-15, 32-34. Content is then served from the **CDN** instead of the **content provider’s servers**. *Id.*, 1:29-31, 6:62-65; EX-1003 ¶¶51-53.



EX-1001, FIG. 1. According to the '322 patent, its system provides “an alternative to using conventional domain name system (DNS) servers for edge selection.” *Id.*, 3:9-14.

B. Prosecution History

The application that led to the '322 patent was filed December 31, 2015. EX-1001, Appl. No., Filed. In the only office action, Examiner rejected the claims as anticipated. EX-1001, 95-108. Applicant amended the claims to include “an origin system” (1) receiving a request, (2) obtaining a modified embedded resource “from a content delivery network that is separate from the origin system,” where “modified embedded resource includes a direct link to a node within the [CDN] that can deliver content associated with the embedded resource,” and (3) delivering content resource “to the client.” *Id.*, 56-59. It also argued the prior art did not disclose its origin server “communicates with the CDN to obtain a direct link to a CDN node” and “provides that direct link to the client.” *Id.*, 68-73. Without addressing obviousness over known CDN techniques, Examiner allowed the claims after amendment. *Id.*, 11-19; *see* EX-1003 ¶¶54-57. These features, however, are taught in the prior art. EX-1003 ¶57.

C. Claim Construction

The Board construes claims in accordance with 37 C.F.R. § 42.200(b) and *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Claims need 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 terms require express construction at this time because the claims encompass the prior-art mappings below under any construction consistent with *Phillips*.

IV. LEVEL OF ORDINARY SKILL IN THE ART (POSITA)

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. EX-1003 ¶¶61-63. Work experience can substitute for formal education and additional formal education can substitute for work experience. *Id.*

V. PRECISE RELIEF REQUESTED

Ground	Art	Basis	Claims
1A	Verma	§102	15
1B	Verma	§103	11, 12, 14, 15
2	Verma and Raciborski	§103	11, 12, 14, 15
3	Verma and Lewin	§103	1, 8, 10, 13
4	Verma, Raciborski, and Lewin	§103	2, 4, 5, 7, 9, 13
5	Verma, Raciborski, Lewin, and Drai	§103	3, 6

VI. GROUNDS 1A/1B: VERMA

A. Independent Claim 15

Verma anticipates or at least renders obvious claim 15. EX-1003 ¶84.

1. [15pre] A method comprising:

Verma discloses [15pre] because it discloses “a method for delivering content files.” EX-1005, Abstract, [0001], [0010], [0037]; EX-1003 ¶85.

2. [15a] providing, at a content delivery network, an application programming interface (API);

Verma discloses [15a]. EX-1003 ¶86.

Verma discloses a “content delivery network” (content delivery network) and a “broker” (application programming interface):

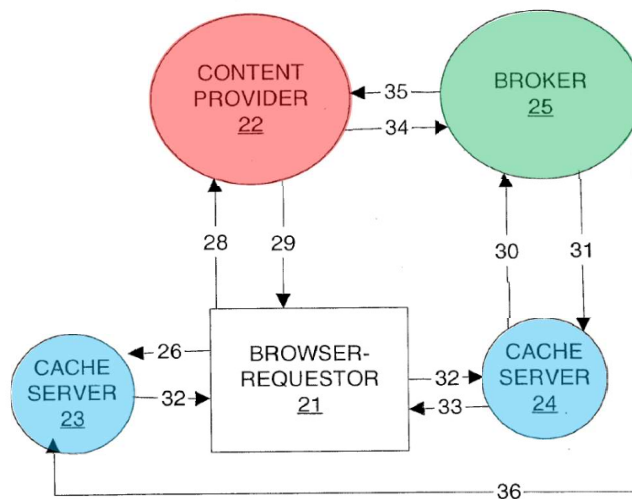


FIG. 1

EX-1005, FIG. 1, [0015], [0022], [0025]-[0026]; EX-1003 ¶86.

Content Delivery Network: Verma discloses a “content delivery network” that “comprises at least one edge server and broker(s).” EX-1003 ¶88; EX-1005, [0012], [0015]-[0017], [0022], [0025]-[0026], [0034], [0036]-[0038]. Those edge servers may be “cache servers.” *Id.*, [0003]. And because the CDN “comprises” a “broker[],” the broker is provided at the content delivery network. EX-1003 ¶88.

Application Programming Interface: Verma’s broker is an API, application programming interface, because it “communicate[s] with the content server(s)” and

provides an interface between content server(s) and CDN. EX-1005, [0015], [0022], [0025]-[0026]; EX-1003 ¶87. For example, “content provider 22 sends a request 34 for information to a content delivery network broker 25,” and “broker 25 provides” information to “content provider 22.” EX-1005, [0025]-[0026]; EX-1003 ¶87. A POSITA would have understood Verma’s “broker” is an API because it performs the same logical functions as the API in the ’322 patent, which provides that “[w]hen the origin server receives the request,” it “calls an API” to “communicate with the compute engine” in the CDN. EX-1001, 4:49-52, 7:16-25 (“API is a convenient and efficient way for disparate systems to uniformly and predictably pass information to the computing engine and for the computing engine to return information”; “the API may include the functionality of the engine”); EX-1003 ¶87.

3. [15b] at the **API**, receiving, from an **origin system** that is separate from the **content delivery network**, an **embedded resource** and at least one **parameter associated with the embedded resource**;

Verma discloses or at least renders obvious [15b]. EX-1003 ¶89.

a. Ground 1A: Anticipation.

Separate Origin System: First, Verma discloses a “**content provider**” (**origin system**) that interacts with a “**broker**” (**API**) and “**content delivery network**” (**CDN**). EX-1005, [0025]-[0026]; § VI.A.2 (Grounds 1A/1B [15a] discussing API and CDN disclosure); EX-1003 ¶90.

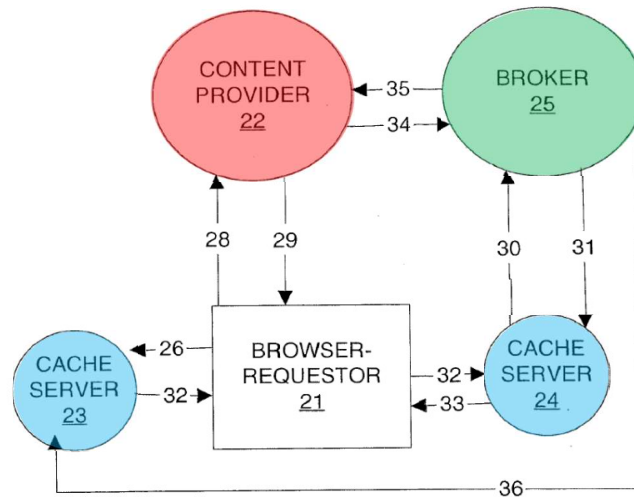


FIG. 1

EX-1005, FIG. 1; EX-1003 ¶90.

The “content provider” describes an origin system because it is the originator of requested content. EX-1003 ¶91. Verma explains, “web pages and content files are initially stored at a content server” running a web site. EX-1005, [0015]; EX-1003 ¶91. “[F]iles are transferred from time to time from the content provider 22 to cache servers 23 and 24 via the broker 25” so that content can be served from the cache servers—the content provider remains the originator of the content. EX-1005, [0016], [0025]; EX-1001, 4:15-18 (an “origin server is a device (or collection of devices) maintaining original copies of content for distribution to client[s] and/or distribution of copies of content to other nodes”).

Verma’s “content provider” (origin system) and “content delivery network” are separate because they are different entities. EX-1005, [0025]; EX-1003 ¶92. The

“content provider 22 web site has a business relationship with the content delivery network to speed up the delivery of movie files” “to its customers,” confirming the “content provider” and CDN are separate entities with “a business relationship.” *Id.* A POSITA would have known it was common for separate third-parties to provide CDN services (e.g., Akamai) to content providers through a “business relationship,” as taught by Verma. EX-1005, [0013], [0025]-[0026]; EX-1003 ¶¶93; EX-1007, [0045].

Second, Verma discloses a “URL” (embedded resource) and “delay tolerance information” (parameter associated with the embedded resource) are received by the “broker” (application programming interface) in a request from a “content provider” (origin system). EX-1005, [0018], [0025]-[0026], [0037], claim 9; EX-1003 ¶¶94.

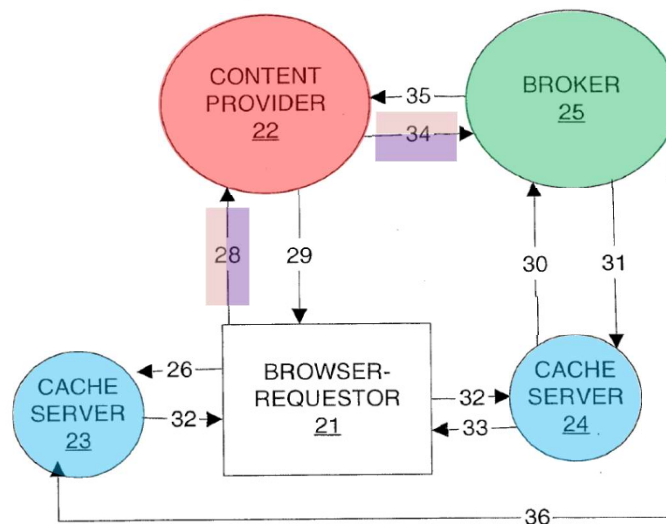


FIG. 1

EX-1005, FIG. 1; EX-1003 ¶¶94.

Embedded Resource: Verma discloses “browser 21” at the client “operates to request a content file,” for example the Matrix Reloaded movie, “by sending URL 28 to a content provider 22.” EX-1005, [0025]. Verma’s “content provider 22 [then] sends a request 34 for information to a content delivery network broker 25.” *Id.* The content provider can “forward[] the request for a content file [] received by a content server,” URL 28, “to [the] content delivery network broker.” *Id.*, claim 9; EX-1003 ¶95. The broker (API) receives URL 28 as part of “request 34.” EX-1003 ¶95.

“URL 28” discloses an embedded resource because it is a “link” to download content (e.g. “Matrix Reloaded” movie), consistent with the ’322 patent. EX-1005, [0025], [0007], [0013], [0019]-[0020], [0029] (“URL link”), [0031], [0033], [0035], claim 15; EX-1003 ¶96; EX-1001, claim 10 (“link” is “embedded resource”).

A POSITA would have understood “URL 28” was embedded in a “Movies-Inc.Com” webpage, as was standard practice. § II.D; EX-1003 ¶97. Verma teaches the client “can open web pages and request content files.” EX-1005, [0015]. Thus, a POSITA would have understood URL 28, used to request “Matrix Reloaded,” would have been embedded in the webpage the client opened to make a request. EX-1005, [0015], [0025]; EX-1003 ¶97.

Verma’s disclosure that “URLs are prepended (Akami-ed)” also indicates that “URL 28” is an embedded resource. EX-1005, [0026]; EX-1003 ¶¶98-99. Verma’s

“Akamai” technique “replace[s] the original URL” (URL 28) “with an ‘Akamai-ed’ URL” which is inserted in an HTML page:

```
<Content timing>
<Period start=18:00, 9/10/03, end=19:00>
<a href=http://location1/contentURL> contentURL </a>
</Period>
<Period start=19:00, 9/10/03. end=20:00>
<a href=http://location2/contentURL> contentURL </a>
</Period>
</Content timing>
```

EX-1005, [0013], [0029]; EX-1003 ¶¶98-99. Because Verma’s re-written/Akamai-ed URL is embedded in an HTML page, and it replaces a previously existing URL, a POSITA would have understood the original “URL 28” would have been likewise embedded in an HTML page. EX-1003 ¶¶98-99; EX-1005, [0013], [0025]-[0029].

Parameter: Verma also discloses the “request from the client” (including URL 28) “can comprise delay tolerance information.” EX-1005, [0018], [0025]; EX-1003 ¶100. Delay tolerance information is a parameter associated with the embedded resource (URL 28) because it is a time period in which content at URL 28 should be delivered. EX-1005, [0018], [0015], [0027], [0037]-[0038], claims 1, 11, 33; EX-1003 ¶100. Specifically, “delay tolerance information” is a “desired” “time,” “time period,” or tolerable “delay” for “delivery” of a “file[]”/“movie” locatable at URL 28. EX-1005, [0015], [0018], [0025]; EX-1003 ¶100. This allows scheduling delivery “during a time period satisfying the client.” EX-1005, [0027].

This delay tolerance information (parameter) is also received by the “broker” (API) from the “content provider” (origin system). EX-1005, [0018], [0015], [0025], [0027], [0038], claims 1, 11, 33; EX-1003 ¶¶101-102. For example, a client indicates the “desired delivery time or a desired delivery time period.” EX-1005, [0018]. Client browser 21 sends the “request” to content provider 22 that “comprise[s] delay tolerance information.” EX-1005, [0018], [0025]. Once content provider 22 receives this request, Verma’s method describes “forwarding the request for a content file [] received by a content server to a content delivery network broker.” EX-1005, claim 9; EX-1003 ¶¶101-102. The “delay tolerance information” is thus “forward[ed]” by the content provider to, and received by, the broker, as part of the client’s request.

Id.

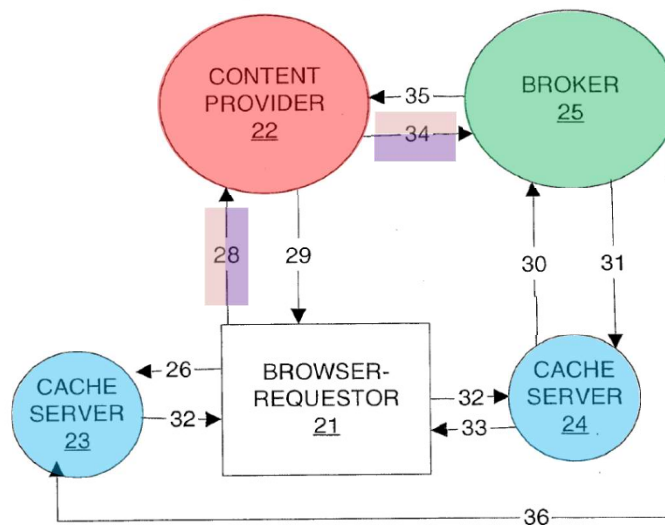


FIG. 1

EX-1005, FIG. 1.

b. Ground 1B: Obviousness.

Verma alternatively renders [15b] obvious. EX-1003 ¶103. To the extent there is ambiguity as to whether request 34, sent from content provider to broker, includes “URL 28” and “delay tolerance information” (the embedded resource and associated parameter), it would have been obvious. EX-1005, [0015], [0018], [0025]-[0027], [0038]; EX-1003 ¶103. And to the extent there is ambiguity as to whether URL 28 is embedded, it also would have been obvious. EX-1005, [0015], [0018], [0025]; EX-1003 ¶103.

i. Motivation to Combine and Expectation of Success.

