

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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NETNUT LTD.,  
Petitioner,

v.

LUMINATI NETWORKS LTD.,  
Patent Owner.

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Patent 9,742,866

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**PETITION FOR *INTER PARTES* REVIEW  
OF U.S. PATENT NO. 9,742,866**

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Patent Trial and Appeal Board  
U.S. Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

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### **EXHIBIT LIST**

Ex. No.	Description
1001	U.S. Patent No. 9,742,866 to Shribman et al. (“’866 patent”)
1002	Excerpts from the Prosecution History of the ’866 Patent (s/n 14/930,894)
1003	Expert Declaration of Keith J. Teruya
1004	CV of Keith J. Teruya
1005	Appendix of Challenged Claims
1006	Postel, RFC 791, Internet Protocol, DARPA Internet Program Protocol Specification (Information Sciences Institute, University of Southern California, September 1981)
1007	Fielding, et al., RFC 2616, Hypertext Transfer Protocol -- HTTP/1.1, (Internet Engineering Task Force, Network Working Group, June 1999)
1008	RESERVED
1009	RESERVED
1010	Exhibits considered by Keith J. Teruya
1011	Excerpts from Webster’s Third New International Dictionary, ISBN: 978-0-87779-789-0 (2017) (Cover, Copyright Page, Definitions of “include” and “website”)
1012	Wessels, “Squid: The Definitive Guide,” ISBN-10: 9780596001629, ISBN-13: 978-0596001629, O’Reilly Media; 1st Ed. (January 1, 2004)
1013	RESERVED
1014	Luotonen, “Web Proxy Servers,” ISBN-10: 0136806120, ISBN-13: 978-0136806127, Prentice Hall; 1st Ed. (December 30, 1997)
1015	RESERVED
1016	RESERVED
1017	U.S. Patent Publication No. 2011/0087733 to Shribman et al. (“Shribman”) (Published April 14, 2011)
1018	European Patent Publication EP 2 597 869 A1 by Sharp KK, Published May 29, 2013
1019	RESERVED
1020	Cooper et al., RFC 3040, Internet Web Replication and Caching Taxonomy (January 2001)
1021	RESERVED
1022	RESERVED

Ex. No.	Description
1023	Claim construction order, <i>Luminati Networks Ltd. v. UAB Tesonet</i> , No. 2:18-CV-299 (E.D. Tex.), slip op. (D.I. 121, Aug. 20, 2019)
1024	RESERVED
1025	RESERVED
1026	RESERVED
1027	ISO/IEC 23009-1:2012(E), MPEG-DASH standard, Jan. 5, 2012
1028	RESERVED
1029	Microsoft Computer Dictionary (5th Ed. 2002), definitions of Web site and Web page
1030	RESERVED
1031	RESERVED
1032	RESERVED
1033	Claim construction order, <i>Luminati Networks Ltd. v. BIScience Inc.</i> , No. 2:18-CV-483 (E.D. Tex.), slip op. (D.I. 130, Dec. 6, 2019)

## I. INTRODUCTION

NetNut Ltd. (“Petitioner”) petitions for *Inter Partes* Review (“IPR”) of claims 15-20, 23-24, and 27-28 of U.S. Patent No. 9,742,866 (“the ’866 patent”), Ex. 1001. (The ’866 patent is a divisional of an application that eventuated in U.S. Patent No. 9,241,044 (the “’044 patent”), challenged in IPR2021-00458, recently filed by Pet.) The Petition is supported by the Exhibits listed above, including the Expert Declaration of Keith J. Teruya (Ex. 1003).

The claims of the ’866 patent concern retrieving content over the Internet via one or more proxies (referred to as “tunnel devices”), with the additional factor that the content to be retrieved is partitioned into a plurality of “slices.” *See* ’866 patent, Ex. 1001, Abstract. (The content “slice” aspect in the claims is what primarily differentiates the ’866 patent from its divisional ’044 parent.)

Prior art references, including without limitation prior published work by the ’866 patent’s inventors, describe content-fetching algorithms that render the challenged claims obvious. The same techniques are also obvious over ordinary proxy servers in combination with well-documented standards for piece-wise content retrieval, whose existence is acknowledged within the ’866 patent itself. Petitioner therefore respectfully requests review and cancellation of the challenged claims.

## **II. STATUTORY PREDICATES**

### **A. Mandatory Notices Under 37 CFR § 42.8**

#### **1. Real Parties-In-Interest**

Petitioner NetNut Ltd. is the sole real party-in-interest. No other party had any control over, or contributed to the funding, preparation, or filing of the present Petition.

#### **2. Related Matters**

With the sole exception of one case, which has already gone to judgment but remains subject to a Rule 60 (post-judgment) motion, Petitioner does not believe that there is any judicial matter, or any other proceeding before the PTAB, that would affect, or be affected by, a decision on this Petition.

However, in the interest of full disclosure, Petitioner also makes of record herein those matters as well as additional matters, which include (i) terminated IPRs on the '866 patent and a related patent (U.S. Pat. No. 9,242,044 ("044 patent")), (ii) district court litigation and IPR proceedings concerning other patents owned by Patent Owner, including without limitation U.S. Pat. No. 10,484,511, claiming priority to U.S. Prov. Pat. App. S/N 61/249,624 ("511 Family"), and (iii) ongoing patent prosecution matters before the USPTO involving Patent Owner's patents in the family of the '044 and '866 patents ("044 Family") and in the '511 Family. (The '511 Family concerns the same general subject matter but does not



have common claims of priority with the '044 Family.) In addition, Petitioner has recently filed *ex parte* reexamination requests with respect to two patents in the '511 Family, which requests are noted in the following tables.

### **Litigation**

Matter	Subject Matter
<i>Luminati Networks Ltd. v. NetNut Ltd.</i> , No. 2:20-cv-00188 (E.D. Tex.)	Litigation by Patent Owner against Petitioner, asserting US 10,484,511 and US 10,637,968 (but not the '866 patent)
<i>Luminati Networks Ltd. v. BIScience Inc.</i> , No. 2:18-cv-483 (E.D. Tex.)	Dismissed but subject to a pending Rule 60 motion, also subject to currently deactivated appeals (see below); '044 and '866 patents
<i>Luminati Networks Ltd. v. UAB Tesonet</i> , No. 2:18-cv-299 (E.D. Tex.)	Dismissed; '044 and '866 patents
<i>Luminati Networks Ltd. v. IP Ninja Ltd.</i> , No. 2:19-cv-196 (E.D. Tex.)	Dismissed; '044 and '866 patents
<i>Luminati Networks Ltd. v. BI Science (2009) Ltd.</i> , No. 2:19-cv-352 (E.D. Tex.)	Dismissed but subject to a pending Rule 60 motion, also subject to currently deactivated appeals (see below); '511 Family
<i>Luminati Networks Ltd. v. Teso LT, UAB et al.</i> , No. 2:19-cv-395 (E.D. Tex.)	'511 Family
<i>Luminati Networks Ltd. v. code200, UAB et al.</i> , No. 2:19-cv-396 (E.D. Tex.)	'511 Family

Matter	Subject Matter
<i>Luminati Networks Ltd. v. BI Science Ltd.</i> , No. 2:19-cv-397 (E.D. Tex.)	Dismissed but subject to a pending Rule 60 motion, also subject to currently deactivated appeals (see below); '511 Family
<i>Luminati Networks Ltd. v. Tefincom S.A.</i> , No. 2:19-cv-414 (E.D. Tex.)	'511 Family
<i>Teso LT, UAB v. Luminati Networks Ltd.</i> , 2:20-cv-00073 (E.D. Tex.)	Business torts
<i>Luminati Networks Ltd. v. BI Science (2009) Ltd.</i> , 0:2020cvpri02118 (Fed. Cir.)	Appeal, deactivated pending determination of Rule 60 motion in the District Court; '511 Family
<i>Luminati Networks Ltd. v. BI Science, Inc.</i> , 0:2020cvpri02181 (Fed. Cir.)	Appeal, deactivated pending determination of Rule 60 motion in the District Court; '044 and '866 patents

### PTAB Proceedings

Matter	Subject Matter
<i>BI Science (2009) Ltd. v. Luminati Networks Ltd.</i> , IPR 2020-00166 (Terminated)	Terminated; '044 patent
<i>BI Science (2009) Ltd. v. Luminati Networks Ltd.</i> , IPR 2020-00167 (Terminated)	Terminated; '866 patent
<i>Code200, UAB v. Luminati Networks Ltd.</i> ,	'511 Family

Matter	Subject Matter
IPR2020-01266	
<i>Code200, UAB v. Luminati Networks Ltd.</i> , IPR2020-01358	'511 Family
<i>Code200, UAB v. Luminati Networks Ltd.</i> , IPR2020-01506	'511 Family
<i>Teso LT, UAB v. Luminati Networks Ltd.</i> , IPR2021-00122	'511 Family
<i>Teso LT, UAB v. Luminati Networks Ltd.</i> , IPR2021-00249	'511 Family
<i>NetNut Ltd. v. Luminati Networks Ltd.</i> , IPR2021-00458	'044 Patent, filed by Petitioner on January 22, 2021

### Patents and Patent Applications Shown in PAIR

App. No.	Status/Issued As	Related To
12/836,059	U.S. Pat. No. 8,560,604	'511 Family
14/025,109	U.S. Pat. No. 10,069,936	'511 Family
14/468,836	U.S. Pat. No. 9,241,044	'044 Family
14/930,894	U.S. Pat. No. 9,742,866	'044 Family
15/663,762	U.S. Pat. No. 10,277,711	'044 Family
15/957,942	U.S. Pat. No. 10,313,484	'511 Family
15/957,950	U.S. Pat. No. 10,225,374	'511 Family
16/031,636	U.S. Pat. No. 10,616,375	'511 Family

App. No.	Status/Issued As	Related To
16/140,749	U.S. Pat. No. 10,652,357	'044 Family
16/140,785	U.S. Pat. No. 10,659,562	'044 Family
16/214,433	U.S. Pat. No. 10,469,614	'044 Family
16/214,451	U.S. Pat. No. 10,440,146	'044 Family
16/214,476	U.S. Pat. No. 10,652,358	'044 Family
16/214,496	U.S. Pat. No. 10,721,325	'044 Family
16/278,104	U.S. Pat. No. 10,523,788	'511 Family
16/278,105	U.S. Pat. No. 10,469,628	'511 Family
16/278,106	U.S. Pat. No. 10,491,712	'511 Family
16/278,107	U.S. Pat. No. 10,484,510	'511 Family
16/278,109	U.S. Pat. No. 10,484,511	'511 Family
16/292,363	U.S. Pat. No. 10,469,615	'044 Family
16/292,382	U.S. Pat. No. 10,447,809	'044 Family
16/292,364	Pending	'044 Family
16/292,374	Pending	'044 Family
16/292,382	Pending	'044 Family
16/365,250	Pending	'044 Family
16/365,315	Pending	'044 Family
16/368,002	U.S. Pat. No. 10,582,013	'511 Family
16/368,041	U.S. Pat. No. 10,582,014	'511 Family
16/396,695	U.S. Pat. No. 10,637,968	'511 Family

App. No.	Status/Issued As	Related To
16/524,026	Pending	'044 Family
16/566,929	Pending	'044 Family
16/567,496	Pending	'044 Family
16/593,996	Pending	'044 Family
16/593,999	Pending	'044 Family
16/600,504	Pending	'511 Family
16/600,505	Pending	'511 Family
16/600,506	Pending	'511 Family
16/600,507	Pending	'511 Family
16/662,800	Pending	'511 Family
16/662,883	Pending	'044 Family
16/693,306	Pending	'511 Family
16/782,073	Pending	'511 Family
16/782,076	Pending	'511 Family
16/807,661	Pending	'511 Family
16/807,691	Pending	'511 Family
16/865,362	Pending	'044 Family
16/865,364	Pending	'044 Family
16/865,366	Pending	'044 Family
16/910,724	Pending	'511 Family
16/910,863	Pending	'511 Family

App. No.	Status/Issued As	Related To
16/932,763	Pending	'044 Family
16/932,764	Pending	'044 Family
16/932,766	Pending	'044 Family
16/932,767	Pending	'044 Family
90/014,624	Pending	'511 Family
90/014,652	Pending	'511 Family

### 3. Lead and Back-Up Counsel

Petitioner sets forth the following designations of counsel:

<b>Lead Counsel</b>	Ronald Abramson, #34,762
<b>Back-up counsel</b>	M. Michael Lewis, #50,478 Ari J. Jaffess, #74,558

### 4. Service Information

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<b>Telephone</b>	(212) 257-1630
<b>Facsimile</b>	(914) 462-4175

Additionally, Petitioner consents to electronic service via email at the email addresses noted above.

**B. *Inter Partes* Review Fee**

The Office is authorized to charge Deposit Account No. 603258 for the fees set forth in 37 C.F.R. § 42.15(a), or any other applicable fees, for this Petition for *inter partes* review.

**C. Certification of Standing (37 C.F.R. § 42.104(a))**

Petitioner certifies that the '866 patent is available for IPR and that Petitioner is not barred or estopped from requesting IPR of the challenged claims on the grounds alleged herein.

### III. IDENTIFICATION OF CHALLENGES

Petitioner requests cancellation of the challenged claims on the following grounds (independent claims underlined):

Ground	Claims	Challenge
1	15-17, 23, and 24	Anticipated by Sharp KK (§ 102)
2	18	Obvious over Sharp KK in view of MPEG DASH and common dictionary references (§ 103)
3	19, 20, 27, and 28	Obvious over Sharp KK in view of Shribman (§ 103)
4	15, 17, and 18	Obvious over Luotonen in view of RFC 2616 (§ 103)
5	15, 17, and 18	Obvious over Luotonen in view of RFC 2616 and RFC 3040 (§ 103)

### IV. DISCRETIONARY FACTORS

This Petition presents substantially the same grounds that were raised against the '866 patent in IPR2020-00167. However, that IPR was terminated before the Patent Owner filed a preliminary response and before the Board ruled on institution. The petitioner in IPR2020-00166 was BI Science, Ltd. (“BI Science”).



Petitioner herein is a different party (NetNut Ltd.), which Patent Owner has more recently sued for allegedly infringing other patents of Patent Owner (but not including the '866 patent).<sup>1</sup>

Situations in which a petitioner files serial petitions against the same patent are addressed in *General Plastic Industrial Co., Ltd. v. Canon Kabushiki Kaisha*, Case IPR2016-01357 *et al.*, Paper 19 (Sept. 6, 2017, precedential). However, *General Plastic* does not apply herein, in that the Petitioner herein is not the same as in the prior IPR, and there is no real-party-in-interest or privity relationship with BI Science.

Rather, the present situation arises not because of serial *petitions*, but because of serial *lawsuits*, by Patent Owner.

As is evident from the tabulations of other litigation set forth above, Patent Owner has chosen to pursue a campaign of asserting its numerous patents against its principal commercial competitors. Among a number of other competitors, Patent Owner sued BI Science on the '044 and '866 patents. BI Science filed IPRs against both patents (IPR2020-00166, -00167). Prior to an institution decision on either of those IPR Petitions, a settlement was filed and the two IPRs were

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<sup>1</sup> Petitioner's counsel herein is the same counsel that filed the prior IPR against the '044 patent.

terminated. Though the IPRs were terminated as stipulated in the filed settlement document, whether the settlement with BI Science is effective is currently an issue being litigated in the District Court in Texas. Appeals and cross-appeals were filed in the Eastern District of Texas BI Science cases, but those appeals are currently deactivated pending resolution of the Rule 60 motion in the District Court.

Patent Owner later sued Petitioner, but on different patents (in the '511 Family). Petitioner herein is challenging the '866 patent, on which it has *not* been sued.

Patent Owner cannot expect that its settlement with BI Science and accompanying termination of BI Science's IPRs will have the result of shielding Patent Owner's patents asserted in the earlier case from IPR challenge, just because Patent Owner settled with another party.

IPRs exist to provide an efficient mechanism to police against bad patents, and the '866 patent is none the less "bad" simply because Patent Owner agreed to a settlement involving that patent before the IPR petition against that patent could even be considered. Sound policy favors consideration of this Petition, and if the grounds herein should be found sufficient as to at least one claim, institution of *inter partes* review. Exposure to such challenges is a risk that a Patent Owner assumes when it goes out on an aggressive patent assertion campaign against the other principal players in its industry. *See Thryv, Inc. v. Click-to-Call*

*Technologies, LP*, 140 S. Ct. 1367, 1374 (2020) (“By providing for inter partes review, Congress, concerned about overpatenting and its diminishment of competition, sought to weed out bad patent claims efficiently”).

With regard to *Fintiv* (*Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential)), there is no prospect of any stay in the District Court by reason of this IPR on a different patent. Furthermore, the ’866 patent challenged herein is only being litigated to the limited extent of a post-judgment motion and potential appeal, currently on hold. Should the prior settlement in that case be set aside at the behest of BI Science, BI Science may continue to challenge the ’866 patent in the District Court. However, appeals of any decision setting aside the prior judgment can also be expected, and any further determination on the merits in that regard, which would only follow such likely appeals, would not likely be concluded before the trial in this IPR. Thus, there is no practical risk of conflicting decisions or waste of resources as a result of the Board undertaking the requested *inter partes* review.

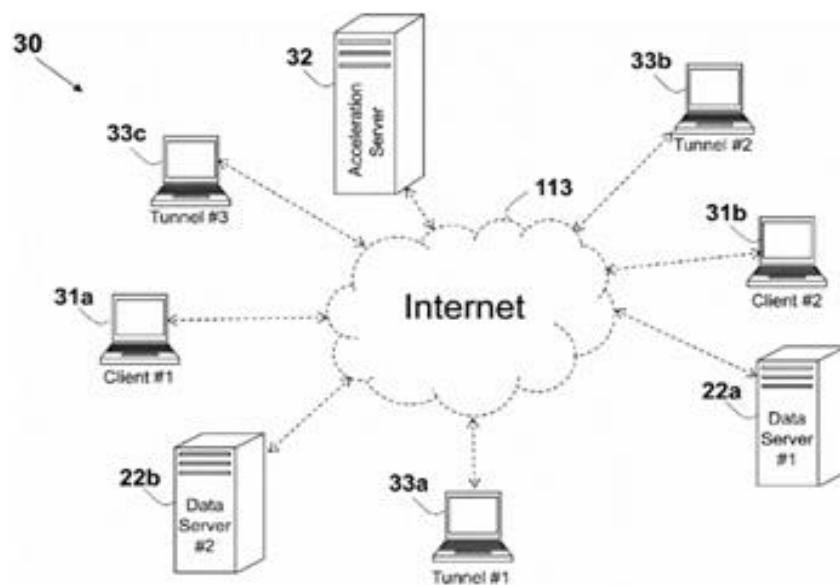
Finally, PTAB review is particularly appropriate given the strong merits of the challenges set out herein, especially in view of the Patent Owner’s broad assertion campaign against others in its industry.

## V. OVERVIEW OF THE '866 PATENT

### A. Specification

The '866 patent is a divisional of U.S. Patent No. 9,241,044 (the '044 patent), concurrently being challenged by Petitioner in a separate IPR. As shown on the cover page of Ex. 1001, the earliest claimed priority date of the '866 patent is August 28, 2013, based on provisional application 61/870,815, filed March 28, 2013. This is after March 13, 2013, and thus the '866 patent is subject to the first-to-file provisions of the America Invents Act.