Receiving the Embedded Resource and Parameter: A POSITA would have understood Verma’s method requires receipt of an original URL and associated delay tolerance information at the broker so the broker may rewrite, or prepend, the URL. EX-1003 ¶104.

In Verma, “URLs are prepended (Akamai-ed)” by “replac[ing] the original URL (e.g. http://contentURL) with an ‘Akamai-ed’ URL” redirecting to a specific cache server. EX-1005, [0013], [0026]. Prepend (rewritten) URLs are “generat[ed]” at the broker (API) and “return[ed]” from the broker to the content server. EX-1005, [0012], [0013], [0022], [0025]-[0028], [0037], claims 9, 18; EX-1003 ¶¶105-107. Based on this, a POSITA would have been motivated to receive

the original URL, “URL 28,” at the broker for “rewrit[ing]” (“prepend[ing]”) by the broker to achieve Verma’s stated goals. *Id.*

Additionally, Verma teaches the “broker” (API) evaluating “delivery tolerance information.” EX-1005, [0015], [0018]; EX-1003 ¶108. For example, the “content broker” “returns the re-written URL to the content server,” which “contains time period information.” EX-1005, [0012]. A POSITA would have understood the broker receives “delivery tolerance information” to determine the timing information and return a “prepended URL directed to” a cache server based on where “the content file is available during a time period satisfying the client.” EX-1005, [0012], [0026]-[0027], [0037], claims 1-2, 9, 11, 33; EX-1003 ¶108. Based on this, a POSITA would have been motivated to receive “delivery tolerance information” (associated parameter) with the original URL 28 at the broker (API). EX-1003 ¶109.

A POSITA would have reasonably expected success in receiving a parameter associated with the URL embedded resource and the URL embedded resource at the broker (API). EX-1005, [0025]; EX-1003 ¶110. Verma already teaches “request 34” as a way to communicate data between a content provider and broker. EX-1003 ¶110. Indeed, the content provider “forward[s] the request” received from the client, “to a content delivery network broker.” EX-1005, claim 9, [0025], FIG. 1. Implementing this scheme in Verma (to the extent not expressly disclosed) would have been simply using known features according to their known functions (data

path for request 34, URL, delay tolerance information) to achieve entirely predictable results (URL and delay tolerance information transmitted to, and received by, broker). EX 1003 ¶110.

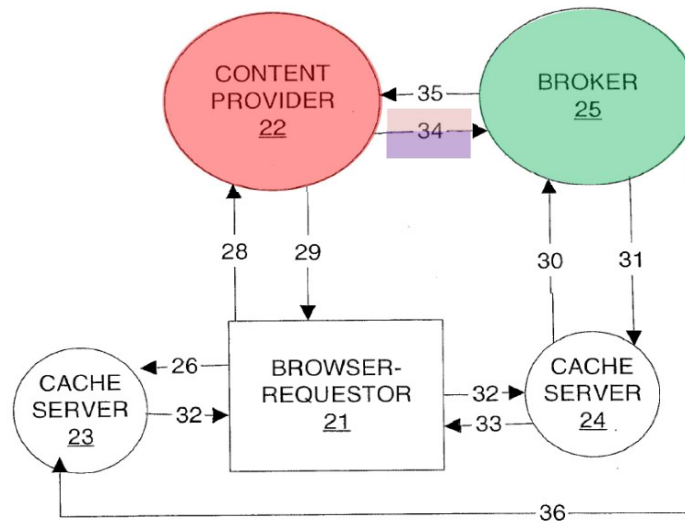


FIG. 1

EX-1005, FIG. 1.

Embed in a Webpage: It would also have been obvious to embed URL 28 in a webpage, for using embedded links was routine, conventional webpage structure. § II.D; EX-1003 ¶111. Moreover, doing so would have provided several well-known advantages. EX-1003 ¶¶113-115. This would have been obvious because Verma teaches URL 28 gets “prepended (Akamai-ed)” and replaced by that rewritten URL, and illustrates that “prepended” URL is embedded in the webpage. EX-1005, [0025]-[0026], [0029]; § VI.A.3.a (Ground 1A [15b]); EX-1003 ¶112.

A POSITA would have understood there were advantages to embedding URLs in conventional webpages. EX-1003 ¶¶113-115. For example, it “enable[s] the server to add dynamically-generated content” to HTML pages, which advantageously offers personalization. *Id.*, ¶113; EX-1007, [0006], [0028], [0039]-[0040]. Moreover, embedded objects can be served from “distributed servers,” which “shifts the burden of Web content distribution” “from [the] content provider to a network of hosting servers” to advantageously “provide a fault-tolerant network for distributing Web content,” “speed-up the delivery,” and allow “reliabl[e] and economical[]” service. EX-1009, 2:31-37, 2:43-57, 3:4-16; EX-1005, [0007] (redirecting “to an edge server that is closer to the requesting client in order to speed up[]” downloading); EX-1003 ¶114.

Verma’s client also uses a “web browser” like “Internet Explorer[] or Netscape.” EX-1005, [0014], [0025]; EX-1003 ¶115. A POSITA would have understood typing lengthy URLs into a browser for each content item sought is inconvenient. EX-1003 ¶115; EX-1016, 2:24-26 (“quite laborious to enter a long alphanumeric Universal Resource Locator (URL) to access a specified service using the phone keypad”). A browser that could instead interact with embedded options in the webpage, such as movie options, would have advantageously allowed the client to survey and select movies quickly without needing to provide a lengthy URL. *Id.*

A POSITA would have reasonably expected success embedding URL 28 in a

webpage. *Id.* Verma discloses a “web site,” like “Movies-Inc.Com”; “web pages”; and content, like a “movie,” accessed via a “browser[,] such as Internet Explorer, or Netscape.” EX-1005, [0014], [0015], [0025]; EX-1003 ¶¶116-117. Implementing this scheme in Verma (to the extent not expressly disclosed) would have been using known features according to their known functions (HTML webpages, URLs, and markup languages), § II.D, EX-1009, 1:34-36, 1:15-30, 5:23-31; EX-1010, 6:19-32, 6:63-67, to achieve entirely predictable results (URL embedded in webpage client opens), *id.* EX 1003 ¶¶116-117.

4. [15c] generating a **modified embedded resource** providing a **direct link to a node within the content delivery network** for obtaining **content** associated with the **embedded resource**;

Verma discloses [15c]. EX-1003 ¶118.

Verma discloses “generating the **uniform resource locator**” (**prepending URL** or **rewritten URL**) (**modified embedded resource**) that provides a **complete path** to a specific “**cache server**” (**direct link** to the **CDN node**) to obtain a “**movie**” (**content** associated with the **embedded resource**). EX-1005, [0005], [0012]-[0013], [0016], [0019], [0026]-[0031], [0037], claim 9; EX-1003 ¶119.

Generating Modified Embedded Resource: Verma teaches “generating the uniform resource locator by [] the content delivery network broker” after receiving a request for content from the content provider. § VI.A.3 (Grounds 1A/1B, [15b]); EX-1005, claim 9, [0012], [0022]; EX-1003 ¶120. The broker’s “generat[ed]

uniform resource locator” is a “prepended”/“rewritten URL” because it takes an “original URL” (“http://contentURL”) and rewrites it into an “Akamai-ed’ URL” identifying the local_cache_server in the path (“http://local_cache_server/contentURL”). EX-1005, [0012]-[0013], [0016], [0026], claims 3, 9 (“uniform resource locator” in claim 9 is defined in claim 3 as “identifying information regarding the cache server on which the content will be available”); EX-1003 ¶120. Verma’s “prepended” (“rewritten”/“Akamai-ed”) URL discloses a modified embedded resource, for the original URL is modified by the broker to point to a cache server, as described in the ’322 specification. *See* EX-1005, [0012]-[0013], [0022], [0026]-[0029], [0037]-[0038]; EX-1001, 4:45-48 (“modified embedded resource” with “URL”), 5:1-4 (“embedded resource 24B (also referred to as a modified embedded resource) that will direct the client to” a node); EX-1003 ¶120.

Direct Link: Verma’s “prepended URL” (“rewritten URL”) provides a direct link to a CDN node for obtaining content associated with the embedded resource, as it “comprises a link to a content server or a cache server” allowing a client to directly contact the node to access requested content. EX-1005, claim 15, [0002], [0007], [0012]-[0013], [0015], [0037]; EX-1003 ¶121. Specifically, Verma’s “prepended URL” (modified embedded resource) provides a direct path bound to a single cache server node, for example, “prepended URL directed to cache server 23” or “cache

server 24.” EX-1005, [0027], [0037], FIG. 2; *id.*, [0005], [0029], [0031], claim 15; EX 1003 ¶121. “When the client receives the prepended URL, it requests the content file from the appropriate cache server” directly. EX-1005, [0037]; EX-1003 ¶121.

Exemplary modified embedded resources are annotated below:

```
<Content timing>
<Period start=18:00, 9/10/03, end=19:00>
<a href=http://location1/contentURL> contentURL </a>
</Period>
<Period start=19:00, 9/10/03. end=20:00>
<a href=http://location2/contentURL> contentURL </a>
</Period>
</Content timing>
```

EX-1005, [0029]. This aligns with the ’322 patent specification, which explains that a direct link is one, “[w]hen the user selects the link, the browser will directly contact the node for the content.” EX-1001, 6:50-7:9; 8:5-10; EX-1003 ¶121.

Node: Verma’s “cache servers in a content delivery network” (“cache servers 23 and 24”) are nodes in a CDN because they are servers where “the content file will be available.” EX-1003 ¶122; *e.g.*, EX-1005, [0003], [0010]-[0013], [0020], [0025]-[0028], [0036]-[0038].

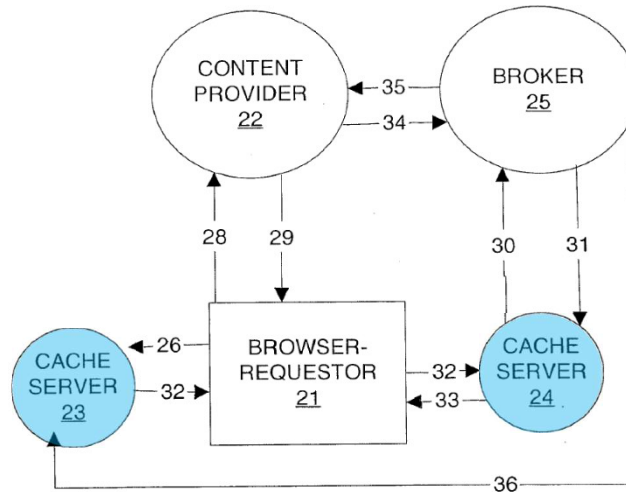


FIG. 1

EX-1005, FIG. 1, [0025]. Verma's "cache servers" are "edge servers," because they reside at "locations near the edge of the network," *Id.*, [0003], [0037]-[0038], and the '322 patent provides "a node" may be an "edge server," EX-1001, 6:59-60. EX-1003 ¶122.

Content: Verma discloses the "movie entitled 'Matrix Reloaded'" associated with URL 28 (content associated with embedded resource). EX-1005, [0025]. The cache servers "store th[at] requested movie," and the "prepended"/"rewritten" URL allows the client to directly obtain that "movie" because it points to "the appropriate cache server" where "the content is available." EX-1005, [0025]-[0028], [0037], [0012], [0022]; EX-1003 ¶123.

5. [15d] delivering, by the content delivery network, the modified embedded resource to the origin system;

Verma discloses [15d]. EX-1003 ¶124.

Verma discloses a **broker** (part of the **CDN**) “returning” (delivering) the **re-written URL** (**modified embedded resource**) “to the **content server** which received the request from the client” (**origin system**). EX-1005, [0012], [0022], [0026], claim 18; EX-1003 ¶125; §§ VI.A.2-VI.A.4 (Grounds 1A/1B, [15a]-[15c]).

For example, Verma discloses a “URL rewritten” “by a content broker which receives information from the cache servers in a content delivery network” “and then returns the re-written URL to the content server which received the request from the client.” EX-1005, [0012]; EX-1003 ¶126. The “broker” is part of Verma’s “content delivery network,” as discussed. § VI.A.2 (Grounds 1A/1B, [15a]); EX-1003 ¶126. The “re-written URL” is thus “returned” (delivered) by the “broker” (part of CDN) to the “content server” (origin system), as claimed. EX-1003 ¶126; EX-1005, [0012], [0022]; claim 18. Figure 1 illustrates this flow:

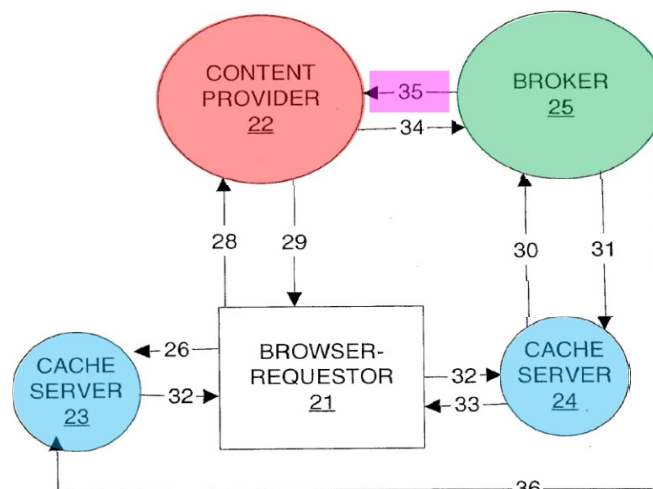


FIG. 1

EX-1005, FIG. 1.

6. [15e] receiving, **at the node**, a request from a **client device** to obtain the **content**; and

Verma discloses [15e]. EX-1003 ¶127.

Verma teaches “a **client that runs a browser**” (**client device**) that “requests” “**content**” from an “**appropriate cache server**” (**node**) “when the **content** is available.” EX-1005, [0001], [0014], [0025], [0037]; EX-1003 ¶128. For example, Verma discloses a “client device,” e.g. “**computer**,” that “use[s] a browser.” *Id.*

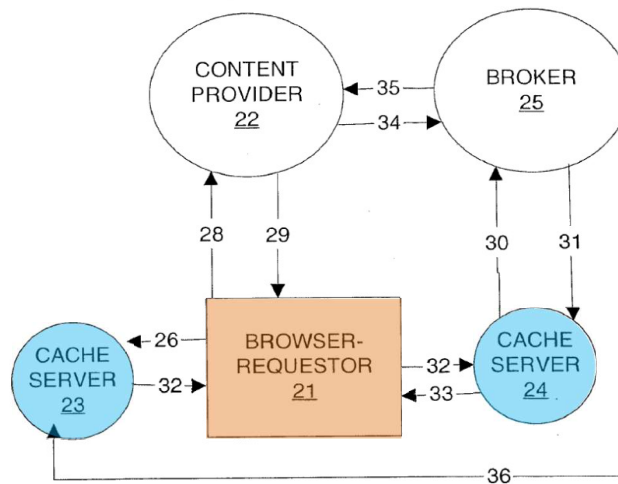


FIG. 1

EX-1005, FIG. 1. And Verma discloses the cache server (node) receiving a request from the client to obtain content because “[w]hen the client receives the prepended URL” from the broker (§§ VI.A.4-VI.A.5 (Grounds 1A/1B, [15c]-[15d])), “it requests the content file from the appropriate cache server.” EX-1005, [0037]; EX-1003 ¶128.