The '866 patent concerns retrieving Internet content through intermediary devices. The following description is made with reference to Fig. 5 of the '866 patent (depicting the first embodiment disclosed in the Detailed Description). *See* Ex. 1001, 83:25 *ff.*



**FIG. 5**

Client device 31a obtains content from a data server 22a by way of a tunnel device 33a, which client 31a learns of from acceleration server 32 and that acts as a proxy for client 31a. *Id.*, 83:25 *ff.*

Initially, tunnel device 33a signs into acceleration server 32, providing to acceleration server 32 tunnel device 33a's "identification on the Internet 113, such as its IP address," which acceleration server 32 then records in a database of such tunneling devices. *Id.*, 84:6-19. Client device 31 similarly signs in with acceleration server 32. *Id.*, 84:29-44. Thereafter, client device 31 sends a first request to acceleration server 32 for a list of available tunnels that can be used as proxies. *See id.*, 84:63-65. Acceleration server 32 responds with a list of tunnel devices. *Id.*, 85:1-5. This list includes "the identification (*e.g.*, IP address) of the tunnel devices to be used as intermediary devices to the client device #1 31a." *Id.*, 91:31-33. Tunnel devices 33a can be selected by client 31a or acceleration server 32 based upon various criteria. *Id.*, 91:35-60. These criteria could be, for example, the geographical location of tunnel device 33a. *See id.*, 91:55-25.

Client device 31a uses the Internet address of selected tunnel device 33a to establish a connection with tunnel device 33a. *Id.* 83:19-22. When client device 31a requires content from data server 22a, client device 31a sends a "Content Request" message to tunnel device 33a. *Id.*, 83:46-51. This "Content Request" message identifies both the data server 22a and the desired content. *See, e.g., id.*,

95:47-66. The content can be partitioned in multiple parts or slices. (*Id.*, 94:63-64.)

Different tunnels may be used to fetch different slices and to provide redundant access for the same slice. *Id.*, 95:10-92:6. *See generally id.*, 92:7-93:62.

Tunnel device 33a then fulfills its role as a proxy: “In response [to the “Content Request” message], the tunnel device 33a sends a ‘Content Request’ message [] to the data server #1 22a ... requesting the content that was requested by the client device #1 31a. The data server #1 22a receives the request and . . . sends the requested content back to the tunnel device #1 33a” (*id.*, 85:53-60), with tunnel device 33a thereafter forwarding this content to client device 33a. *Id.* 83:60-65.

According to the ’866 patent, the “content requested by the client device #131a may be partitioned into multiple parts or ‘slices’.” *Id.*, 93:63-65. In particular, “the content may be partitioned into multiple slices (overlapping or non-overlapping), where each slice is requested and fetched using a distinct tunnel device (or via the client device serving as its own tunnel).” *Id.*, 94:60-63. The ’866 Patent also refers to these content “slices” as “chunks,” and explains that chunks may be identified “by the content (e.g., URL, web-site, or web-page), and a number such as the number,” (*id.*, 105:21-23), a CRC value (*id.* 105:25-28), or be based on a hash function of the chunk content (*id.*, 105:29-30). However, the ’866

patent also discloses that a “chunk” can consist of an entire webpage, for a site comprising a plurality of webpages. *Id.*, 104:22-24.

The '866 patent discloses that client device 31a may also serve as a tunnel device and *vice versa*. *Id.*, 95:22-25. Moreover, the tunnel devices may store content obtained from earlier fetches from a data server, in which case rather than re-requesting such content from, *e.g.*, data server 22a, the tunnel device instead provides its locally-stored copy of the requested information to client 31a. *See id.*, 87:38-57.

Another embodiment is disclosed at length in Figs 26-26d for a peer-to-peer system 260, with related discussion from columns 101-109.

## **B. Claims**

A Claims Appendix, containing a listing of all challenged claims, is provided in Exhibit 1005. All claims are method claims. Only claim 15 of the fourteen challenged claims is independent. Claim 15 is reproduced below:

15. A method for fetching a content over the Internet from a first server identified in the Internet by a second identifier via a group of multiple devices, each identified in the Internet by an associated group device identifier, the method comprising the step of partitioning the content into a plurality of content slices, each content slice containing at least part of the content, and identified using a content slice identifier, and for each of the content slices, comprising the steps of:

(a) selecting a device from the group;

(b) sending over the Internet a first request to the selected device using the group device identifier of the selected device, the first request including the content slice identifier and the second identifier;

(c) in response to receiving the sent first request by the selected device, receiving over the Internet the content slice from the selected device; and

wherein the method further comprising the step of constructing the content from the received plurality of content slices,

and wherein each of the devices in the group is a client device.

The challenged dependent claims (16-28) add variations as to the form, order, number, and selection of the content slices.

### **C. Prosecution History**

As reflected in Ex. 1002, the application for the '866 patent, s/n 14/930,894, was filed November 3, 2015 as a divisional of U.S. Patent App. s/n 14/468836 (which eventuated as U.S. Pat. No. 9,241,044, challenged in a separate IPR recently filed by Petitioner). The application was filed with 39 claims. All of those claims were cancelled during prosecution (*see* Ex. 1002 at 59-60 and 5), and claims 12-39 were re-added as claims 40-67 (*see* Ex. 1002 at 37-40). With additional amendments, the reinstated claims 40-67 were numbered as 1-28 upon issue.



The principal item of prior art cited in prosecution was Hotti, U.S. Pat. Pub. No. 2007/0226810, cited against the initial claim set. The applicant traversed this rejection, and it was withdrawn. Ex. 1002 at 41-42.

The Examiner withdrew an earlier indication of allowability with regard to claim 2 (Ex. 1002 at 48), at which point the applicant cancelled claims 1-11 and reintroduced claims 12-39 as claims 40-67 (*id.* at 59-60 and 5). After an interview and further amendments (*id.* at 5, 7), the Examiner allowed the case (*id.* at 1).

## **VI. LEVEL OF SKILL IN THE ART**

A person of ordinary skill in the art (“POSITA”) in the technical field of the ’866 patent would have had a working familiarity with widely-used Internet utility software and the principal published RFC (Request for Comment) publications of the Internet Engineering Task Force, as well as leading International Standards Organization (ISO) standards for the encoding and transmission of Internet content such as streaming video. The qualifications of such a person would include (1) at least a bachelor’s degree or equivalent in a field such as Electrical Engineering, Computer Engineering, or Computer Science, or an equivalent field that includes network engineering as a topic of study, plus at least one years of practical academic or industry technical experience in the computer network field, such as serving as an engineer for an Internet service provider performing network design,

development, or configuration tasks, or as a software developer for network communications software or related utility software, and with working familiarity with the principal Internet RFCs and ISO standards, or (2) at least three years' full-time technical experience as stated (or an equivalent combination of academic study and work experience). Such education and/or training would likely have exposed the person to the referenced tools and standards and brought that person to a sufficient level to understand and usefully work with the claimed subject matter. *See* Ex. 1003, ¶¶ 25-27.

## **VII. CLAIM CONSTRUCTION (37 CFR § 42.104(b)(3))**

There have been two District Court claim construction rulings on the '866 patent: *Luminati Networks Ltd. v. UAB Tesonet*, No. 2:18-CV-299 (E.D. Tex.) (the “*Teso* Claim Construction Order”) (Ex. 1023) and *Luminati Networks Ltd. v. BI Science Inc.*, No. 2:18-CV-453 (E.D. Tex.) (the “*BI Science* Claim Construction Order”) (Ex. 1033). The Board should note that the *Teso* Claim Construction Order preceded the *BI Science* order and that the claim construction order in the *BI Science* case “reiterated and adopted the reasoning and ruling” expressed in its prior *Teso* decision except to the extent it addressed specific arguments. *See* Ex. 1033 at 19.

**A. Preamble**

The interpretation of the preamble of claims 15 was addressed by the District Court in the *BI Science* case and held limiting. *See* Ex. 1033 at 35-36; Ex. 1023 at 15.

For purposes hereof, Petitioner will assume that the preamble of claim 15, that is, the language preceding “the method comprising,” is limiting. *See* Ex. 1023 at 15, 58.

**B. “Content Slice”**

The District Court in the *Teso* case construed “‘content slice’ to mean ‘some or all of the content, created by partitioning the content and useable with other content slices to reconstruct the content.’” Ex. 1023 at 42.

Indeed, the Patent Owner specifically argued in the District Court against an interpretation that “would preclude a ‘content slice’ from containing all of the content.” *Id.* at 41.

Claim 15 recites the step “of partitioning the content into a plurality of content slices, each content slice containing at least part of the content.” Ex. 1001, 173:45-47. The “at least” language indicates that the each resulting “slice” of “content” may include all or only a portion of the total “content.” This understanding is confirmed by the specification, which states that “[t]he terms ‘chunk’ and ‘slice’ are interchangeably used herein to include, but not limited to, a

part of, or the entire of, a content.” *Id.*, 169:48-50. The specification addresses a non-limiting range of possibilities for these portions, from “bits, nibbles, bytes,” etc. to files, stored programs, and even *complete webpages*, where the content in question comprises multiple webpages. *E.g.*: “The content may be a website content composed of multiple webpages, and thus the partition may be such that each slice include one (or few) webpages.” *Id.*, 104:22-24. Further, the portions may be sequential or non-sequential, non-overlapping or overlapping. *Id.*, 53:37-48. Furthermore, dependent claim 18 recites “wherein ... the partitioning may be at the webpage level”, clearly implying that parent claim 15 must cover the same. With the breadth of these examples in mind, Petitioner asserts that the PTAB may use the same construction adopted by the District Court, *i.e.*, that the term “content slice” means “some or all of the content, created by partitioning the content and useable with other content slices to reconstruct the content.”