7. [15f] providing the content to the client device.

Verma discloses [15f]. EX-1003 ¶129.

Verma discloses a CDN that delivers “movie files” to “customers.” EX-1005, [0025]; EX-1003 ¶130. The “movie file[]” is the claimed content. § VI.A.6 (Grounds 1A/1B, [15e]); EX-1003 ¶130. And “opening a returned URL,” as noted in §§ VI.A.4-VI.A.5 (Grounds 1A/1B, [15c]-[15d]), “serves to accomplish content downloading” at the client requesting content from the cache server. EX-1005, [0031], [0002], [0015]; EX-1003 ¶130. Content is provided to the client when it is delivered, “transferred[,] or downloaded.” *Id.*

B. Independent Claim 11

Verma renders obvious claim 11. EX-1003 ¶131.

1. [11a] at least one processor in communication with a non-transitory computer readable medium including computer readable instructions for:

Verma at least renders [11a] obvious. *Id.*, ¶132.

Verma discloses a “computer method” and apparatus “for delivering content.” EX-1005, Abstract; EX-1003 ¶¶133-134. A POSITA would have understood that Verma’s “computer method” includes a processor executing instructions. EX-1003 ¶¶133-136; EX-1009, 16:53-63. A POSITA would have understood these instructions are stored in a memory the processor accesses/communicates with. EX-1003 ¶¶133-136. A POSITA would have considered it obvious (to the extent not expressly disclosed) to have a processor in communication with a non-transitory

computer readable medium with computer readable instructions to implement Verma's computer method. *Id.* A POSITA would have reasonably expected success and understood implementing this scheme in Verma would have been using known features according to their known functions (processors, memory, software) to achieve predictable results (computer method implemented by programmed instructions). *Id.*, ¶137.

2. [11pre], [11b]-[11g]

The following are substantively identical to limitations addressed above, and as discussed, are anticipated by or at least would have been obvious over Verma:

<u>Claim Element</u>	<u>Corresponding Disclosure</u>
[11pre]	[15a]
[11b]	[15a]
[11c]	[15b]
[11d]	[15c]
[11e]	[15d]
[11f]	[15e]
[11g]	[15f]

EX-1003 ¶138; §§ VI.A.2-VI.A.7 (Grounds 1A/1B, [15a]-[15f]).

Moreover, it would have been obvious to the POSITA to program each of the claimed method steps in elements [11b]-[11g] as computer instructions to effectuate Verma's disclosed "computer method," EX-1003 ¶139; § VI.B.1 (Grounds 1A/1B, [11a]).

C. Claim 12: The content delivery network of claim 11 wherein the computer readable instructions are further for replacing the embedded resource with the modified embedded resource in a resource.

Verma renders obvious the additional limitations of claim 12. EX-1003 ¶140.

Resource: Verma discloses a "Movies-Inc.Com" "web site," which a POSITA would have understood has an associated "web page[]" (**resource**). EX-1005, [0015], [0025]; EX-1003 ¶141; § VI.A.3 (Grounds 1A/1B, [15b]). "[W]eb pages and content files are initially stored at a content server" running a website, like "content server 22." EX-1005, [0015], [0038]; EX-1003 ¶141. A POSITA would have understood the "Movies-Inc.Com content provider 22" "stored" a "web page[]" for its "web site." *Id.* This "web page" would be a "resource" because it is a form of content and is a resource for accessing additional content. EX-1003 ¶142; EX-1001, FIG. 2 (web page may be "HTML document"), claim 13 ("resource is an HTML document").

Embedded Resource: As discussed for element [15b], Verma discloses, or at least renders obvious, a "URL 28" embedded in a "web page[]." § VI.A.3; EX-1003

¶143. Because Verma’s “web page[]” is a resource, as discussed above, Verma also discloses “URL 28” (embedded resource) embedded in a resource. *Id.*

Replacing: As explained, Verma discloses a broker preparing rewritten URLs for insertion into a webpage to replace the original embedded resource. §§ VI.A.3-VI.A.4. A POSITA would have understood Verma discloses embedding a URL in a webpage using HTML. EX-1003 ¶144. For example, it discloses:

- http://location1/contentURL; and
- http://location2/contentURL

```
<Content timing>
<Period start=18:00, 9/10/03, end=19:00>
<a href=http://location1/contentURL> contentURL </a>
</Period>
<Period start=19:00, 9/10/03, end=20:00>
<a href=http://location2/contentURL> contentURL </a>
</Period>
</Content timing>
```

EX-1005, [0029]. Both are modified embedded resources, as explained. § VI.A.4. A POSITA would have understood these modified embedded resources are embedded in an HTML page based on surrounding HTML coding, such as “.” tags. EX-1003 ¶145; EX-1013, 15:21-28.

Because the Akamai technique involves “replac[ing] the original URL” “with an ‘Akamai-ed’ URL” (modified embedded resource) it would have been obvious to a POSITA to replace URL 28 in Verma’s “web page[]” (resource) with the “Akamai-

ed’ URL.” EX-1005, [0013], [0015], [0026], [0029]; § VI.A.4; EX-1003 ¶¶146-147; EX-1009, 7:64-8:12.

i. Motivation to Combine and Expectation of Success.

Verma discloses embedding a rewritten/prepended URL in a webpage. § VI.C (Grounds 1A/1B, [12]); EX-1005, [0029]; EX-1003 ¶148. It also discloses using the “Akamai” technique to “replace” an original URL with an Akamai-ed URL. EX-1005, [0013]; EX-1003 ¶148. A POSITA would have been motivated to “replace” original URL 28 embedded in a “web page[]” with the Akamai-ed URL, and embed that modified resource in the webpage, to achieve Verma’s method of Akamai URL replacement. EX-1003 ¶148.

A POSITA would have reasonably expected success, for Verma discloses, or at least renders obvious, embedding “URL 28” in a “web page[],” as discussed for [15b]. § VI.A.3; EX-1005, [0015], [0025]; EX-1003 ¶149. Verma also discloses a modified embedded resource embedded in a webpage as shown in the HTML coding noted above. § VI.C; EX-1005, [0029]; EX-1003 ¶149. Verma’s Akamai-ed URL “replace[s]” an “original URL”—doing this in the webpage (resource) would have been a routine application of conventional features. EX-1003 ¶149. Implementing this scheme in Verma (to the extent not expressly disclosed) would have been simply using known features according to their known functions (HTML webpages, URL rewriting, markup languages), § II.D, EX-1009, 1:15-30, 5:23-31, EX-1010, 1:34-

36, 6:19-32, to achieve predictable results (rewritten URL embedded in webpage to replace embedded original URL), *id.* EX 1003 ¶¶149-150.

D. Claim 14: The content delivery network of claim 11 wherein the modified embedded resource includes at least one of an IP address to facilitate communication with the node to obtain the content associated with the embedded resource, a virtual IP address to facilitate communication with the node to obtain the content associated with the embedded resource, and one or more absolute uniform resource locators to facilitate communication with the node to obtain the content associated with the embedded resource.

Verma discloses “one or more absolute uniform resource locators” as claimed. EX-1003 ¶151.

As discussed above for [15c], Verma discloses a modified embedded resource. § VI.A.4; EX-1003 ¶151. It discloses several prepended URLs (modified embedded resources) including:

- http://location1/contentURL;
- http://location2/contentURL; and
- http://local_cache_server/contentURL.

EX-1005, [0013], [0029], [0031]; EX-1003 ¶151. Each of these prepended URLs is also an absolute URL because each provides a complete, absolute path to the single relevant cache server. EX-1003 ¶151. A POSITA would have understood that each URL includes a protocol (“http”); a hostname for a cache server (“local_cache_server,” “location1,” “location2”); and a path to content (contentURL.) *Id.* They facilitate communication with the node to obtain content

associated with the embedded resource because they allow the client to download and receive content, as explained with [15c]. § VI.A.4; EX-1005, [0031]; EX-1003 ¶151.

VII. GROUND 2: VERMA AND RACIBORSKI

A. Independent Claim 15

Verma anticipates or at least renders obvious claim 15. § VI.A. Alternatively, Verma and Raciborski render obvious claim 15. EX-1003 ¶152.

1. [15pre]-[15a]

Verma discloses [15pre]-[15a]. §§ VI.A.1-VI.A.2 (Grounds 1A/1B, [15pre]-[15a]); EX-1003 ¶153.

2. [15b]

Verma and Raciborski render [15b] obvious. EX-1003 ¶154.

To the extent Verma does not expressly disclose or suggest Verma’s “broker” (API) receives Verma’s URL (embedded resource) or “delay tolerance information” (associated parameter) from the “content provider,” it would have been obvious to a POSITA in view of Raciborski. *Id.*

Origin System/API/CDN: Raciborski discloses an “analysis interface of the CDN” (API), “content originator” (origin system), and “content delivery network” or “CDN.” EX-1006, [0016], [0051], [0055], FIG. 3A; EX-1003 ¶156.

Raciborski’s “analysis engine” in a “content originator” “communicates with an analysis interface 330 of the CDN.” EX-1006, [0051], [0055]. The “content

originator” has an “origin server” that “holds one copy of each content object” and provides that content to the CDN; it discloses an origin system. EX-1006, [0051]-[0052]; § VI.A.3 (Ground 1A/1B, [15b]); EX-1003 ¶158. Moreover, the “content originator” (origin system) is separate from the CDN because the “web site [] contract[s] with a CDN to deliver” content, *e.g.*, EX-1006, [0003], [0023]-[0025], [0051], and the contractual relationship indicates they are separate entities. § VI.A.3; EX-1003 ¶158.

Raciborski’s “analysis interface” is an interface for communication between the content originator and CDN, and is an API as claimed. EX-1006, [0051], [0055], [0068]-[0069]; EX-1003 ¶157; § VI.A.2 (Ground 1A/1B, [15a]).

Embedded Resource/Parameter: Raciborski discloses “**content provider 108** sends various information to the **one or more CDNs** to enable dynamic pricing.” EX-1006, [0026]. Content provider 108 is part of the “content originator” *Id.*, [0051]; EX-1003 ¶159. The sent information includes “**full object location** (i.e., server, path, and name)” (**embedded resource**) and “**if delivery can be delayed**” (**the associated parameter**). EX-1006, [0026]; EX-1003 ¶160. Full object location is shown, for example, in a “bid message” in Table 1:

TABLE I

Real Time Bid Message Example	
Field	Example
Bid Identifier	34sd89732k
Recipient IP Address	69.93.18.222
Domain of Content Object	LLNW.com
Path of Content Object	/press/2005releases/
File Name of Content Object	routemark.mp4
Format	MPEG4
Bitrate	200 Kbps
Latency Options	3
QoS Level(s)	3
Packet Loss Options	2
Buffer Duration	24 hours
Max. Volume	1000

EX-1006, Table 1. A “bid message” is “received by the analysis interface 330 from various content originators” (origin system), and provides information on the object delivery. EX-1006, [0026], [0055]-[0056]; EX-1003 ¶160.

The “domain, path, and file name” in the “bid message” describe an embedded resource because they “identify the content object.” EX-1006, [0055]-[0056]; EX-1003 ¶160. For example, the ’322 patent provides an exemplary embedded resource including a “path” and file name “resource.txt” for the content. EX-1001, 4:37-39; EX 1003 ¶160. Moreover, Raciborski’s “domain, path, and file name” describes a link or URI, EX-1006, [0004], [0017], [0055]-[0056], which ’322 patent claim 10 explains is an “embedded resource,” Ex-1001, claim 10. EX-1003 ¶161; § II.D.

This “link” is embedded in a page. EX-1003 ¶162. For example, Raciborski teaches “[l]inks on the content site 116” and a “web site,” and “URIs in the web page.” EX-1006, [0003], [0017] [0067]; EX-1003 ¶162. A POSITA would have

understood a link “on” a webpage, or “URIs in the web page,” are embedded in that page. *Id.* Moreover, the “URIs in the web page” include a “full object location” since an exemplary URI has “path\object_name.” EX-1006, [0037], [0055]-[0056]; EX-1003 ¶162.

“[I]f delivery can be delayed” “information” is a parameter associated with the “full object location” (embedded resource) because it relates to permissible “delay” for delivery of that “object” at a “full object location.” EX-1006, [0026]; EX-1003 ¶163; *see* § VI.A.3 (Ground 1A/1B, [15b]).

i. Motivation to Combine and Expectation of Success.

It would have been obvious to combine Verma and Raciborski to receive the embedded resource and parameter associated with the embedded resource at Verma’s “broker” to achieve Verma’s goal. EX-1003 ¶164.

Verma and Raciborski disclose content delivery methods and communication between a content delivery network API and origin system. EX-1005, [0015], [0022], [0025]; EX-1006, [0002], [0055]; EX-1003 ¶165. Given their similarities and their shared desire to increase delivery performance, the POSITA would have understood Verma and Raciborski were analogous art. *Id.*

Verma already discloses its broker (API) evaluating “delivery tolerance information” and modifying URLs, and it would have been obvious to further receive such information (both Raciborski’s “full object location” (embedded

resource) and “if delivery can be delayed” (associated parameter)) at the broker because the broker needs to evaluate the delay tolerance, select a node, and modify the object location (embedded resource/link). EX-1003 ¶166; § VI.A.3 (Grounds 1A/1B, [15b]). Doing so would have allowed Verma’s broker to analyze a time period, select a cache server that could satisfy delivery during that time period, and rewrite the original URL to redirect to that cache server. EX-1003 ¶166; EX-1005, [0012]-[0013], [0018], [0022], [0025]-[0028], [0037].

A POSITA would have reasonably expected success doing so because Verma and Raciborski are similar systems. EX-1003 ¶167. As discussed above, both systems comprise the same components (client devices, origin system, API, and CDN) routed in a similar way to achieve the same goal (select node to deliver content). *Id.*; EX-1005, FIG. 1; EX-1006, FIG. 3A. Verma’s broker is already configured to accept information—“content provider 22 sends a request 34 for information to a content delivery network broker.” EX-1005, [0025]-[0026]; EX-1003 ¶¶167-168. Implementing this scheme in Verma (to the extent not expressly disclosed) would have been simply using known features according to their known functions (linked paths to content, data regarding delivery delay, and Verma’s data path 34), EX-1006, [0025]-[0026], [0055]-[0056], EX-1005, [0025]-[0026], to achieve entirely predictable results (link and data regarding delivery delay

are transmitted to, and received by, Verma's broker for evaluation and modification),
id. EX 1003 ¶¶167-168.

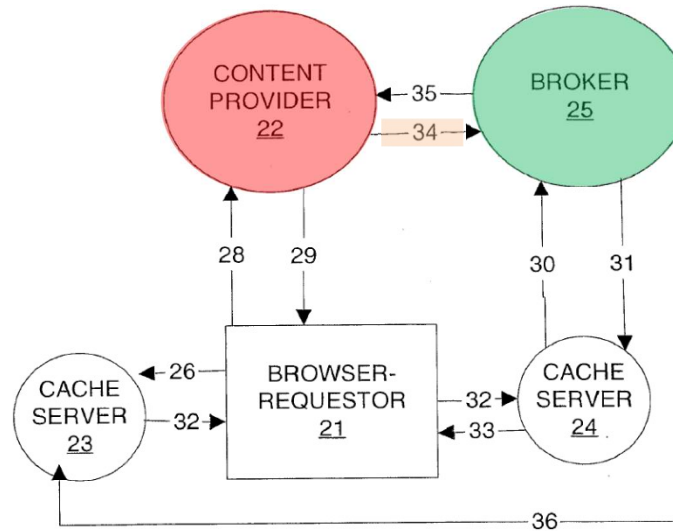


FIG. 1

EX-1005, FIG. 1.

A POSITA would have likewise been motivated to combine Verma and Raciborski such that Verma's "URL 28" was embedded as a "[l]ink[]" on the content site" (Verma's "Movies-Inc.Com" "web site"), as in Raciborski. EX-1006, [0017]; EX-1005, [0025]; EX 1003 ¶169. Doing so would have allowed Verma's "web pages" to utilize advantageous embedded links. § VI.A.3 (Grounds 1A/1B, [15b]); EX 1003 ¶169; EX-1005, [0015]. A POSITA would have expected success doing so, as explained above and in [15b]. §§ VI.A.3.b, VII.A.2 (Grounds 1A/1B/2, [15b]); EX 1003 ¶170.

3. [15c]-[15f]

Verma discloses [15c]-[15f]. §§ VI.A.4-VI.A.7 (Grounds 1A/1B [15c]-[15f]); EX-1003 ¶171.

B. Independent Claim 11

Verma renders claim 11 obvious. EX-1003 ¶172; § VI.B (Grounds 1A/1B, [11]). Claim 11 would have also been obvious over Verma and Raciborski. EX-1003 ¶172.

1. [11a]

Verma and Raciborski render [11a] obvious. EX-1003 ¶173.

Raciborski discloses that its “embodiments may be implemented by hardware [and] software”—“[w]hen implemented by software,” “the program code segments to perform the necessary tasks may be stored in a machine readable medium,” where the code segments are “instructions.” EX-1006, [0015]; EX-1003 ¶173. Raciborski thus discloses a non-transitory computer readable medium having computer readable instructions. *Id.* Moreover, Raciborski discloses “[a] processor(s) may perform the necessary tasks”; that is, Raciborski discloses a processor in communication with a computer readable medium to access and implement necessary tasks (instructions), as claimed. *Id.*

It would have been obvious to implement Verma’s “computer method” with a processor executing instructions on a non-transitory computer readable medium, for a POSITA would have understood that computer methods are typically implemented

using a “processor[]” executing “instructions” in a “storage medium.” *Id.*; EX-1005, Abstract, [0037]; EX-1006, [0015]; EX-1009, 16:53-63; EX-1003 ¶174. And, the POSITA would have reasonably expected success doing so, as discussed above for [11a]. § VI.B.1; EX-1003 ¶174.

2. [11pre], [11b]-[11g]

Verma discloses [11pre], [11b], and [11d]-[11g]. § VI.B.2 (Grounds 1A/1B [11pre], [11b], [11d]-[11g]); EX-1003 ¶175.

[11c] is substantially similar to [15b]. EX-1003 ¶175. Verma and Raciborski also render [11c] obvious, as explained above for [15b]. § VII.A.2 (Ground 2, [15b]); EX-1003 ¶175.

Moreover, it would have been obvious to the POSITA to program the steps in [11b]-[11g] as computer instructions to effect Verma’s “computer method,” as discussed. § VI.B.2 (Ground 1B [11pre], [11b]-[11g]); EX-1003 ¶176.

C. Claim 12

Raciborski and Verma render obvious the additional limitations of claim 12. EX-1003 ¶177.

Resource: Raciborski discloses “a web page is formulated on the content site 116 for a recipient computer.” EX-1006, [0067]; EX-1003 ¶¶178-179. This “web page” is a resource because it is a form of content and a resource for accessing additional content. *Id.*; § VIII.A.2 (Ground 3, [1a]) (claim 10 confirms “content

resource is a hypertext markup language (HTML) document”; Figure 2 confirms “web page” may be an “HTML document”); EX-1003 ¶¶178-179.

Embedded Resource: Raciborski also discloses “URIs in the web page meant for CDN delivery are aimed at the URI rewriter 308 to allow redirection.” EX-1006, [0067]. These “URIs in the web page” are embedded resources, as explained above. §§ VI.A.3, VII.A.2 (Grounds 1A/1B/2, [15b]); EX-1003 ¶180.

Replacing: Raciborski discloses “[t]he rewritten URI is embedded in the web page.” EX-1006, [0070]. The “rewritten URI” is the modified embedded resource because “[t]he URI rewriter 308 redirects requests for content objects away from the origin server 316 and toward a CDN.” EX-1006, [0053], [0070]; EX-1003 ¶181. When “[t]he rewritten URI is embedded in the web page,” a POSITA would have understood that the original URI (embedded resource) is replaced with a “rewritten URI” (modified embedded resource), as that rewritten URI “redirects requests” via “embedd[ing] in the web page” (resource). *Id.*

i. Motivation to Combine and Expectation of Success.

It would have been obvious to a POSITA to combine Verma and Raciborski because Verma teaches a desire to “replace the original URL” “with an ‘Akamai-ed’ URL,” as discussed for claim 12 in Grounds 1A/1B. § VI.C; EX-1003 ¶¶182-184. And Raciborski’s links on webpages would have advantageously allowed Verma’s

system to perform Akamai URL replacement with URLs embedded in a webpage.
EX-1003 ¶184.

Verma’s “prepended”/“rewritten URL” is embedded in a page. § VI.C; EX-1005, [0027]-[0029]; EX-1003 ¶184. And a POSITA would have been motivated to use Raciborski’s replacing/embedding a “rewrite URI” (modified embedded resource) in a “web page” (resource) to achieve Verma’s stated goal. EX-1003 ¶184.

A POSITA would have reasonably expected success in combining Verma with Raciborski to replace an original embedded URL in a webpage with a rewritten URL, as explained for [15b] and claim 12. EX-1003 ¶185; §§ VI.C.i, VII.A.2.i (Grounds 1A/1B, [12]; Ground 2, [15b]).

D. Claim 14

Verma and Raciborski render the additional limitation in claim 14 obvious. EX-1003, ¶186 § VI.D (Grounds 1A/1B, [14]).

VIII. GROUND 3: VERMA AND LEWIN

A. Independent Claim 1

Verma and Lewin render obvious claim 1. EX-1003 ¶187.

1. [1pre] A content delivery method comprising:

Verma discloses [1pre] because it discloses “[a] method for delivering content files.” EX-1005, claim 1, [0001], [0010], [0037], Abstract; EX-1003 ¶188.

2. [1a] receiving, by an **origin system**, a request from a **client device** for a **content resource**, the **content resource** including at least one **embedded resource** with a **tag**;

Verma and Lewin render obvious [1a]. EX-1003 ¶189.

Origin System/Client Device/Origin System Receive Request From Client

Device: First, Verma discloses a “**content provider**” (**origin system**). § VI.A.3 (Grounds 1A/1B [15b]); EX-1005, [0025]-[0026], FIG. 1; EX-1003 ¶190. Verma likewise discloses “**a client that runs a browser**,” which may be a “**client device**.” § VI.A.6 (Grounds 1A/1B, [15e]); EX-1005, [0001], [0014], [0037]; EX-1003 ¶190.

This is illustrated below:

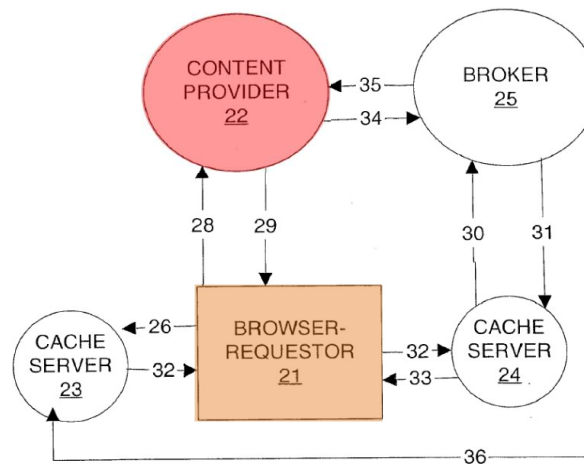


FIG. 1

EX-1005, FIG. 1. And Verma discloses a “content provider” (origin system) receives a “request [for] a content file” from the “client that runs a browser” (client device). EX-1005, [0002], [0012], [0015]-[0016], [0018], [0025]-[0026], [0037]; EX-1003 ¶190.

To the extent Verma does not expressly disclose its origin system receiving “a request from a client device for a content resource, the content resource including at least one embedded resource with a tag,” it would have been obvious to a POSITA in view of Lewin. EX-1003 ¶¶191, 193.

a. Obviousness based on Lewin.

Lewin discloses a “request[]” from a “**browser**” (**client device**) for an “**HTML document**” (**content resource**). EX-1007, [0049]; EX-1003 ¶192. Lewin discloses “**URLs**” (**embedded resources**) included in the “**HTML page**” (**content resource**) that have “**tags**” (**with a tag**). EX-1007, [0012]-[0013], [0029]-[0030], [0049]-[0050]; EX-1003 ¶192.

Request For Content Resource: Lewin discloses a “page,” which may be a “Web page” or “HTML” page and stored by a content provider (origin system). EX-1007, [0049], [0012]; EX-1003 ¶194. A “user requests the page”—user browser “requests the HTML document (e.g., my.xyz.com)” (**content resource**) “from the identified server.” EX-1007, [0010], [0049]; EX-1003 ¶194. Such a request is shown in Figure 2:

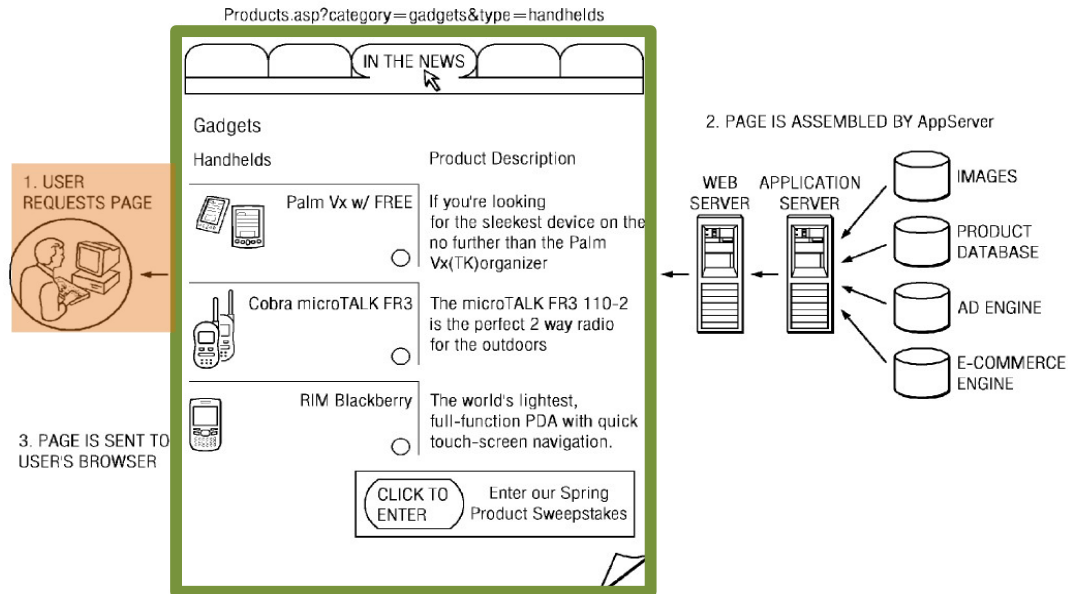


FIG. 2

EX-1007, FIG. 2.

Content Resource Including Embedded Resource: Lewin’s “HTML page” or “HTML document” is a content resource, for it is a web page, consistent with ’322 patent claim 10 explaining that a “content resource is a hypertext markup language (HTML) document.” EX-1007, [0049], [0012]-[0013], [0028]; EX-1001, claim 10; EX-1003 ¶195.

Lewin’s “HTML page” (content resource) includes embedded content such as “page components” including logos and advertisements. EX-1007, [0008]; EX-1003 ¶196. These are shown in Figure 4:

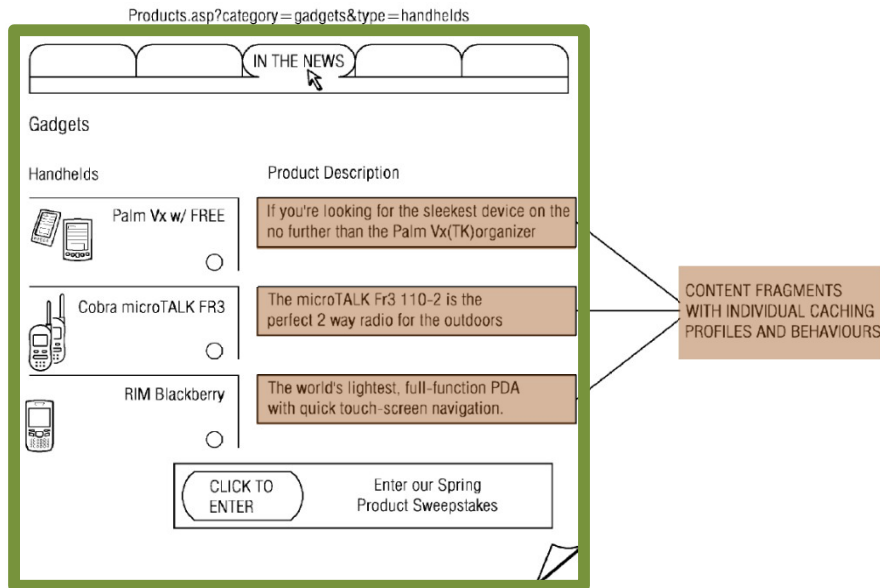


FIG. 4

EX-1007, FIG. 4.