### **C. “Content Slice Identifier”**

The ’866 patent intended the terms “chunk” and “slice” to be interchangeable and mean a part or the entirety of a content. Ex. 1001, 169:48-50. The ’866 patent does not define a “slice identifier,” but it does explain that “the content in the chunks is identified by a chunk identifier, where each chunk identifier is associated with one, and only one, chunk.” *Id.*, 105:16-18; *see also id.*, 142:18-27.

Further, in the context of the claims, the “content slice identifier” need only unambiguously identify the corresponding content slice to the responding device. Global identification of the content slice on the Internet may be resolved in combination with the separately specified device identifier (*e.g.*, “second identifier” (of the first server), as in claim 15). *See* Ex. 1003 ¶¶ 37-39.

The District Court in the *Teso* case held that “content slice identifier” has plain and ordinary meaning. Ex. 1023 at 43. To the extent the term requires construction, Petitioner submits that a “content slice identifier” should be construed “a machine-readable expression in any form sufficient for the device that will retrieve the corresponding content slice to unambiguously identify that content slice.”

#### **D. “Device”**

Although on its own the term “device” is quite broad, within the context of the challenged claims and the underlying description of the ’866 Patent, it is clear that “device” is intended to mean a computing device. *Cf.* Ex. 1023 at 15 (“device” means “a physical device”).

#### **E. “Identifier” (With Respect to a Device)**

The District Court construed “identifier” to have its plain and ordinary meaning. Ex. 1023 at 15. for purposes hereof, Petitioner agrees that this term does not require explicit construction. To the extent it is necessary to consider what the

plain and ordinary meaning is, Patent Owner relies, among other things, on descriptions in the claims themselves and specification.

Within the challenged claims, a “first server” is “identified in the Internet by a second identifier,” and similarly each device in the “group of multiple devices” is also “identified in the Internet by an associated group device identifier....” Ex. 1001, 173:42-44. Hence, the term “identifier” when used with respect to a device, is used to reference a machine-readable expression that a computing device uses to identify the subject device in the Internet. The challenged claims do not impose any further restrictions on “identifier,” and the specification makes clear that this term is intended to have broad scope.

According to the specification, “[e]ach of the identifiers herein may be a URL or an IP address in IPv4 or IPv6 form.” *Id.*, 55:31-32. Hence, “identifier” at least means a URL, an IP address, or both. But, the ’866 Patent clearly intended “identifier” to be even broader than this, noting that “peer and agent devices may be identified by their respective IP address, *or by any other mechanism allowing addressing over the Internet.*” *Id.*, 107:53-55 (emphasis added). *See* Ex. 1003 ¶¶ 40-42.

Hence, when used with respect to a device, “identifier” should be construed as “any machine-readable expression that can be used by a computing device to address the device over the Internet.”

**F. “Partitioning the content into a plurality of content slices”**

The meaning of “partitioning” is clear enough on the face of this language, given the above interpretation of “content slice.” However, claim 15 is silent as to what instrumentality performs the partitioning and where it is performed. Petitioner’s position is that there should be no further limitations imposed in this regard.

In general, the recited partitioning step may be viewed as either (i) partitioning the content in advance on the device during retrieval, or (ii) selecting elements responsive to piece-wise requests, whether it has been pre-sliced or not. Either understanding is consistent with the disclosure and claims. *See* Ex. 1003 ¶¶ 43-44. It is Petitioner’s position that, for purposes of hereof, no limitations should be imposed as to which instrumentality does the partitioning or, when, or on which device it is carried out.

**G. “Constructing the Content”**

The District Court in the *Teso* case construed “constructing the content” to mean “assembling or combining content slices so as to reconstruct the original content.” Ex. 1023 at 48. Petitioner submits that this is a reasonable construction for purposes hereof and that the Board should also adopt it.

Claim 15 first recites the step of “partitioning *the content* into a plurality of content slices,” and later recites “constructing *the content* from the received

plurality of content slices....” Ex. 1001, 173:45-174:11. In each case, the same content that is being partitioned is also being constructed. Further, this content is specifically being constructed from the received plurality of content slices. Hence, the plain meaning of “constructing the content” within the context of claim 15 is that the original content is reconstructed from the received slices. This understanding is confirmed by the specification, which explains that when the slices are overlapping, “the content may be fully reconstructed from any two of the slices, hence providing a degree of redundancy. For example, in case of carrying the three slices over the Internet and a failure to receive one of the slices, the remaining two slices may be used to fully reconstruct the whole content.” *Id.*, 95:52-57; *see also id.*, 105:57-58 (“multiple chunks may be combined *to reconstruct the original content*, such as website or content.” (emphasis added)).

“Constructing the content” thus should be construed to mean “assembling or combining content slices so as to reconstruct the original content.” *See* Ex. 1003 ¶¶ 45-47.

#### **H. “wherein each of the devices in the group is a client device”**

Patent owner took the position in the *Teso* case that this limitation should be construed in accordance with plain and ordinary meaning. *See* Ex. 1023 at 48.

In the *Teso* case, the court noted that the Patent Owner had broadly argued that, “during performance of the claimed method, a particular device could



sometimes operate as client and sometimes operate as something else” (Ex. 1023 at 49) – *i.e.*, that sometimes operating as a client was sufficient. The court further noted that “[t]he specification also discloses that ‘[d]evices that are not denoted herein as servers such as client devices ... , tunnel devices ... , agent devices ... , or peer devices ... , may typically function as a client in the meaning of client/server architecture, commonly *initiating requests for receiving services, functionalities, and resources, from other devices* (servers or clients).’” *Id.* at 50 (ellipses and emphasis in original).

The ’866 patent defines “client” as follows: “the term ‘client’ is used herein to include, but not limited to, a program or to a device or a computer (or a series of computers) executing this program, which accesses a server over the Internet for a service or a resource.” Ex. 1001 at 4:50-53. RFC 2616 (Ex. 1007) at 8 defines “client” as “[a] program that establishes connections for the purpose of sending requests.” Consistent therewith, the District Court construed the subject limitation to mean “a device that is operating in the role of a client by requesting services, functionalities, or resources from other devices” Ex. 1023 at 51. The court expressly *rejected* the interpretation a “client device” had to be one that will “sign in as a client” or that to be a “client device,” a device must also be “using tunnel, agent, or peer devices serving as intermediate devices to fetch content in the

method.” *Id.* at 51. The Board should likewise reject any such attempts to narrow this term beyond its plain and ordinary meaning.

Solely for purposes hereof, Patent Owner will assume the District Court’s construction, *i.e.*, that a “client device” may be any “device that is operating in the role of a client by requesting services, functionalities, or resources from other devices”. *See* Ex. 1003 ¶ 48. Such a construction includes devices that assume such a role even if the device has other roles and is not limited to devices that themselves fetch content through tunnel, agent, or peer devices serving as intermediaries. *Id.*

**I. for each of the content slices ... (a) selecting a device from the group**

In the *BI Science* case, there was a question whether the enumerated steps of the claim, including “(a) selecting a device from the group,” had to be repeated for each of the plurality of content slices. Ex. 1033 at 47. The court rejected this interpretation: “There issue in dispute here appears to be whether each step in the claim has to be performed anew for each content slice. It does not.” *Id.*

“Rather,” the court continued,

a plain reading of the claim and the teaching of the ’866 Patent suggests that the steps may be accomplished for each slice by performing the step for more than one slice at a time. While the claim states that “for each of the content slices” certain steps are taken, it does not specify that each step must be performed for each slice separately from the performance of that step for every other slice. And the patent suggests otherwise. For example, in the six-

slice embodiment described with reference to Figure 29a, three slices are allocated to a first device, one to a second, and two to a third. '866 Patent col.117 ll.23–39. Similarly, for the embodiment described with reference to Figure 29e, the patent teaches that the slices may be allocated to any of multiple devices, or even to only one of the devices. *Id.* at col.118 ll.48–58. These teachings establish that although a device is selected for each slice, one device may be selected for multiple slices. And in the content-fetch flow described with reference to Figure 23a, the client selects one or more devices and then “retrieves the relevant chunks from each of the selected . . . devices.” *Id.* at col.110 ll.12–52. This indicates that a single device selection may apply to each of multiple slices (chunks) allocated to that device.

Ex. 1033 at 48.

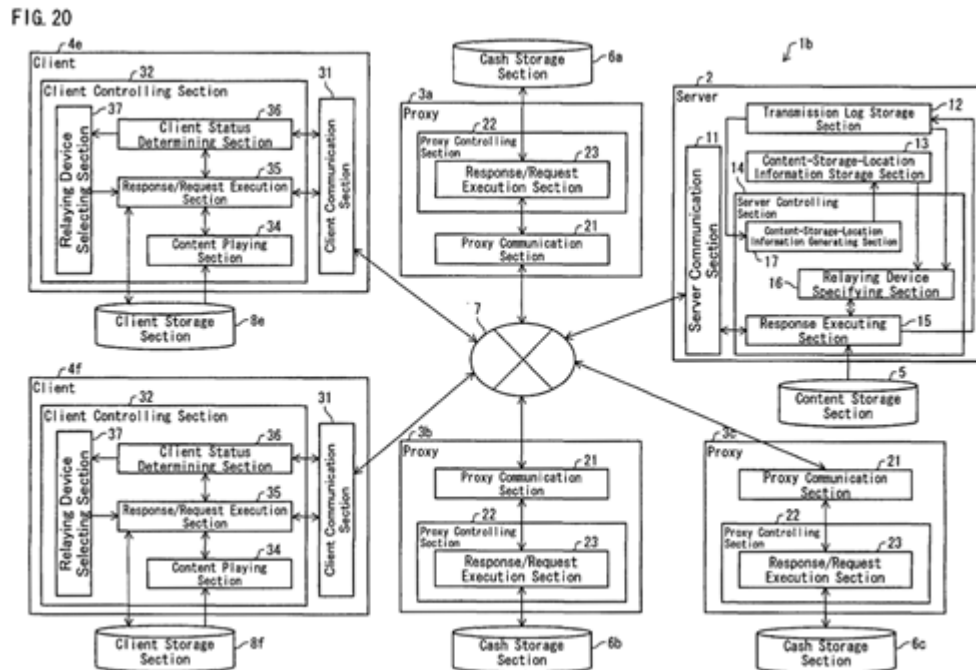
For the same reasons, Patent Owner submits for purposes hereof that there is no basis for reading a further limitation into this claim language, and that the subject claim limitation may be met without necessarily performing step (a) repeatedly for each separate content slice.