Lewin explains “directives [] are placed in HTML pages” and “evaluated on a server before the page is served,” which “enable[s] the server to add dynamically-generated content to an existing HTML page.” EX-1007, [0028]. Dynamic assembly instructions may be “URLs for HTML chunks to be incorporated in the final HTML page.” *Id.*, [0049]. “URLs” are embedded resources, as explained above. §§ VI.A.3, VII.A.2 (Grounds 1A/1B, 2, [15b]); EX-1007, [0028], [0049]; EX-1003 ¶197.

Tags: The “dynamic assembly instructions” (URLs (embedded resources)) are “specif[ied]” by “tags,” like a “<esi:include> tag.” EX-1007, [0028], [0030], [0049]; EX-1003 ¶198. This is consistent with the ’322 patent “example” where “the HTML document is initially published with a tagged embedded resource 24A[,] that would identify the resource.” EX-1001, 4:56-60; EX-1003 ¶198. This is shown in Figure 6:

```
<html>
<body>
<!--personalized greeting (1)-->
Hello ${HTTP_COOKIE{"username"}}

<!--targeted ad (2)-->
<esi:choose>
<esi:when test="${GEO{country_code}}='US' ">
  <esi:include src=us_ad.html/>
</esi:when>
<esi:when test="${GEO{country_code}}='Canada' ">
  <esi:include src=canada_ad.html/>
</esi:when>
<esi:otherwise>
  <esi:include src=generic_ad.html/>
</esi:otherwise>
</esi:choose>

<!--Static navigation bar (3)-->
<a href=...> <a href=...> <a href=...> <a href=...>

<!--Personalized recommendations (4)-->
<esi:include src=recommendations.html/>

<!--Static links, copyright,etc (5)-->
<a href=...> <a href=...> <a href=...> <a href=...>
Copyright 2001, etc.
</body>
</html>
```

FIG. 6

EX-1007, FIG. 6 (URLs in purple, tags in blue), FIG. 7.

i. Motivation to Combine and Expectation of Success.

Verma and Lewin disclose similar methods for accessing content from a CDN, including browsers accessing webpages. EX 1003 ¶¶199-207; EX-1005, [0015], [0022], [0025]; EX-1007, [0002], [0010], [0049]. Given their similarities, and shared desire to increase content delivery performance, a POSITA would have understood Verma and Lewin were analogous art. *Id.*

Request For a Content Resource: It would have been obvious for Verma’s “request for a content file” to operate a request for a HTML page with an embedded URL in view of Lewin. EX-1003 ¶¶199-211; EX-1005, [0025]; EX-1007, [0008], [0012], [0028], [0049].

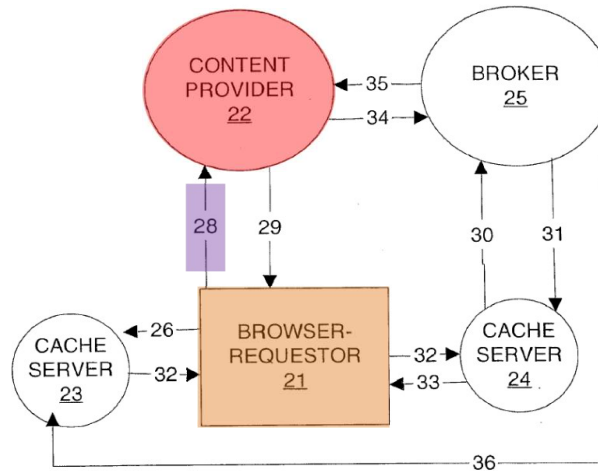


FIG. 1

EX-1005, FIG. 1. Verma discloses a “Movies-Inc.Com” “web site,” which a POSITA would have understood had an associated “web page[]” (**content resource**), as taught in Lewin. EX-1005, [0015], [0025]; EX-1003 ¶208; EX-1007, [0010], [0012]. It also discloses the client “can open web pages and request content files.” EX-1005, [0015]; EX-1003 ¶208. It would have been obvious to a POSITA for Verma’s client to open webpages (EX-1005, [0015]) with a “user request[ing] the page” (EX-1007, [0010]), as taught in Lewin, because a POSITA would have known that requesting a page was standard practice for accessing websites, and would have known HTML documents/pages offered significant advantages, including desirable embedded content. EX-1003 ¶¶208-211; §§ VI.A.3, VII.A.2 (Grounds 1A/1B/2, [15b]), II.D.

Content Resource Including Embedded Resource With a Tag: It would have been obvious for Verma’s “URL 28” to be embedded in an HTML page, and specified by a “tag[],” for Lewin teaches a “central” webpage development feature

“is the ability to fetch and include files that comprise a web page,” and “tag[s]” “may be used for this purpose.” EX-1003 ¶212; §§ VI.A.3, VI.C (Grounds 1A/1B, [15b], [12]), § II.D; EX-1005, [0025]; EX-1007, [0028], [0030], [0049].

Lewin teaches directives “placed in HTML pages” are “[t]raditional[.]” EX-1007, [0028]; EX-1003 ¶214. A POSITA would have been motivated to use markup languages, like tags, with embedded links because they allow designers to describe “the layout of content on a webpage” and “attributes of that content.” EX-1013, 7:44-51; EX-1003 ¶213. Tags “define various HTML layout and display information,” EX-1013, 7:44-51, and can “specify dynamic assembly instructions,” like URLs, EX-1007, [0049]. § II.D; EX-1003 ¶¶213-217. The POSITA would have understood Lewin’s tags allow for identification of URLs, and would have wanted to incorporate tags in Verma to have a uniform and efficient way to identify URLs, like “URL 28.” EX-1007, [0049]; EX-1005, [0025]; EX-1003 ¶¶213-217.

Expectation of Success: A POSITA would have reasonably expected success implementing Lewin’s “request[.]” for an “HTML page” with “URLs” designated by “tags” in Verma. EX-1003 ¶¶218-219. Verma discloses a web site “Movies-Inc.Com,” “open[ing] web pages,” and a browser sending a “request” to a content provider. *Id.*; EX-1005, [0002], [0012]-[0018], [0025]-[0026]. Sending such requests was well-known, routine, conventional webpage operation. §§ VI.A.3.b, VII.A.2 (Grounds 1A/1B/2, [15b]), II.D; EX-1003 ¶¶219-222. And HTML was a

known language allowing website access that is “compatible” with Netscape Navigator and Internet Explorer browsers, which Verma discloses. § II.D; EX-1005, [0014]; EX-1003 ¶¶219-222.

Similarly, Verma suggests URLs with tags in its modified embedded resource, as discussed for [15b] and claim 12. EX-1005, [0029] (exemplary absolute URL with “<a href. . .” tags); §§ VI.A.3, VI.C, VII.A.2, VII.C, VIII.A.2.a (Grounds 1A/1B/2, [15b], [12]), II.D; EX-1003 ¶223. And as shown below:

```
<Content timing>
<Period start=18:00, 9/10/03, end=19:00>
<a href=http://location1/contentURL> contentURL </a>
</Period>
<Period start=19:00, 9/10/03. end=20:00>
<a href=http://location2/contentURL> contentURL </a>
</Period>
</Content timing>
```

EX-1005, [0029] (tags in blue). Markup language tags were known to identify URLs in webpage design, as discussed, and it would have required no more than the application of conventional technology to designate an original URL (embedded resource) with a tag in a webpage (resource). §§ II.D, VIII.A.2 (Ground 3, [1a]); EX-1005, [0013]; EX-1003 ¶223.

Implementing this scheme in Verma (to the extent not expressly disclosed) would have been simply using known features according to their known functions (HTML webpages, URLs, markup languages, and HTTP requests), § II.D, EX-1009, 1:15-30, 5:23-31; EX-1010, 6:19-32, 6:63-67, to achieve predictable results

(Verma's client operating a browser requests the "web page[]" for Verma's "Movies-Inc.Com" "web site," and Verma's URL 28 is embedded in that "web page[]" designated by a tag using a markup language, such as HTML), *id.*; EX-1005, [0015], [0025]. EX-1003 ¶224.

3. [1b] upon identification of the **tag**, using at least one **delivery parameter** to obtain, by the **origin system**, a **modified embedded resource** from a **content delivery network** that is separate from the **origin system**; and

Verma and Lewin render [1b] obvious. EX-1003 ¶225.

Origin System/Separate Content Delivery Network: As discussed, Verma's "**content provider**" (**origin system**) is separate from its "**content delivery network**." § VI.A.3 (Grounds 1A/1B, [15b]); EX-1005, [0025]; EX-1003 ¶226.

Modified Embedded Resource: The "**prepended URL**" ("**rewritten URL**" or "**Akamai-ed**" URL) describes a **modified embedded resource**, as explained in [15c]. § VI.A.4 (Grounds 1A/1B, [15c]); EX-1003 ¶227.

Using a Delivery Parameter to Obtain: Verma further discloses a "**location of the client**" (**delivery parameter**) used by the "**content provider**" (**origin system**) to obtain a "**prepended URL**" (**modified embedded resource**) from the "**broker**" in the **CDN**. EX-1005, [0012]-[0013], [0022], [0025]-[0028], [0037]-[0038], FIG. 1, claim 18; EX-1003 ¶228.

Verma discloses the "content provider" sending "request 34" to the "broker," which in turn causes the broker to "return" a "prepended URL" (modified embedded

resource) to the content provider. §§ VI.A.4-VI.A.5 (Grounds 1A/1B [15c]-[15d]); EX-1003 ¶229. The content provider uses a “location of the client” in the request to obtain that “prepended URL” because it “dynamically request[s] the broker 25 for a content file delivery to a location close to the client.” EX-1005, [0025]-[0026], [0037]; EX-1003 ¶¶230-231. Specifically, “content provider 22” passes a desired “location” to “broker 25” because “broker 25” receives a “request” for “delivery to a location.” EX-1005, [0026]; EX-1003 ¶231.

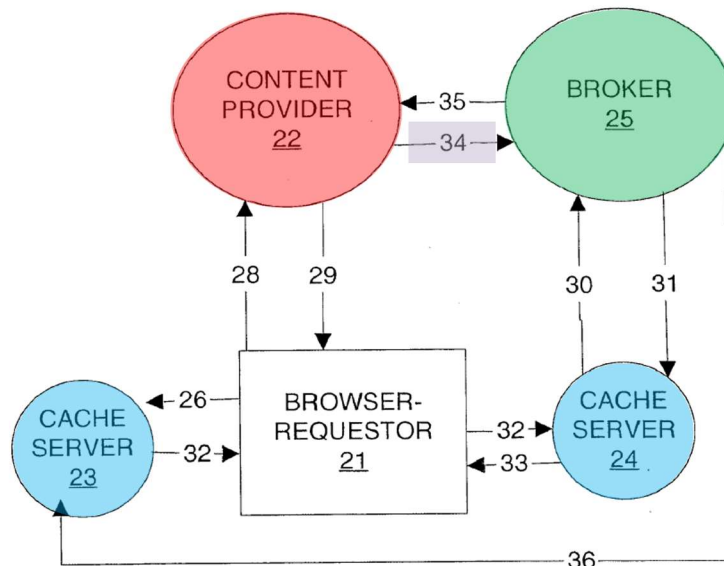


FIG. 1

EX-1005, FIG. 1. The “location of the client” describes a delivery parameter because it is a location where content at “URL 28” (embedded resource) should be delivered and, in turn, informs which cache server (CDN node) will be used for delivery. EX-1005, [0037] (check “based on the location of the client” and returning a prepended

URL redirecting to cache server 23/24 based on the check), [0026]-[0027]; EX-1003

¶232. This is shown below in Figure 2:

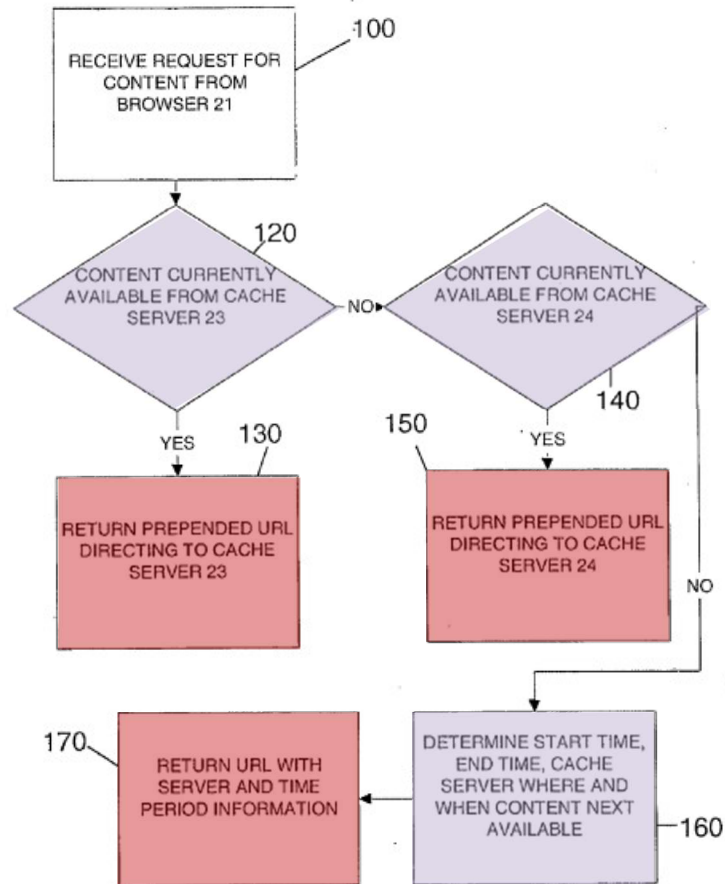


Fig. 2

EX-1005, FIG. 2.

a. Obviousness based on Lewin.

To the extent Verma does not expressly disclose using a **delivery parameter** to obtain, by the **origin system**, a **modified embedded resource** from the **CDN** “based upon identification of the tag,” it would have been obvious to do so in view of Lewin.

EX-1003 ¶233.

Upon Identification of the Tag: Lewin discloses a server “parses the HTML page looking for tags that specify dynamic assembly instructions including, without limitation, URLs for HTML chunks to be incorporated in[to] the final HTML page.” EX-1007, [0049]. Parsing a page “looking for tags” is identifying the tag. EX-1003 ¶234. Moreover, Lewin teaches directives “placed in HTML pages [] are evaluated on [the] server before the page is served.” EX-1007, [0028]. Evaluating a directive, like a tag, involves identifying the directive for evaluation. EX-1003 ¶234. Because Lewin parses an HTML page looking for tags specifying instructions, and evaluates directives (tags) placed into HTML pages, the POSITA would have understood that the identification of the tag initiated dynamic assembly, like incorporation of content “into the final HTML page” and obtaining a modified embedded resource, like URLs on the HTML page. EX-1007, [0049]-[0050]; EX-1003 ¶234. This is shown below:

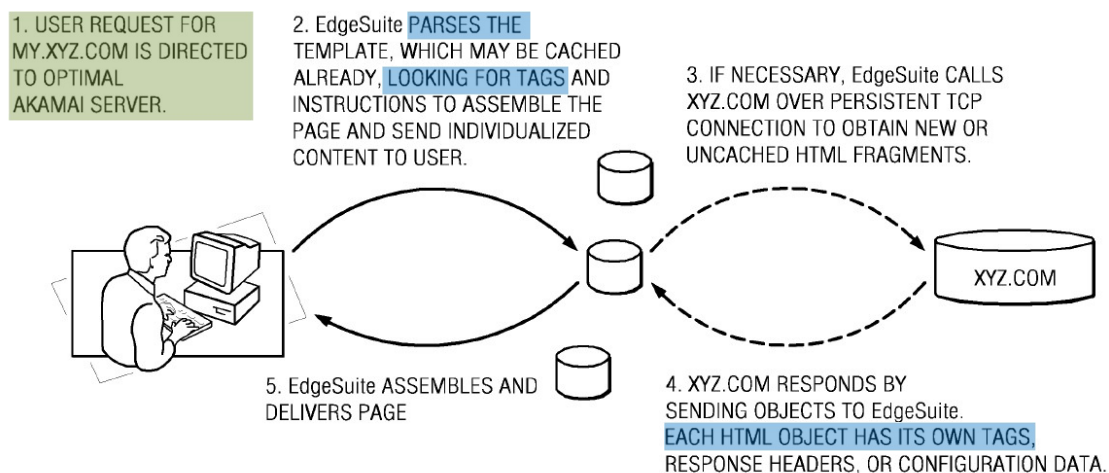


FIG. 9

EX-1007, FIG. 9.

i. Motivation to Combine and Expectation of Success.

A POSITA would have recognized the advantages of embedding content in webpages, including the ability to serve objects from distributed servers, increasing delivery performance and efficiency. §§ VI.A.3, VII.A.2, VIII.A.2 (Grounds 1A/1B, 2 [15b], Ground 3, [1a]); EX-1003 ¶236. It would have been obvious for a POSITA to parse an HTML webpage for tags, as in Lewin, to enable Verma’s system to utilize and identify advantageous embedded content by providing a solution for dynamic identification and execution of the URLs. EX-1003 ¶235.

A POSITA would have reasonably expected success in “pars[ing] the HTML page looking for tags” in Verma to identify URLs for objects to fetch. § VIII.A.2.a.i (Ground 3, [1a]); EX-1003 ¶237.

4. [1c] delivering, by the **origin system**, the **content resource** to the **client device** with the **modified embedded resource**, wherein the **modified embedded resource** includes a direct link to a node within the content delivery network that can deliver content associated with the embedded resource.

Verma and Lewin render [1c] obvious. EX-1003 ¶238.

As discussed in Ground 1A/1B [15c], Verma discloses a “modified embedded resource includes a direct link to a node within the content delivery network that can deliver content associated with the embedded resource.” EX-1003 ¶239; § VI.A.4.

Verma and Lewin render obvious delivering, by the origin system, the content resource to the client device with the modified embedded resource. EX-1003 ¶240.

a. Obviousness based on Lewin.

It would have been obvious for Verma's "content provider" (origin system) to assemble a page ("Movies-Inc.Com" "web site" "web page[]") (content resource) that includes Verma's "prepended URL" (modified embedded resource) pointing to a cache server storing a requested "movie," and return (deliver) that page to Verma's "client that runs a browser" (client device) for viewing. EX-1003 ¶241; EX-1005, [0015], [0025], FIG. 1; EX-1007, [0008], [0017], [0028], [0050], FIG. 2.

Lewin discloses the application server "assembles the page based on the return values" and features like the "navigation menu, logos, and advertisement." EX-1007, [0008], [0017]. The user receives that assembled page from the "application server," *id.*, which discloses a server delivering a webpage (content resource) to a user (client device), as claimed. EX-1003 ¶242. This is shown in Figure 2:

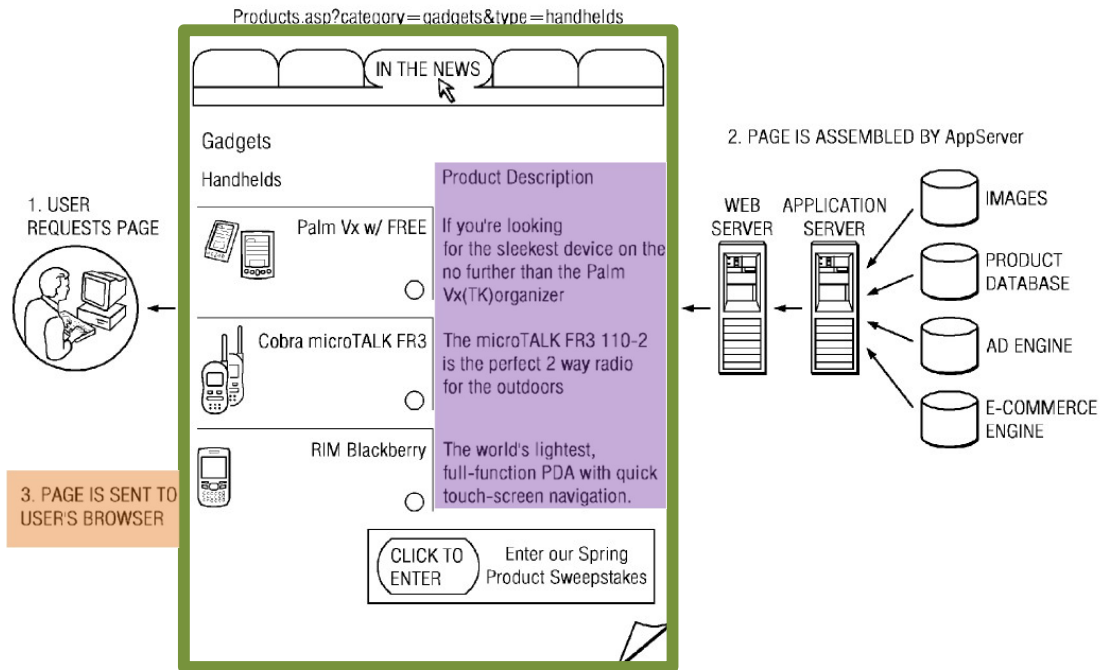


FIG. 2

EX-1007, FIG. 2, [0017] (delivering content resource in orange, content resource in green).

Lewin also discloses “the assembled page” (content resource) may include modified embedded resources. EX-1007, [0008], [0017], FIG. 2; EX-1003 ¶243. Lewin’s HTML page sent to the user “may contain URLs or other CDN-modified resource locators to other embedded page objects” that can be “requested from the CDN.” EX-1007, [0050]. A POSITA would have understood “URLs or other CDN-modified resource locators” constitute modified embedded resources, like Verma’s prepended URLs. EX-1003 ¶243.

i. Motivation to Combine and Expectation of Success.

A POSITA would have been motivated to implement Verma's "Movies-Inc.Com" "web site" as an HTML webpage having movie links embedded in the webpage. VIII.A.2.a (Ground 3, [1a]); EX-1003 ¶244. A POSITA would have also been motivated to return the final assembled HTML webpage to the user to complete the "end user request," like Verma's client "request." EX-1003 ¶244; EX-1007, [0008], [0017], [0028], [0050]; EX-1005, [0025].

A POSITA would have reasonably expected success returning an assembled HTML webpage to the user because it only requires application of conventional data transmission techniques to transmit an HTML page from Verma's content provider to the "browser requestor" via pathway "29" in Verma. EX-1003 ¶245. This is shown below:

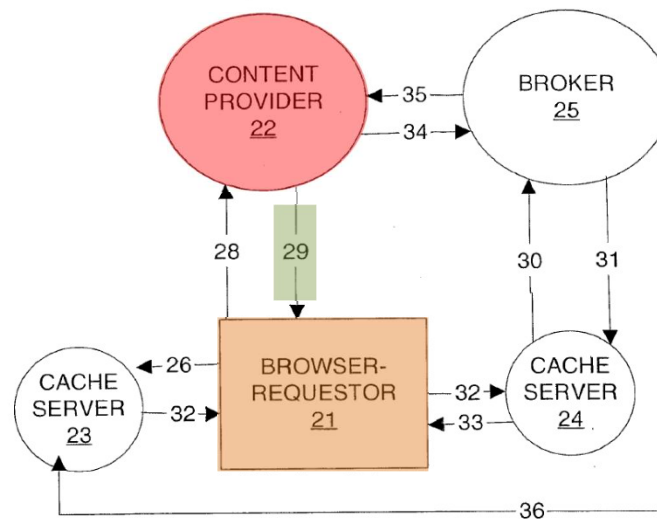


FIG. 1

EX-1005, FIG. 1. Implementing this scheme in Verma (to the extent not expressly disclosed) would have been simply using known features according to their known functions (HTML webpages, HTTP requests), § II.D, to achieve entirely predictable results (Verma's browser requests webpage for "Movies-Inc.Com" "web site" and receives webpage with Akamai-ed URL (modified embedded resource)), *id.*; EX-1005, [0015], [0025]; EX-1003 ¶246.

B. Claim 8: The content delivery method of claim 1 wherein the tag is a unique tag.

Verma and Lewin render obvious this additional limitation. EX-1003 ¶247. As discussed, Verma and Lewin render obvious including a tag with an embedded resource. *Id.*; § VIII.A.2 (Ground 3, [1a]). It would have also been obvious for that tag to be a "unique tag" because a unique tag would have allowed implementation of advantageous personalized and dynamic content. EX-1003 ¶247.

Lewin discloses a "tag" for "[c]onditional inclusion" of content: "conditional for which advertisement to include, which is dependent [up]on the user's geographic location." EX-1007, [0032], [0043]; EX-1003 ¶248. "If the user is from the USA," one advertisement is included; "[i]f the user is from Canada," another advertisement is included. *Id.* This is a unique tag, for it is not a generic tag, but a specific tag for "[c]onditional inclusion" of an embedded resource "based on Boolean comparison or environmental variables." *Id.* And inclusion depends upon unique conditions. *Id.* Figure 6 illustrates unique conditional tags called "<esi:choose>" in HTML:

```
<html>
<body>
<!--personalized greeting (1)-->
Hello ${HTTP_COOKIE{'username'}}

<!--targeted ad (2)-->
<esi:choose>
<esi:when test="${GEO{country_code}}='US' ">
  <esi:include src="us_ad.html"/>
</esi:when>
<esi:when test="${GEO{country_code}}='Canada' ">
  <esi:include src="canada_ad.html"/>
</esi:when>
<esi:otherwise>
  <esi:include src="generic_ad.html"/>
</esi:otherwise>
</esi:choose>

<!--Static navigation bar (3)-->
<a href=...> <a href=...> <a href=...> <a href=...>

<!--Personalized recommendations (4)-->
<esi:include src="recommendations.html"/>

<!--Static links, copyright,etc (5)-->
<a href=...> <a href=...> <a href=...> <a href=...>
Copyright 2001, etc.
</body>
</html>
```

FIG. 6

EX-1007, FIG. 6, [0032].

A POSITA would have been motivated to use Lewin’s unique “[c]onditional inclusion” tags to provide advantageous “personalization” “to build highly dynamic Web pages,” including allowing web developers to include “personalized greetings,” “targeted advertisement[s],” and country-specific advertisements. EX-1007, [0035], [0038]-[0039], [0043]; EX-1003 ¶249; EX-1009, 2:63-64. Using such unique tags would require no more than the application of conventional technology to implement in Verma; a POSITA would have reasonably expected success doing so. § VIII.A.2 (Ground 3, [1a]); EX-1003 ¶¶249-250.

C. Claim 10: The content delivery method of claim 1 wherein the content resource is a hypertext markup language (HTML) document and the embedded resource is a link.

Verma and Lewin render obvious the additional limitation of claim 10 (HTML page/document (HTML document) and embedded URLs (link)). § VIII.A.2 (Ground 3, [1a]); EX-1003 ¶251.

D. Claim 13: The content delivery network of claim 11 wherein the resource is an HTML document and the modified embedded resource is a link.

Lewin and Verma render obvious the additional limitation of claim 13 (HTML page or document (resource² is an HTML document) and prepended URL (modified embedded object is link)). §§ VI.A.4, VIII.A.2-VIII.A.4, VIII.C (Grounds 1A/1B [15c]; Ground 3, [1a]-[1c], [10]); EX-1003 ¶252.

² Claim 13 lacks antecedent basis for “the resource” because it depends from claim 11. Claim 12, however, recites “replacing the embedded resource with the modified resource in *a resource*,” and the prior art discloses such resource.

IX. GROUND 4: VERMA, LEWIN, AND RACIBORSKI

A. Claim 2

1. [2pre] The content delivery method of claim 1 wherein the request is received over an **http connection** and the at least one **delivery parameter includes an IP address of the client device**, and further comprising:

Verma and Raciborski render obvious additional elements in [2pre]. EX-1003 ¶253.

HTTP connection: As discussed, Verma teaches a browser “open[ing a] web page[.]” EX-1005, [0015,] [0025]; EX-1003 ¶254. Verma at least suggests using an http connection to transmit that request. EX-1003 ¶254. For example, it teaches the URLs for requesting content include an “http” protocol:

- http://contentURL
- http://local_cache_server/contentURL
- http://location1/contentURL
- http://location2/contentURL
- http://local_cache_server/contentURL
- http://contentURL.tim

EX-1005, [0013], [0029], [0031], [0033]. A POSITA would have known “opening a [] URL” sends a request over an http connection, for the “http” protocol is specific in the URL. EX-1003 ¶255.

To the extent Verma does not teach or suggest this feature, it would have been obvious to a POSITA in view of Lewin. Lewin discloses “HTTP requests” “to search an online retailer’s database.” EX-1007, [0005]; EX-1003 ¶256. A POSITA would have understood an “HTTP request[]” is received over an http connection because “HTTP” is a type of communication protocol. EX-1003 ¶256.

i. Motivation to Combine and Expectation of Success.

A POSITA would have been motivated to use an “HTTP request[]” over an http connection, as taught in Lewin, to implement Verma’s browser requesting a page like the “Movies-Inc.com” “web site” using an advantageous commonplace standard protocol. EX-1003 ¶257; EX-1007, [0005]. “Hypertext Transfer Protocol (HTTP)” was a well-known communication protocol a POSITA would have readily used to request a webpage. EX-1009 1:17-21; EX-1010, 6:19-32, 6:63-67; EX-1007, [0005]; EX-1003 ¶¶258-259. A POSITA would have understood the http communication protocol provided a simple communications means compatible with the browsers/servers Verma implements—“Internet Explorer, or Netscape.” EX-1005, [0014]; EX-1003 ¶¶258-259.