## **VIII. OVERVIEW OF PRIOR ART REFERENCES**

### **A. Sharp KK, EP Pat. Pub. No. 2597869 A1, Ex. 1018**

Sharp KK (Ex. 1018) published on May 29, 2013, which is about three months before the earliest priority date of August 28, 2013 for the '866 patent and is thus prior art to the '866 patent under 35 U.S.C. § 102(a)(1). (Its U.S. counterpart, Kaneko *et al.*, US 2013/0117413, published May 9, 2013, is substantially identical and has the same prior art effect.) Sharp KK was not considered by the Patent Office during prosecution of the '866 patent.

Sharp KK discloses an online content distribution system, and of particular relevance is Embodiment 3 of Sharp KK, extending from columns 48 to 65. Fig. 20 of Sharp KK is reproduced below concerning this third embodiment:



In Sharp KK, server 2 specifies a plurality of relaying devices 3 from which content playing device 4 can acquire content. *See* Ex. 1018 ¶¶ 0217, 0229, 0232, 0257. Content playing device 4 acquires content by selecting the address of relaying device 3 from the plurality of relaying devices specified by server 2. *Id.* Content is in the form of a media file, which is broken into fragments. *Id.* ¶ 0240; Fig. 21. After selecting a relaying device 3, content playing device 4 sends a media request to the selected relaying device 3, requesting a fragment of the media by way of a media segment number, which is thereafter incremented. *Id.* ¶¶ 0272,

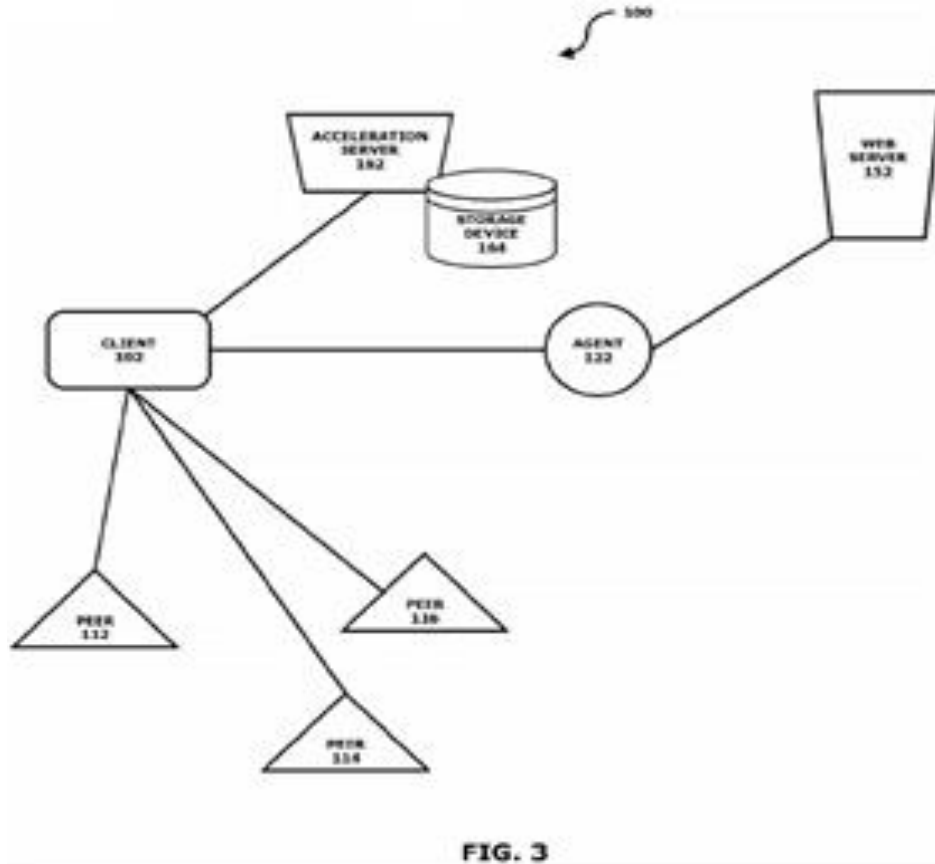
0302. This process continues until all media content has been received. *Id.* ¶ 0269;

Fig. 23, step S632.

**B. Shribman, U.S. Pat. Publ. No. 2011/0087733, Ex. 1017**

Shribman published on April 14, 2011, which is more than one year before the earliest priority date of August 28, 2013 for the '866 patent and is thus prior art to the '866 patent under 35 U.S.C. § 102(a)(1). Shribman subsequently issued as U.S. Pat. No. 8,560,604 (the "'604 patent"). The '604 patent was cited by the applicant in the prosecution of the '866 patent, but it was not applied and nothing in the file wrapper of the '866 patent suggests that Shribman was substantively considered by the Examiner.

Shribman is highly similar to the '866 patent architecturally. It discloses deploying a geographically diverse array of devices that can interchangeably function as clients, peers, or agents (caching proxies), so that those devices, when operating in the role of clients, can more efficiently retrieve content from origin servers over the Internet.



According to Shribman, any device in network 100 may serve as a client, peer, or agent, depending upon the requirements of network 100. Ex. 1017 ¶ 0035; *see also id.* Figs 4-6 and ¶¶ 0041-65 (disclosing general computing device 200 with software that enables peer, agent, and client functionalities). When one of the communication devices acts as a client 102, it can communicate with various peers 112, 114, 116 and one or more agents 122. *Id.* ¶ 0036.

To obtain content from a web server 152, client 102 first registers with acceleration server 162, providing acceleration server 162 the IP address of client 102. *Id.* ¶ 0072. Thereafter, client 102 sends a request to acceleration server 162

that contains the IP address of web server 152, requesting a list of agents 122 that client 102 can use in relation to web server 152. *Id.* ¶ 0079. In response to this request, acceleration server 162 sends a list of agents to client 102. *Id.* ¶ 0080. This list necessarily includes the IP address of each agent. *See id.* ¶¶ 0080, 0101; Fig. 7, item 166; Fig. 13, items 560, 562, 564; claim 13.

Client 102 reaches out to each agent in the received list, sending each agent the URL of the desired content. *Id.* ¶ 0081. In response, each agent sends to the client a list of peers and checksums of chunks of the desired content that these peers have. *Id.* ¶ 0083. This list of peers includes the IP address of each peer. *Id.*, Fig. 7, item 310. After deciding which agent to use, client 102 sends a request for specific chunks of content from the selected agent. *Id.* ¶ 0086.

In response to this chunk request from the client, if the selected agent determines that the requested information “exists and is still valid, then the agent prepares a response to the client, which includes for each of the chunks: (i) the checksum of the chunk; [and] (ii) a list of peers that according to the database of the selected agent contains these chunks....” *Id.* ¶ 0087. As before, this list of peers necessarily includes the IP address of each peer. *Id.*, Fig. 7, item 310.

Upon receiving the response list, client 102 “sends a request to each of the peers listed for the chunk to download the chunk.” *Id.* ¶ 0090. The peers, in turn, respond to indicate whether or not they still have the requested chunks of

information. *Id.* ¶ 0091. Client 102 “then selects the quickest peer that responds with a positive answer regarding the requested information, the client [letting] that peer know that it is chosen to provide the client with the chunk” (*id.* ¶ 0091), and “the chosen peer then sends the chunk to the client.” *Id.* ¶ 0092.

**C. RFCs 2616 (Ex. 1007) and 3040 (Ex. 1020)**

Internet RFCs (and like standards documents) constitute printed publications for purposes of 35 U.S.C. § 102, in that they are published in the ordinary course by established standards organizations and intended to be viewed by the interested Internet engineering audience at large, as of their dates of publication at stated on the cover of each. *See* Ex. 1003 ¶¶ 60-61. “The title of the RFCs (‘Request for Comments’), with [an expert’s] declaration that the RFC documents were made widely available ‘from a number of Internet hosts,’ constitutes sufficient evidence that the RFCs were intended for publication and would have been accessible to interested artisans seeking documents related to ‘the standards that govern the design, use, and management of core Internet services.’” IPR2018-00129, Paper 11 (Institution Decision), at 28-29 (May 15, 2018); *see also* Ex. 1026 in that IPR (expert declaration of former IETF official).

These are also situations in which “conventional markers,” such as the copyright notice and internal publication dates carry great weight. They also qualify for a hearsay exception for business records under FRE 802(6). Some of



the cited documents are dated earlier than 1998 and to that extent also qualify as “ancient records” under FRE 803(16).

**D. ISO/IEC 23009-1:2012(E), MPEG-DASH standard, Jan. 5, 2012, Ex. 1027**

This is a portion of the ISO/IEC standard for MPEG-DASH streaming, which was a draft standard at the time of this document. It is dated January 5, 2012 and has a 2012 copyright notice. This document is a printed publication for purposes of 35 U.S.C. § 102, in that it was published in the ordinary course by an established and leading international standards organization, intended to be viewed as of its stated date of publication by the interested Internet engineering audience at large. *See* Ex. 1003 ¶ 59. It qualifies for a hearsay exception for business records under FRE 802(6).