A POSITA would have reasonably expected success in implementing Lewin’s “HTTP requests” because requesting a webpage over an http connection would have required no more than using a known technique (http communication protocol) in a known way to attain an entirely predictable result (web browser and content provider

communicate over the Internet). EX-1003 ¶260. Verma already discloses a browser “opening a returned URL” with an “http” protocol—doing the same to request a webpage would have been no different. EX-1005, [0031]; EX-1003 ¶260.

IP Address of the Client Device: As discussed for [1b] in Ground 3, Verma discloses a delivery parameter, specifically, a “location of the client.” § VIII.A.3. To the extent Verma does not specify that the delivery parameter can be an “IP Address of the recipient computer,” it would have been obvious to use such a parameter in view of Raciborski. EX-1003 ¶261.

Raciborski discloses an “IP Address of the recipient computer” (client device) as a delivery parameter. EX-1006, [0026], [0055]-[0056], Table 1; EX-1003 ¶262. “The content provider 108 sends various information to the one or more CDNs,” like the “IP Address of the recipient computer.” *Id.* Its “recipient IP address is given in the bid message” “received by the analysis interface” of the CDN “from various content originators,” as shown below:

TABLE I

Real Time Bid Message Example	
Field	Example
Bid Identifier	34sd89732k
Recipient IP Address	69.93.18.222
Domain of Content Object	LLNW.com
Path of Content Object	/press/2005releases/
File Name of Content Object	routemark.mp4
Format	MPEG4
Bitrate	200 Kbps
Latency Options	3
QoS Level(s)	3
Packet Loss Options	2
Buffer Duration	24 hours
Max. Volume	1000

Id.; EX-1003 ¶262.

ii. Motivation to Combine and Expectation of Success.

A POSITA would have known, in the context of content distribution systems, a “user’s location” “preferably is deduced by looking at the IP address of the client machine making the request.” EX-1009, 9:55-57, Abstract; EX-1003 ¶¶263-264; EX-1006, [0026], [0055]-[0056]. A POSITA would have been motivated to use such “IP Address of the recipient computer” in Verma to identify the “location of the client” because it was the preferred method for doing so. *Id.*

A POSITA would have also reasonably expected success in implementing Raciborski’s “IP Address of the recipient computer” in Verma, for it was a known, “preferabl[e]” way to identify location. *Id.*; EX-1003 ¶265. Raciborski likewise teaches an IP address conveniently integrates into a Bid URI for passing to a CDN.

EX-1006, [0037]; EX-1003 ¶265. Implementing this scheme in Verma (to the extent not expressly disclosed) would have been simply using known features according to their known functions (recipient IP address transmitted to Verma's broker via Verma's request 34, like Verma's disclosed client "location"), to achieve entirely predictable results (Verma's browser receives the client's IP address for evaluation). EX-1003 ¶266; § VIII.A.3 (Ground 3, [1b]).

2. [2a] passing information based on the client IP address to an application programming interface (API) of the content delivery network;

Verma and Raciborski render [2a] obvious. EX-1003 ¶267.

As discussed for [15b] and [1b], Verma discloses a content provider (origin system) sending a request for content to a CDN broker (API). §§ VI.A.3, VII.A.2, VIII.A.3 (Grounds 1A/1B/2, [15b], Ground 3, [1b]); EX-1003 ¶268. That request includes a delivery parameter. § VIII.A.3; EX-1003 ¶268. As explained for [2pre], it would have been obvious to use a client IP address as that delivery parameter. § IX.A.1 (Ground 4, [2pre]); EX-1003 ¶268; EX-1005, [0026], [0037]; EX-1006, [0026], [0055]-[0056].

It would have been further obvious for "information based on th[at] client IP address" to have also been received by the broker in Verma's CDN. EX-1003 ¶269. The "IP Address of the recipient computer," as discussed for [2pre], is information based on a client IP address at least because it is the client IP address. *Id.*; EX-1001,

claim 5 (“information based on the IP address” “is the IP address”); § IX.A.1 (Ground 4, [2pre]). And a POSITA would have been motivated to use Raciborski’s client IP address (and information based on that client IP address) in Verma’s request with a reasonable expectation of success. EX-1003 ¶269; § IX.A.1.

3. [2b] in association with the API, obtaining a parameter associated with the embedded resource;

[2b] is substantially similar to [15b]. EX-1003 ¶270. As discussed, Verma discloses or renders obvious [2b]. *Id.*; § VI.A.3 (Grounds 1A/1B, [15b]). [2b] would have been also obvious over Verma and Raciborski. EX-1003 ¶270; §§ VI.A.3, VII.A.2 (Grounds 1A/1B/2, [15b]).

4. [2c] identifying, based on the IP address and the parameter, location information for the node in the content delivery network that can serve the content associated with the embedded resource; and

Verma and Raciborski render [2c] obvious. EX-1003 ¶271.

Verma discloses identifying location information for a “cache server” (node) based on which “cache server” “is closer to the client” (IP address) and where “the content file is available during a time period satisfying the client” (parameter). *Id.*; EX-1005, [0027], [0015]; EX-1003 ¶272.

Location information is identified in Verma’s prepended URLs because they designate the cache server (node)—cache server 23 or 24, location1, location2, and local_cache_server. EX-1005, [0013], [0027], [0029], [0031], [0037]; EX-1003

¶274. Moreover, the prepended URL constitutes an absolute uniform resource locator, as discussed in § VI.D (Grounds 1A/1B, [14]):

```
<Content timing>
<Period start=18:00, 9/10/03, end=19:00>
<a href=http://location1/contentURL> contentURL </a>
</Period>
<Period start=19:00, 9/10/03. end=20:00>
<a href=http://location2/contentURL> contentURL </a>
</Period>
</Content timing>
```

EX-1005, [0029]. And claim 7 explains “location information” can be an “absolute uniform resource locator.” EX-1003 ¶274.

Further, the location information for the node in the CDN is identified based on the client location information (IP address) and associated parameters (e.g., delay tolerance information). *Id.*; EX-1005, [0037], [0015] (redirected URL “[b]ase[d] on the location and delay tolerance”); EX-1003 ¶273. Verma Figure 2 shows “steps undertaken by the [CDN] of F[igure] 1 to schedule content delivery”:

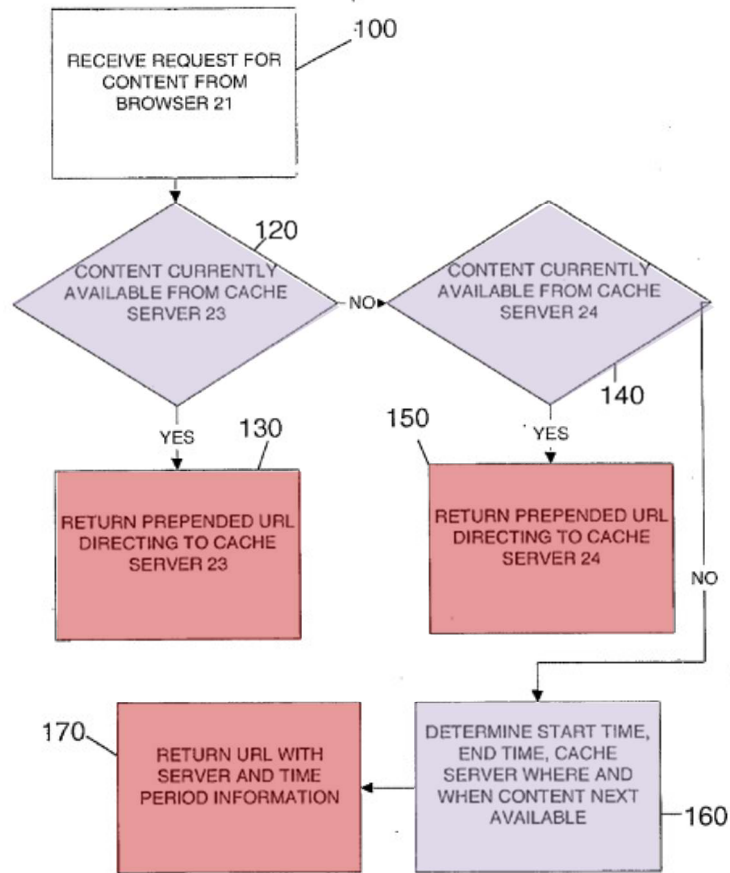


Fig. 2

EX-1005, FIG. 2. As shown with step 120, a “check occurs” “based on the location of the client, regarding whether the content is currently available on [a] cache server (e.g., cache server 23) closest to the client.” EX-1005, [0037], FIG. 2; EX-1003 ¶273. “If the content isn’t available from the cache server 23,” as shown at step 140, “a check occurs” “to determine if the requested content file is scheduled to be available on another cache server close to the client, [namely] cache server 24.” *Id.* Based on which cache server is selected, “a prepended URL redirecting to cache

server 23” “is returned” or “a prepended URL with a future availability redirecting to the cache server 24” “is returned” (steps 130, 150). *Id.*

The cache server (node) location information is identified based on the client location information (IP address) because the above-described check occurs “based on the location of the client.” *Id.* It would have been obvious for a POSITA to use the IP Address of the recipient computer in view of Raciborski, as discussed above, to designate the client location. EX-1003 ¶275; § IX.A.1-IX.A.2 (Ground 4, [2pre]-[2a]).

The cache server (node) location information is also identified based upon “delay tolerance information” associated with the request (parameter associated with the embedded resource). EX-1003 ¶276. In Figure 2, Verma discloses “check[ing]” if content is “currently available on a cache server” or “scheduled to be available on another cache server.” EX-1005, [0037], FIG. 2; EX-1003 ¶276. A POSITA would have understood the broker evaluates “delay tolerance information,” or the “desired delivery time,” included in the “request from the client” to select a cache server to accommodate delivery “during a time period satisfying the client.” EX-1005, [0015], [0018], [0028], [0037]; EX-1003 ¶276.

i. Motivation to Combine and Expectation of Success.

A POSITA would have been motivated to use the “IP Address of the recipient computer” as the means to identify the “location of the client,” and expected success

in doing so, as explained for [2pre] and [2a]. §§ IX.A.1-IX.A.2 (Ground 4, [2pre]-[2a]); EX-1003 ¶277.

5. [2d] generating the modified embedded resource to include the direct link to the node.

[2d] is substantially similar to [15c]. EX-1003 ¶278. Verma discloses [2d] as explained for [15c]. *Id.*; § VI.A.4 (Grounds 1A/1B, [15c]).

B. Claim 4: The content delivery method of claim 2 wherein the parameter³ is a delivery protocol parameter.

Verma and Raciborski render obvious the additional limitation of claim 4. EX-1003 ¶279.

As discussed above in [2b] (Ground 4) and [15b] (Grounds 1A/1B/2), Verma discloses or renders obvious the API obtaining a parameter associated with the

³ Claim 1 recites “at least one delivery parameter.” Claim 2 specifies the “at least one delivery parameter” can include “an IP address of the client” and recites “obtaining a parameter associated with the embedded resource.” To the extent there is ambiguity over what constitutes “the parameter,” claim 2 suggests “the parameter” finds antecedent basis in “parameter associated with the embedded resource,” because claim 2 recites “based on the IP address and the parameter,” suggesting the latter is the “parameter associated with the embedded resource.” Petitioner applies that understanding to claim 4.

embedded resource (there, “delay tolerance information”). §§ VI.A.3, VII.A.2, IX.A.3. To the extent Verma does not expressly disclose the parameter associated with the embedded resource is a “delivery protocol parameter,” it would have been obvious in view of Raciborski. EX-1003 ¶280.

Raciborski discloses “content provider 108 sends various information to the” CDNs, including a “protocol used to deliver the content object.” §§ IX.A.1-IX.A.2 (Ground 4, [2pre]-[2a]); EX-1006, [0026]; EX-1003 ¶281. This “protocol” is a delivery protocol parameter because it is a communication protocol used to deliver objects. EX-1006, [0025]-[0026], [0030]; EX-1003 ¶281. Raciborski also discloses a “content object streaming protocol,” which is a delivery protocol for delivery via streaming (e.g., “live streams”), rather than downloading. *Id.*

i. Motivation to Combine and Expectation of Success.

It would have been obvious to combine Verma and Raciborski to “send[]” (pass) the “protocol used to deliver the content object” (delivery protocol parameter) to select a node to identify expensive content delivery scenarios. EX-1003 ¶¶282-283. A POSITA would have been motivated to ensure appropriate pricing for a content provider, and do so using a delivery protocol parameter, as in Raciborski. *Id.* Verma’s “Movies-Inc.Com content provider” “has a business relationship with the content delivery network,” and a POSITA would have understood cost

considerations were important in maintaining this relationship. *Id.*; EX-1005, [0025].

Moreover, Verma contemplates “downloading” and “streamed” content. EX-1005, [0002], [0007]-[0008], [0015], [0020] [0031], [0034]; EX-1006, [0020]. Raciborski teaches “live streams” (as in Verma) “would typically be connections that are longer in duration, which could impact costs.” EX-1006, [0025]-[0026], [0030]. A POSITA would have understood providing such “live stream[s]” had greater cost sensitivity when compared to regular downloads. EX-1003 ¶284. Based on this cost sensitivity, a POSITA would have been motivated to evaluate “various prices” for “streaming protocol[s]” along with Raciborski’s evaluation of the “protocol used to deliver the content object” in Verma’s system to select a node consistent with cost expectations. *Id.* A POSITA would have recognized that, if real-time streaming is provided and the content provider has a “cost” “threshold[,]” then a limited subset of nodes will meet the threshold requirement when other factors, like routing, quality of service, size, and/or temporal considerations, are accounted for. EX-1006, [0019], [0025], [0031]; EX-1003 ¶¶284-285.

A POSITA would have reasonably expected success implementing a delivery “protocol” in Verma because delivery protocols were well-known, e.g., “hypertext transfer protocol,” “file transfer protocol,” and “real-time streaming protocol.” EX-1015, 1:12-18; EX 1003 ¶286. Moreover, Verma transmits data between “content

provider” and “broker” via Verma’s request 34. EX-1003 ¶286; EX-1005, [0025]; §§ VII.A.2, IX.A.1-IX.A.2 (Ground 2, [15b], Ground 4, [2pre]-[2a]). Implementing this scheme in Verma (to the extent not expressly disclosed) would have been simply using known features according to their known functions (known delivery protocols on Verma’s request 34 data path), to achieve predictable results (broker receives the delivery protocol parameter for evaluation and selects cache server). EX 1003 ¶286.