**E. Prior Art Proxies, e.g., SQUID**

The '866 patent itself reflects the existence of an extensive body of prior art with regard to proxy servers:

A proxy server is a server (a computer system or an application) that acts as an intermediary for requests from clients seeking resources from other servers. A client connects to the proxy server, requesting some service, such as a file, connection, web page, or other resource, available from a different server and the proxy server evaluates the request as a way to simplify and control its complexity. Proxies may be used to add structure and encapsulation to distributed systems. Today, most proxies are web proxies, facilitating access to content on the World Wide Web and providing

anonymity. A proxy server may reside on the user's local computer, or at various points between the user's computer and destination servers on the Internet. A proxy server that passes requests and responses unmodified is usually called a gateway or sometimes a tunneling proxy. A forward proxy is an Internet-facing proxy used to retrieve from a wide range of sources (in most cases anywhere on the Internet). Forward proxies are proxies in which the client server names the target server to connect to, and are able to retrieve from a wide range of sources (in most cases anywhere on the Internet). An open proxy is a forwarding proxy server that is accessible by any Internet user, while browsing the Web or using other Internet services.

Ex. 1001, 27:25-48.

One widely-known example of a proxy as described in the '866 patent, which was long known in the art, is Squid. The Squid proxy server is extensively documented in Wessels, *Squid: The Definitive Guide* (O'Reilly Media 2004), Ex. 1012 hereto ("Wessels"). The book was published by a major publisher in the field and has the usual conventional markers (copyright, ISBN, etc.) indicating a reliable publication date in 2004.

Also relevant is the 1998 book *Web Proxy Servers*, by Ari Luotonen, principal architect of the CERN proxy server, Ex. 1014 (the direct predecessor of Squid), which was similarly published (by Prentice Hall) and reliably dated in 1998 by conventional markers.

Squid and Luotonen, however, are much more than mere background art with regard to the '866 patent. The books each go into details that, as shown herein, reflect many of the same features recited in the claims of the '866 patent.

## IX. GROUNDS FOR INVALIDITY

### GROUND 1: Anticipation of Claims 15-17 and 23-24 by Sharp KK, Exhibit 1018

#### 1. Claim 15

##### Preamble

**“A method for fetching content over the Internet from a first server identified in the Internet by a second identifier ...”** *See, e.g.*, “Embodiment 3” in Ex. 1018, Fig. 20, reproduced in the summary of Sharp KK, above; *see also id.*, Fig. 24. As shown in Fig. 20 and its referencing disclosure, Sharp KK discloses a client 4e using multiple proxies 3a-3c (“a group of multiple devices”) to download content originating from server 2 (“a first server”). *Id.* ¶ 0220. Server 2 is identified in the Internet by a domain name “example.com” (“second identifier”). *See id.*, Fig. 27, message “a”, “Host: example.com”. This occurs over networks including the Internet. *Id.* ¶ 0569.

**“... via a group of multiple devices ...”** Client 4e requests content from server 2, for example, “GET /content1/0 HTTP/1.1” *Id.* Fig. 27, message “(a)”, line 2; *id.* ¶¶ 0290, 0293. Server 2 responds with a list of proxies (group of multiple devices) from which client 4e can obtain the requested content (example-proxy1.com, example-client2.com, example-proxy3.com). *See id.* Fig. 27, message “b”; *id.* ¶¶ 0294-0297.

**“ ... each identified in the Internet by an associated group device**

**identifier,”** Each of these devices in the group has an associated group device identifier (*i.e.*, the domain name of the group device as recited in this list). *Id.* Each proxy is a “device,” since each proxy 3 (or client 4f, which can also serve as a proxy) is a computing device. *See id.* ¶ 0566; Ex. 1003, ¶¶ 66-68.

**“the method comprising the step of partitioning the content into a plurality of content slices, each content slice containing at least part of the content, and identified using a content slice identifier ... ”**

Sharp KK discloses partitioning the content into a plurality of content slices (disclosed as “fragments” in Sharp KK), each content slice containing at least part of the content, and identified using a content slice identifier. In particular, Sharp KK discloses a media file being fragmented by a predetermined unit, such as by a group of pictures. *Id.* ¶ 0240, Fig.21. As identifiers, consecutive reference numerals are assigned to each such fragment. *Id.* ¶ 0245. A media segment includes one or more movie fragments. *Id.* ¶ 0248. A media segment is a transmission unit, and the combined segments form the content. *Id.* ¶ 0247; *id.* Fig. 21; Ex. 1003 ¶ 69.

As set forth in the following, for each such segment of desired content, Sharp KK also discloses performing the steps recited in the body of claim 15 to thus fetch the overall original content – that is, the media content.

**[for each of the content slices ...] (a) selecting a device from the group**

According to Sharp KK, in order to download media content, a client first provides a content identifier of the desired content to server 2. Ex. 1018 ¶¶ 0290-93; *id.* Fig. 27. Server 2 responds with a list of proxies (or clients acting as proxies):

[0229] The client 4 of Embodiment 3 ... when functioning as a content playing device, (i) receives a content storage location list which is transmitted from the server 2 and (ii) acquires a content that the client 4 requests, from one of relaying devices which exist at an address indicated by the address information contained in the content storage location list thus received.

*Id.* ¶ 0229; *see also id.* ¶¶ 0294-96.

From this group of proxy devices, Sharp KK discloses client 4 selecting one of proxies 3 from this group. *Id.* ¶ 0229 (“from one of relaying devices which exist at an address indicated by the address information contained in the content storage location list thus received”); *id.* ¶¶ 0232-35.

This proxy may be used for each of the content slices. The selected proxy may also be changed during the retrieval process. Sharp KK checks quality of service for each chunk, and if necessary, changes the proxy selection. *See, e.g., id.* ¶¶ 235, 283; Ex. 1003 ¶ 72.

Although the claim need not be interpreted to require **repeated** proxy selection for each chunk, Sharp KK, by disclosing to check the need for a proxy change after every retrieval, discloses that additional aspect. This is clearly shown

in Fig. 23 of Sharp KK, which shows an inner and outer processing loop for movie fragments and segments, respectively. The outer loop performs a quality of service check for each segment (S633), and decides whether to keep the current proxy or change to a new one (S634). Thus, Sharp KK meets the “for each” wording of limitation 15(a), however it may be construed. Ex. 1003 ¶ 72.

**(b) sending over the Internet a first request to the selected device using the group device identifier of the selected device, the first request including the content slice identifier and the second identifier**

Sharp KK discloses “using the group device identifier of the selected device” to “send over the Internet” “a first request ... including the content slice identifier and the second identifier.” More particularly, Sharp KK discloses client 4e transmitting an instruction to acquire content from proxy 3 (selected device) at the address indicated by the address information that was selected in step (a) above (group device identifier). Ex. 1018 ¶¶ 0229, 0232, 0259, 0270, 0272, 0281; *id.* Fig. 27, message “(c)”.

This transmission includes both the media segment number (“content slice identifier”) and also the domain name of server 2 from which the content originates (the “second identifier”). As shown in Fig. 27, the GET request to the select proxy includes the content identifier (“example.com/content1”) with the appended fragment number of “/0” (which is incremented in subsequent requests). *Id.* ¶¶ 0270, 0302. The “0” in this example is a content slice identifier. *See id.* ¶ 0291.

The request to selected proxy 3 also includes the host name “Host: example.com” of server 2, which is the “second identifier” of the “first server.” *Id.* Fig. 27 (“Host: example.com” in message “(a)”). *See* Ex. 1003 ¶ 73.

**(c) in response to receiving the sent first request by the selected device, receiving over the Internet the content slice from the selected device; and**

Sharp KK discloses, in response to receiving the sent first request by the selected device, client 4 receiving over the Internet the content slice from the selected device. More specifically, Sharp KK discloses proxy 3, in response to the client’s request, checking if the requested content is stored in its cache. Ex. 1018 ¶ 0281. If this content is fresh, proxy 3 transmits the requested media segment to client 4. *Id.* Figs. 21, 24, and 27, message “(f)”. Ex. 1003 ¶ 74.

**wherein the method further comprising the step of constructing the content from the received plurality of content slices**

Sharp KK discloses a content playing device 4 that plays content received in the form of a plurality of segments. Ex. 1018 ¶¶ 0302, 0364 (referencing Fig. 23 and related description), ¶¶ 0559-61; *id.* Fig. 32, steps S724 and S632. Hence, the media being played is constructed from the content of the received plurality of media segments. Ex. 1003 ¶ 75.

**and wherein each of the devices in the group is a client device**

Embodiment 3 discussed above is based upon Sharp KK’s earlier embodiment 2 and differs only in that embodiment 3 supports a plurality of proxies

from which a client 4 may select in the event of slow transmission from a current proxy 3. *See* Ex. 1018 ¶¶ 0219, 0285. Sharp KK’s underlying embodiment 2, in turn, discloses “a client 4 has a function as and acts as a proxy so that it is possible to widely distribute (i) a processing load of a server 2 and (ii) a network load which is used to transmit data from the server 2.” *Id.* ¶ 0142. Sharp KK in fact explicitly states the following: “in Embodiment 2, the client 4 acts both (i) as a device that requests a content and then acquires the content and (ii) as (a) a relaying device (proxy) that stores the content thus requested and then transfers the content to another device or (b) a playing device that acquires the content thus requested and then plays the content.” *Id.* ¶ 0144.

Furthermore, Sharp KK also expressly refers to “a process which is carried out by the client 4 functioning as a relaying device of Embodiment 3 is identical to that of Embodiment 2.” *Id.* ¶ 0251. Since, as stated the process is “identical to that of Embodiment 2,” the disclosure then states: “As such, those processes will not be discussed here.” *Id.* But ¶ 0251 tells us all we need to know – an express disclosure that the clients of Embodiment 3 can also act as proxies, just as in Embodiment 2. Moreover, Embodiment 3 itself shows a scenario in which the proxy selection logic on the server “changes proxy 3a which is currently selected as the relaying device, from which content is required, to the client 4f having second priority to be



selected as the relaying device,” expressly disclosing the dual roles that clients and proxies can have in Embodiment 3. *Id.* ¶ 283.