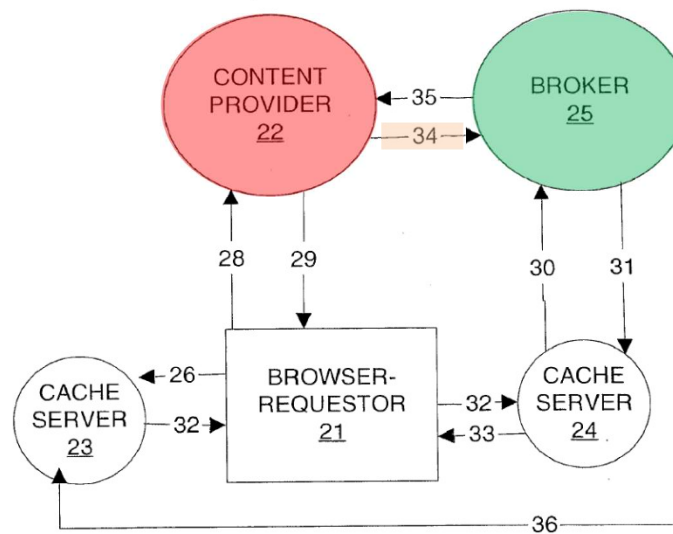


FIG. 1

EX-1005, FIG. 1.

C. Claim 5: The content delivery method of claim 2 wherein the information is the IP address.

Verma and Raciborski render obvious this additional limitation (information is IP address) as discussed for Ground 4 [2pre] and [2a]. §§ IX.A.1-IX.A.2; EX-1003 ¶287.

D. Claim 7: The content delivery method of claim 2 wherein the location information includes at least one of an IP address, a virtual IP address, one or more absolute uniform resource locators.

Claim 7 is substantially similar to claim 14, except claim 7 recites “location information includes,” and claim 14 recites “modified embedded resource includes.” EX-1003 ¶288. The ’322 patent confirms that a “modified embedded resource provid[es] information as to [the] location within a content delivery network” of a node. *Id.*; EX-1001, 2:4-6, 4:45-48, FIG. 5. Because claim 14’s “modified embedded resource” provides the “location” “information” of claim 7, EX-1003 ¶288, Verma discloses the additional limitations of claim 7, as discussed for claim 14. *Id.*; § VI.D (Ground 1A/1B, [14]).

E. Claim 9

1. [9a] The content delivery method of claim 1 wherein the request is over an http connection and the at least one delivery parameter is a location identifier for the client device, the method further comprising:

[9a] is substantially similar to [2pre], except [2pre] recites “delivery parameter includes an IP address of the client device,” and [9a] recites “delivery parameter is a location identifier for the client device.” EX-1003 ¶289. A POSITA would have understood the device IP address is a location identifier for the client device because an IP address is a unique set of numbers that identifies an address, or a location, for a device in the network. *Id.* Verma and Raciborski render obvious this additional limitation. *Id.*; § IX.A.1 (Ground 4, [2pre]).

2. **[9b] passing, by the origin system, the location identifier to an application programming interface (API) of the content delivery network to generate the modified embedded resource relating to the node.**

[9b] is substantially similar to [1b], [2pre], [2a], [2c]-[2d], but it explains “the origin system” passes the “location identifier,” rather than a “client IP address,” to the API. EX-1003 ¶290. As discussed in [9a], Ground 3 [1b], Ground 4 [2pre], [2a], [2c]-[2d], Verma and Raciborski render obvious this additional limitation. §§ VIII.A.3, IX.A.1-IX.A.2, IX.A.4-IX.A.5, IX.E.1; EX-1003 ¶290.

F. Claim 13

Verma and Lewin render obvious claim 13’s additional limitation. § VIII.D (Ground 3, [13]); EX-1003 ¶291.

X. GROUND 5: VERMA, LEWIN, RACIBORSKI, AND DRAI

A. Claim 3: The content delivery method of claim 2 wherein the parameter is a popularity parameter.

As discussed, Verma’s delay tolerance information is a parameter associated with the embedded resource. §§ VI.A.3, IX.A.3 (Grounds 1A/1B, [15b]; Ground 4, [2b]); EX-1003 ¶292. To the extent Verma does not expressly disclose that such a parameter is a “popularity parameter,” it would have been obvious in view of Drai. EX-1003 ¶292.

Indeed, Drai discloses routing “objects based on their popularity level.” EX-1008, [0108]; EX-1003 ¶293. It discloses “a CDN balancer,” like “central manager 500,” “for balancing the load of content distribution between a plurality of CDNs.”

EX-1008, [0064]. The CDN balancer “selects the optimal delivery method” using “routing conditions” to route end users “to one of the routing targets,” e.g., different “edge” servers or CDNs. EX-1008, [0068], [0105]-[0106], [0108]-[0109]; EX-1003 ¶293. These conditions include “popularity based routing to route objects based on their popularity level.” EX-1008, [0108]-[0109]; EX-1003 ¶293. Because “objects” are routed “based on their popularity,” a POSITA would have understood location information, such as a server location, is identified based on this parameter. *Id.*

i. Motivation to Combine and Expectation of Success.

It would have been obvious to pass Draai’s “popularity level” information to Verma’s broker (API) to advantageously preemptively identify high network traffic to avoid overloading cache servers. EX-1003 ¶294.

Verma and Draai address performance challenges in CDNs like congestion, traffic, and network overload using similar system architectures. *Id.* ¶295; e.g., EX-1005, [0003], [0015], [0022], [0027]; EX-1008, [0002], [0005], [0008], [0061]. Given these similarities, and their shared desire to increase content delivery performance, a POSITA would have understood that Verma and Draai are analogous art. *Id.*

Verma explains “network congestion[or] too much current traffic” is a CDN problem. EX-1005, [0002]. A POSITA would have seen an advantage in using Draai’s popularity level parameter to identify in-demand content preemptively and distribute

delivery across multiple nodes, in turn minimizing the risk of a single cache server getting overwhelmed. EX-1003 ¶¶296-297; EX-1007, [0009] (discussing “popular Web content” and need to “reduce the likelihood of overloaded Web servers and Internet delays”). Moreover, a POSITA would have recognized evaluating popularity allows requests for popular content to be advantageously bundled so the system only needs to stream the data off the disk once, limiting re-caching the content. EX-1003 ¶298.

A POSITA would have reasonably expected success in implementing Drai’s “popularity based routing” in Verma because both use network traffic information to identify appropriate delivery options. EX-1008, [0108]; EX-1005, [0012] (broker “receives information from the cache servers in a [CDN] as to traffic” and uses it to identify “cache server”); EX-1003 ¶299. Given these similarities, it would have been straightforward for a POSITA to apply conventional routing techniques and include Drai’s “popularity” data in the “information” Verma’s “broker” “receives.” EX-1005, [0012], [0025]; EX-1008, [0108]; EX-1003 ¶299.

Implementing this scheme in Verma (to the extent not expressly disclosed) would have been simply using known features according to their known functions (known content popularity and node balancing techniques) to achieve entirely predictable results (identifying cache servers to balance delivery of popular content). EX-1003 ¶300.

B. Claim 6: The content delivery method of claim 2 wherein the information is geographic information.

Verma's "location of the client" (delivery parameter) discloses a delivery parameter. §§ VIII.A.3, IX.A.1-IX.A.2, IX.A.4 (Ground 3, [1b], Ground 4, [2pre]-[2a], [2c]); EX-1003 ¶301. To the extent Verma does not expressly disclose this parameter is geographic information, it would have been obvious in view of Draai. EX-1003 ¶301.

Draai discloses a "CDN balancer" that "selects the optimal delivery method" using "routing conditions 530," to "route[] end users" "to one of the routing targets." § X.A (Ground 5, [3]); EX-1008, [0064], [0068], [0105]-[0106], [0108]-[0109]; EX-1003 ¶302. The "routing conditions" include "geographic routing," which discloses geographic information (as claimed) because it "routes end users from a specific geographic area to one of the routing targets." EX-1008, [0108]-[0109]; EX-1003 ¶302. Because "objects" are routed based on a "specific geographic area" of end users, location information, like server location, is identified based on this parameter. *Id.*

i. Motivation to Combine and Expectation of Success.

It would have been obvious to pass Draai's "geographic area" parameter in Verma's "request" for content "delivery to a location close to the client." EX-1003 ¶303; EX-1005, [0002]-[0003], [0025]-[0026]; EX-1008, [0105], [0108]-[0109]. As

discussed, a POSITA would have been motivated to combine Verma and Drai.
§ X.A.i (Ground 5, [3]).

Verma explains “network congestion” and “too much current traffic” can be problems, and proposes using servers “located at strategic geographic locations near the edge of the network, from which content can be available” to address that issue. EX-1005, [0002]-[0003]. A POSITA would have understood delivering content from cache servers geographically close to the client conserves bandwidth and improves latency. EX-1003 ¶¶303-305 (building bandwidth locally is more effective than routing via geographically expansive network); EX-1008, [0101], [0108]; EX-1007, [0009]; EX-1005, [0007] (directing to server “closer to the requesting client” “to speed up[]” downloading). Using Drai’s geographic parameter in Verma’s request would achieve those touted benefits. EX-1003 ¶305.

Moreover, a POSITA would have recognized some content will be “tailored to viewers in [geographic] location.” EX-1009, 2:63-64; EX-1003 ¶306. For example, Lewin discloses “advertisement” “personalization” based “on the user’s geographic location.” EX-1007, [0043]. A POSITA would have understood that some content is geographically restricted, and Drai’s geographic parameter allows Verma’s broker to filter nodes based on restricted geographic locations. EX-1003 ¶306.

A POSITA would have reasonably expected success in implementing Drai's "geographic" parameter in Verma's request 34 which already uses client "location" information; Drai's geographic parameter would simply be a known implementation of that location information. EX-1003 ¶307; EX-1005, [0025]-[0027], [0037]; EX-1008, [0105], [0108]-[0109]. Verma and Drai are similar systems. § X.A.i (Ground 5, [3]). And Verma already uses "geographic location[]" information in the cache server context. EX-1005, [0003]; EX 1003 ¶307. Implementing this scheme in Verma (to the extent not expressly disclosed) would have been simply using known features according to their known functions (known geographic information data transmitted along Verma's existing request 34 path) to achieve predictable results (broker receives geographic information and identifies geographically appropriate cache server). EX 1003 ¶307.

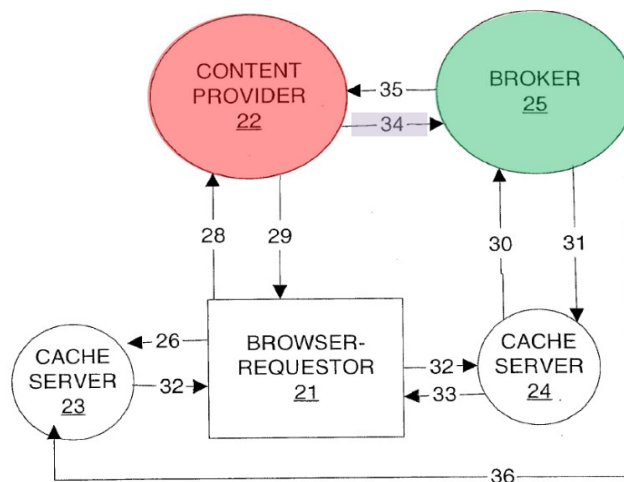


FIG. 1

EX-1005, FIG. 1.

XI. STANDING

Petitioner is not barred or estopped from requesting IPR on these grounds.

XII. § 314 DOES NOT FAVOR DENIAL

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

Factor 1 is neutral. Though Petitioner will move to stay the litigation § XIV.B, the district court has not yet ruled on the stay motion. *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 14 (P.T.A.B. Dec. 1, 2020).

Factor 2 is neutral. Trial is presently scheduled for September 28, 2026. EX-1017, 3. Assuming Patent Owner files a preliminary response three months from this Petition (August 2025), and the Board institutes three months later (November), the Board's anticipated Final Written Decision will be due November 2026—within weeks of the trial date.

Factor 3 favors institution. The Court and parties have expended few resources. Fact discovery opened March 2025, and the Markman is September 12, 2025. *Id.* Petitioner promptly brought this challenge roughly four months after receiving infringement contentions (and notice of asserted claims) on January 14, 2025. *Id.*; *Sotera*, Paper 12 at 16-17. Petitioner was especially prompt considering the '322 patent was amended into the case on January 10, 2025. EX-1017, at 1.

Factor 4 favors institution. This Petition challenges fifteen claims, which will be greater than the number of claims tried (one based on contentions). Ex-1018,

1019. 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 this 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 regard to the claims subject to institution. Ex-1020; *Sotera*, Paper 12 at 18-19.

Under Factor 5, Petitioner is the defendant.

Factor 6 favors institution. To Petitioner's knowledge, no other party has sought review of the '322 patent, and Petitioner is aware of no other party likely to do so. Petitioner relies on prior art the Office never applied, presents significantly different grounds, and relies on Dr. Mowry's declaration explaining invalidity.

XIII. § 325 DOES NOT FAVOR DENIAL

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

Advanced Bionics, step 1, and *Becton, Dickinson* factors (a), (b), and (d) favor institution because Verma, Raciborski, Lewin, or Draai were not identified during prosecution. Though a reference by the same inventor Raciborski, 2008/0086574A1, is cited on the patent's face, it matured from a different application, in a different family, having different disclosure than the Raciborski applied in the Petition.

Further, the Examiner did not have the benefit of Dr. Mowry's declaration. These references are not cumulative of prosecution prior art because they teach and render obvious all challenged claims.

XIV. MANDATORY NOTICES 37 C.F.R. § 42.8

A. Real Party-in-Interest

The Petitioner and real party-in-interest is Google LLC.⁴

B. Related Matters

The '322 patent is, or has been, involved in the following proceedings:

Name	Number	Forum	Filed
<i>Sandpiper CDN, LLC v. Google LLC</i>	2:24-cv-03951	C.D. Cal.	May 10, 2024

C. Lead and Backup Counsel Information

Petitioner provides the following designation of counsel:

Lead Counsel	Backup 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	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

⁴ 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.

Lead Counsel	Backup Counsel
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In a concurrently filed Power of Attorney, Google LLC has granted Power of Attorney to Practitioners at Finnegan, Henderson, Farabow, Garrett & Dunner, LLP. Petitioner consents to service by email at the addresses listed above and Google-Sandpiper-IPRs@finnegan.com.

XV. CONCLUSION

Petitioner respectfully requests the Board grant IPR and find all challenged claims unpatentable.

Dated: May 23, 2025

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

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(a)(1)(i), the undersigned hereby certifies that the foregoing PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,057,322 contains 13,996 words, excluding parts of this Petition exempted under § 42.24(a), as measured by the word-processing system used to prepare this paper.

Dated: May 23, 2025

/Erika H. Arner/
Erika H. Arner (Reg. No. 57,540)
Lead Counsel for Petitioner Google LLC

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing **Petition for *Inter Partes* Review of U.S. Patent No. 10,057,322, Power of Attorney, and all associated Exhibits**, were served on May 23, 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. 10,057,322:

Jason Eisenberg
Sterne, Kessler, Goldstein & Fox P.L.L.C.
1101 K Street, NW
10th Floor
WASHINGTON, DC 20005

Dated: May 23, 2025

/Daniel E. Doku/

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