Sharp KK thus discloses that the group of proxies 3 are also client devices 4.

In view of the above, claim 15 is anticipated by Sharp KK. Ex. 1003 ¶¶ 76-77. (This conclusion is *independently* supported in any case by the specification’s broad definition of “client,” in that Sharp KK’s “relaying devices” are inherently also “clients” per the ’866 patent’s definition.)

## **2. Claim 16**

Claim 16 depends from claim 15 and recites “wherein the content is composed of bits, nibbles, bytes, characters, words, or strings, and the partitioning is based on bit, nibble, byte, multi-byte, number, character, word, or string level.” Sharp KK discloses that media may be fragmented along any suitable unit. Ex. 1018 ¶ 0240. It is inherent in such computer-related inventions that data is composed of bytes. Since each segment in Sharp KK contains one or more pictures that are divided at the byte level, Sharp KK discloses partitioning at the byte level. Sharp KK thus anticipates claim 16. Ex. 1003 ¶ 79.

## **3. Claim 17**

Claim 17 depends from claim 15 and recites, “wherein the content is composed of files, or programs, and the partitioning is based on file or program level.”

As discussed above, Embodiment 3 of Sharp KK identically discloses all limitations of the parent claim, 15.

Sharp KK further discloses, with respect to Embodiment 3, a scenario in which the client device is unable to process the “multipart” MIME format of the default media fragments in Embodiment 3. Ex. 1018 ¶ 0307. In that case, Sharp KK teaches to combine the fragments into “one body.” *Id.* ¶ 308. A POSITA would understand the resulting exchange (*i.e.*, a GET request without an “Accept:multipart/media-segment” header, and a response with the combined non-MIME body) to be a request for a file, where the file contains a segment and constitutes a portion of the content (movie). *See Id.* ¶ 246, Fig. 21; Ex. 1003 ¶¶ 81-82. Sharp KK also states that the format of the content in one embodiment is assumed to be a MP4 file format (*id.* ¶ 0022) and refers to a Figure illustrating segments as representing “files” (*id.* ¶ 0240). *See* Ex. 1003 ¶ 82.

Furthermore, a web page may be represented by a file, and Sharp KK provides explicit disclosure of this. *See* point that follows regarding claim 18.

#### **4. Claim 23**

Claim 23 depends from claim 15 and recites “wherein the partitioning is sequential in the content.” Sharp KK discloses sequential fragments in each media segment, with this sequential ordering continuing across segments, thus anticipating claim 23. Ex. 1018 ¶ 0250; Ex. 1003 ¶ 84.

## 5. Claim 24

Claim 24 depends from claim 15 and recites, “wherein the partitioning is non-sequential in the content.” Sharp KK discloses that fragmentation of the content generally “has consecutive playing time.” Ex. 1018 ¶ 0248. Sharp KK further discloses, however, “two or more movie fragments each of which has no consecutive playing time.” *Id.* Sharp KK thus anticipates claim 24. Ex. 1003 ¶ 85.

### **GROUND 2: Obviousness of Claim 18 over Sharp KK in view of MPEG DASH and Common Dictionary References**

Claim 18 depends from claim 17 and further recites “wherein the content is a website content comprising multiple webpages, and the partitioning is based webpages level.” As stated in the specification of the ’866 patent, an entire web page can constitute a content slice where it is part of a plurality of web pages comprising a web site: “the content may be a website content comprising multiple webpages, and the partitioning may be based webpages level.” Ex. 1001, 104:22-24.

Sharp KK discloses a VOD system. Ex. 1018 ¶ 0022. The same paragraph, however, also states that its content delivery system is not limited to such a VOD system. *Id.* Indeed, Sharp KK explicitly contemplates server 2 responding to web page requests. *See id.* ¶ 0462. This reflects partitioning at the web page level as in claim 18. Ex. 1003 ¶ 89. A POSITA would understand from the disclosure of a

web page request in Sharp KK that such website data could be distributed to clients in the same manner that the video data is distributed in Embodiment 2, as doing so would not require any substantial changes to the underlying distribution process disclosed in Sharp KK, by simply substituting one known type of digital data (website data) for another type of digital data (video data). *Id. See Agrizap, Inc. v. Woodstream Corp.*, 520 F.3d 1337, 1344 (Fed. Cir. 2008) (simple substitution of elements offers no basis for patentability).

It was well-known in the art, long before the earliest priority date of the '866 patent, that websites can comprise multiple webpages, with each webpage in the form of one or more respective files. Ex. 1003 ¶ 90. It is also known even to casual Internet users a web site may comprise a plurality of web pages. This is reflected in the '866 patent itself. *See* Ex. 1001 at 48:41-44 (referring to “code that the website owner user adds to **every page of the web site**” when running certain analytic utilities) (emphasis added); Ex. 1029, Microsoft Computer Dictionary (5th Ed. 2002) at 4 (internal p. 564) (“Web site n. A group of related HTML documents, scripts, and associated files that is served up by an HTTP server on the World Wide Web.”).

Having multiple web pages rather than just one changes nothing in the operations that Sharp KK already teaches to perform to retrieve a web page via its proxy system. It is obvious to use the same technique on the multiple pages of the

typical web site, and there would be every expectation that if Sharp KK worked to serve one of the pages it would work equally well to serve the others. Ex. 1003 ¶ 91.

Finally, in the context of claim 18, the parent claim requires that the client reconstruct the content from the received slices. However, as noted above, the '866 patent contemplates that an entire web page may be regarded as a “content slice.” Where partitioning is at the webpage level, such reconstruction will occur in the browser cache, after a plurality of webpages from a website having multiple pages have been received. Such a browser cache is disclosed in Sharp KK. Ex. 1018 ¶ 0177; Ex. 1003 ¶ 92.

It would therefore be obvious to a POSITA that an ordinary website would comprise multiple webpages and their related files, stored in the content storage of the website, such as section 5 of server 2, since such website data is also digital data that is partitioned into files, just as is the video data. Ex. 1003 ¶ 99. Sharp KK further discloses that the benefits of distributing a website in this manner is that it would reduce loading on both the network and the website server, thus motivating a POSITA to make such a substitution. *See* Ex. 1018 ¶¶ 0014, 0485; Ex. 1003 ¶ 93.

**GROUND 3: Obviousness of Claims 19-20 and 27-28 over Sharp KK in view of Shribman**

**1. Claim 19**

Claim 19 recites “wherein all of the parts of the content are included in all of the content slices.” One representative example from this citation is where the entire content is partitioned into three contiguous uninterrupted sequences of bytes which together span the entire range of bytes in the content. Ex. 1001, 94:16-23.

This claim is obvious over Sharp KK as above, in view of Shribman’s disclosure that “[c]hunks in the present description are defined as equally sized pieces of data that together form the whole content of the URL.” Ex. 1017 ¶ 0055. It would have been obvious to a POSITA to have the slices cover the entire content, because retrieving the content is the object of references such as Shribman and is itself an obvious objective for a content retrieval system. Ex. 1003 ¶¶ 94-95.

**2. Claim 20**

Claim 20 recites “wherein all of the content slices have the same size.” While Sharp KK does not disclose that each of the media fragments is the same size, Sharp KK does disclose that each media fragment may have the same length or the same number of pictures, each of which is a close analog to size. Ex. 1018 ¶ 0240; Ex. 1003 ¶ 96. Indeed, Sharp KK contemplates the media file as being

“fragmented by a predetermined unit,” of which length and number of pictures are presumably but two examples. Ex. 1018 ¶ 0240.

Shribman discloses content being partitioned into fragments of equal size. Ex. 1017 ¶ 0055. It would therefore be obvious to a POSITA to partition the media fragments into equal sizes as taught by Shribman, as doing so would ensure a more even distribution of loading on the proxies across the system and making such a change would be a trivial variation of Sharp KK’s partitioning algorithm that would not otherwise affect the distribution of media segments so partitioned. Ex. 1003 ¶ 97.

### **3. Claim 27**

Claim 27 recites “wherein the number of content slices is higher than the number of devices in the group.” As discussed, Shribman discloses an embodiment in which an agent device retrieves content and thereby becomes the only agent with the requested content. Ex. 1017 ¶ 0089 (“selected agent ... provides itself as the only peer for these chunks”). Since Shribman discloses a plurality of slices, the limitations of claim 27 would be met by the combination of Sharp KK and Shribman. In view of the fact that the number of slices may be arbitrarily high, depending on the size of the content, and the number of devices is inherently a limited resource, the combination of circumstances contemplated by claim 27

would obviously arise and, requiring no change in methodology, would be obvious to handle with completely predictable results. Ex. 1003 ¶ 98.

#### **4. Claim 28**

Claim 28 recites “wherein the number of content slices is lower than the number of devices in the group.” As discussed, per the ’866 patent, content may be partitioned as coarsely as at the “webpage level.” Ex. 1001, 57:65-67. It is obvious that, given what may be of interest to users, many web sites will be encountered in the ordinary course, that only have a few pages. In view of this foreseeable situation, and the fact that the referenced disclosure in Shribman (of equally sized pieces of data) does not require more than two equal slices, it would have been obvious to envision scenarios in which the number of slices would be lower than the number of devices in the group. It would require no change in methodology to handle such a circumstance, again with completely predictable results. Ex. 1003 ¶ 99.

### **GROUND 4: OBVIOUSNESS OF CLAIMS 15, 17, AND 18 OVER LUOTONEN + RFC 2616**

#### **1. Claim 15**

Chunking of content as recited in claim 15 is simply routine, and such requests are regularly proxied by garden variety prior art proxies, and such proxies are extremely well documented in references such as Luotonen, Web Proxy



Servers (Ex. 1014). Combined with content chunking, as set forth, for example in RFC 2616 (Ex. 1007 at 18), claim 15 becomes obvious. Ex. 1003 ¶ 100. Content chunking via “byte-range” retrieval is a standard use of HTTP, which many websites employ. Ex. 1003 ¶ 100.

As to the preamble of claim 15, Luotonen discloses (throughout) methods for fetching a content over the Internet from a first server (any origin server), identified in the Internet by a second identifier (which the target server, when connected to the Internet, inherently has). *See, e.g.*, Ex. 1014 at 28, Fig. 1.4 on internal page 10. Luotonen further discloses having a pool of proxy servers, with a failover mechanism on the client, enabling the client, via auto proxy configuration, to select a different proxy. *Id.* at 325-26 (internal 307-08). Each proxy is (and must be) identified in the Internet by an associated group device identifier, *i.e.*, an IP address. Ex. 1003 ¶ 101.

As for the recited method steps:

**partitioning the content into a plurality of content slices, each content slice containing at least part of the content, and identified using a content slice identifier**

The HTTP protocol is a fundamental basis for Luotonen, in that Web Proxies (the subject to the book) work over HTTP. RFC 2616, which specifies the HTTP 1.1 protocol as of 2013, also discloses, in Section 14.3.1, that HTTP requests may be partitioned into byte ranges, enabling an HTTP client to partition

requested content by byte ranges. Ex. 1007 at 85. Such partitioning may be effected with a “Range of Content-Range” request header, which would comprise a “content slice identifier”, identifying “at least a part of the content.” The format for this header is “(first-byte-pos ‘-’ last-byte-pos)” as disclosed in Sections 14.16 and 14.35.1 of RFC 2616. Such partitioning is a standard and widely used facility of HTTP, and it would have been obvious to use it with proxies as described in Luotonen, and indeed a standards-compliant proxy would be required and expected to support it. Ex. 1003 ¶ 102. There is no need in this scenario to modify the proxy as envisioned by Luotonen – it simply handles this type of piece-wise request as any other HTTP request, because byte range requests are part of the HTTP 1.1 standard that Luotonen’s proxies support. *See* Ex. 1014 at 102 (explicitly discussing byte range HTTP requests in the context of Web proxies); Ex. 1003 ¶ 102. The fact that Luotonen itself documents HTTP 1.1 byte-range requests makes clear the obviousness of combining RFC 2616, and indeed Luotonen itself already incorporates the pertinent teaching of RFC 2616.

**for each of the content slices ... (a) selecting a device from the group**

It was common before August 28, 2013 to have a plurality of proxies service an organization. Ex. 1014 at 373 (internal 355) (proxy “pools”). The user of a proxy as described in Luotonen selects a proxy from the pool by configuring the user’s browser and/or computer. The client can also have proxy autoconfiguration

features. Ex. 1014, Appendix A (“Proxy Auto-Configuration Support in Clients”), at 395-96 (internal 377-78). The proxy configuration on the client selects a proxy from the group, which (until changed by an auto-configuration rule), applies for each of the content slices (byte-range requests). Ex. 1003 ¶ 103.

**(b) sending over the Internet a first request to the selected device using the group device identifier of the selected device, the first request including the content slice identifier and the second identifier**

This limitation is met by the standard HTTP request format under RFC 2616. Ex. 1007 at 24-26. An HTTP request contains at least a “path,” which, in combination with a byte range header, constitutes a “content slice identifier” - literally, a string comprising a range of bytes from the content at the specified path. The request may contain an “authority”, which corresponds to the domain name or IP address of the target server, *i.e.*, the “second identifier”, and in any case must have a “Host” header also corresponding to the “second identifier” of this limitation. The request is directed to the “selected device”, which (as in many examples in Luotonen) may be over the Internet, in any case requiring the communication to be addressed to the selected device by its IP address. Ex. 1003 ¶ 104.

**(c) in response to receiving the sent first request by the selected device, receiving over the Internet the content slice from the selected device**

This limitation is met in the combination of Luotonen and RFC 2616 addressed here when the selected device responds to the “first request.” Ex. 1003 ¶ 105.

**wherein the method further comprising the step of constructing the content from the received plurality of content slices**

A browser makes a byte range request, particularly one in which it specifies multiple ranges in a request (Ex. 1007 at 76) in the expectation that it will construct the desired content from responses to successive such requests. Ex. 1003 ¶ 106.

**and wherein each of the devices in the group is a client device**

Each of the proxies per Luotonen is also a client device. Ex. 1014 at 22 (internal 4) (“[a] proxy acts both as a server as well as a client.”); Ex. 1003 ¶ 107.

## **2. Claim 17**

As for **claim 17**, “wherein the content is composed of files, or programs, and the partitioning is based on file or program level,” *see* Ex. 1029, Microsoft Computer Dictionary (5th Ed. 2002), at 4 (internal 564) (Web site: “a group of related HTML documents and associated files, scripts and databases”); Ex. 1003 ¶ 108.

### **3. Claim 18**

As for **claim 18**, the above Microsoft Computer Dictionary citation above reflects that web sites as therein defined comprise multiple webpages, partitioned based on webpages level. This is an obvious application of claim 15 when the content slices are webpages, which is within the proper construction of content slice as addressed above. Ex. 1003 ¶ 109.

## **GROUND 5: OBVIOUSNESS OF CLAIMS 15, 17, AND 18 OVER LUOTONEN, RFC 2616, AND RFC 3040**

### **1. Claim 15**

Claim 15, when construed as suggested by the '866 patent specification, to cover as “partitioning” even delivery of content at the web page level, is so broad as to be obvious over the basic literature on Internet proxies, such as Luotonen, in view of the content aggregation by way of caching that goes on inside garden variety web browsers.

This ground is identical to the previous ground, except that the partitioning step is met simply by content retrieval at the webpage level of a plurality of pages from any web site that comprises a plurality of pages. As addressed above, Luotonen already addresses the other aspects of the preamble, step (a) (selecting a device from the group), (b) the request format, (c) receiving the content slice (webpage), and the second “wherein” (proxy also acting as a client). Ex. 1003 ¶

111. Since it has been routine since the beginning of the World-Wide Web to use browsers such as Netscape or Firefox to browse multi-page websites, and since web proxies are ubiquitous (*e.g.*, in workplace firewall configurations, among many others (*see* Ex. 1003 ¶ 100)), this is an obvious combination. Ex. 1003 ¶ 110.

As addressed above, a web page may be a “content slice” as understood in the context of the ’866 patent, where it is one of a plurality of web pages comprising a web site, and the ’866 patent in fact explicitly claims precisely such an embodiment. *See* Ex. 1001, claim 18. It is common knowledge, even to the most casual Internet users, that web sites at the time of the claimed invention (and now) typically comprised a plurality of web pages. *See* Ex. 1029, Microsoft Computer Dictionary (5th Ed. 2002) at 4 (internal 564) (“Web site n. A group of related HTML documents, scripts, and associated files that is served up by an HTTP server on the World Wide Web.”); Ex. 1003 ¶ 112.

With regard to the first “wherein” clause,

**wherein the method further comprising the step of constructing the content from the received plurality of content slices**

as addressed above, this limitation may be understood as “assembling or combining content slices so as to reconstruct the original content.” Where the units of “partitioning” (content slices) are at the webpage level itself, this claim step is satisfied when a user browses a plurality of different web pages from the same site. A POSITA would recognize that this reflects the routine use of the Internet at the

time by ordinary Internet users. The content thus reconstructed is not just transitory. Rather, as reflected in the '866 patent itself, it was well-known that “[w]eb browser[s] cache previously accessed web resources and reuse them when possible.” Ex. 1001, 5:22-24. *See also* Ex. 1020, RFC 3040 at 7 (defining “user agent cache” and “The cache within the user agent program” (browser). A user performing the well-known and routine operation of browsing a web site thus performs “constructing the content from the received plurality of content slices,” in the browser cache. Ex. 1003 ¶ 113.

## **2. Claim 17**

As for claim 17, the '866 patent reflects the well-known fact that a web page is also a “file.” *See* Ex. 1001, 5:5-11. *See also* Ex. 1029, Microsoft Computer Dictionary (5th Ed. 2002) at 4 (internal 564); Ex. 1003 ¶ 114.

## **3. Claim 18**

As for claim 18, the above Microsoft Computer Dictionary citation above reflects that web sites as therein defined comprise multiple webpages, partitioned based on webpages level. This is an obvious application of claim 15 when the content slices are webpages as in the reference disclosure in the '866 patent. Ex. 1003 ¶ 115.

**X. NO OBJECTIVE INDICIA TO SUPPORT PATENTABILITY**

Petitioner is not aware of any publicly available information regarding objective indicia of non-obviousness for the challenged claims. If Patent Owner raises arguments alleging objective indicia, Petitioner requests an opportunity to respond in its Reply.

**XI. CONCLUSION**

Based on the grounds specified above, *inter partes* review of the challenged claims is respectfully requested.

Dated: January 25, 2021

Respectfully submitted,

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**CERTIFICATION OF WORD COUNT**

The undersigned hereby certifies that the portions of the above-captioned PETITION FOR INTER PARTES REVIEW specified in 37 C.F.R. § 42.24 has 11,276 words, in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24. This word count was prepared using Microsoft Word/Office 365 and includes words added to images as annotations.

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**CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e), 42.105(b))**

The undersigned hereby certifies that the above-captioned PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 9,742,866, Petitioner's Power of Attorney, and all supporting exhibits were served in their entirety on January 25, 2021 via Priority Mail Express International, on the following:

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The above-captioned PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 9,742,866, Petitioner's Power of Attorney, and all supporting exhibits were also served in their entirety via e-mail on January 25, 2021 on Patent Owner's U.S. counsel in the pending litigation concerning the '866 patent, as follows:

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