



US010257319B2

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

(10) **Patent No.:** **US 10,257,319 B2**

(45) **Date of Patent:** **Apr. 9, 2019**

(54) **SYSTEM PROVIDING FASTER AND MORE EFFICIENT DATA COMMUNICATION**

(56) **References Cited**

U.S. PATENT DOCUMENTS

(71) Applicant: **WEB SPARK LTD.**, Netanya (IL)

3,922,494 A 11/1975 Cooper et al.
4,937,781 A 6/1990 Lee et al.

(72) Inventors: **Derry Shribman**, Tel Aviv (IL); **Ofer Vilenski**, Moshav Hadar Am (IL)

(Continued)

FOREIGN PATENT DOCUMENTS

(73) Assignee: **WEB SPARK LTD.**, Netanya (IL)

CN 101075242 A 11/2007
CN 101179389 A 5/2008

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(Continued)

OTHER PUBLICATIONS

(21) Appl. No.: **15/957,945**

R. Fielding et al, RFC 2616: Hypertext Transfer Protocol—HTTP/1.1, Jun. 1999, retrieved from the Internet <http://rfc-editor.org> [retrieved Apr. 15, 2002] (114 pages).

(22) Filed: **Apr. 20, 2018**

(Continued)

(65) **Prior Publication Data**
US 2018/0241851 A1 Aug. 23, 2018

Primary Examiner — Minh Chau Nguyen
(74) *Attorney, Agent, or Firm* — May Patents Ltd. c/o Dorit Shem-Tov

Related U.S. Application Data

(60) Continuation of application No. 14/025,109, filed on Sep. 12, 2013, which is a division of application No. (Continued)

(57) **ABSTRACT**

A system designed for increasing network communication speed for users, while lowering network congestion for content owners and ISPs. The system employs network elements including an acceleration server, clients, agents, and peers, where communication requests generated by applications are intercepted by the client on the same machine. The IP address of the server in the communication request is transmitted to the acceleration server, which provides a list of agents to use for this IP address. The communication request is sent to the agents. One or more of the agents respond with a list of peers that have previously seen some or all of the content which is the response to this request (after checking whether this data is still valid). The client then downloads the data from these peers in parts and in parallel, thereby speeding up the Web transfer, releasing congestion from the Web by fetching the information from multiple sources, and relieving traffic from Web servers by offloading the data transfers from them to nearby peers.

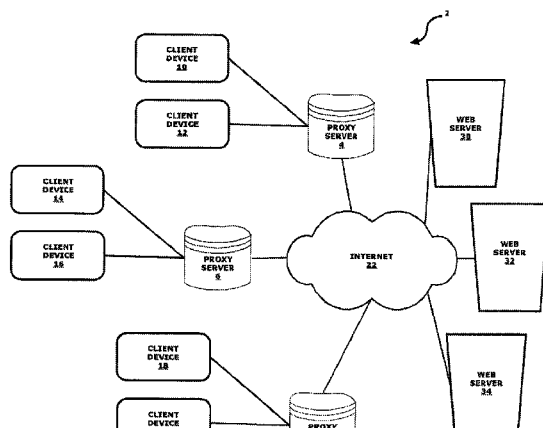
(51) **Int. Cl.**
H04L 29/06 (2006.01)
H04L 29/08 (2006.01)
H04L 12/24 (2006.01)

(52) **U.S. Cl.**
CPC **H04L 67/42** (2013.01); **H04L 41/046** (2013.01); **H04L 67/1002** (2013.01); (Continued)

(58) **Field of Classification Search**
CPC H04L 67/42; H04L 41/046; H04L 67/108; H04L 67/22

(Continued)

29 Claims, 15 Drawing Sheets



Related U.S. Application Data

- 12/836,059, filed on Jul. 14, 2010, now Pat. No. 8,560,604.
- (60) Provisional application No. 61/249,624, filed on Oct. 8, 2009.
- (52) **U.S. Cl.**
 CPC *H04L 67/108* (2013.01); *H04L 67/1023* (2013.01); *H04L 67/1063* (2013.01); *H04L 67/22* (2013.01); *H04L 67/2814* (2013.01); *H04L 67/2819* (2013.01); *H04L 67/02* (2013.01)
- (58) **Field of Classification Search**
 USPC 709/202
 See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,577,243	A	11/1996	Sherwood et al.	
5,758,195	A	5/1998	Balmer	
6,061,278	A	5/2000	Kato et al.	
6,154,782	A	11/2000	Kawaguchi	
6,173,330	B1	1/2001	Guo et al.	
6,466,470	B1	10/2002	Chang	
6,868,453	B1*	3/2005	Watanabe G06F 17/30861 707/E17.107
7,120,666	B2	10/2006	McCanne et al.	
7,203,741	B2	4/2007	Marco et al.	
7,558,942	B1	7/2009	Chen et al.	
7,788,378	B2	8/2010	Rao	
7,818,430	B2	10/2010	Zuckerman	
7,865,585	B2	1/2011	Samuels et al.	
7,890,547	B2	2/2011	Hotti	
7,970,835	B2	6/2011	St. Jacques	
8,135,912	B2	3/2012	Shribman et al.	
8,171,101	B2	5/2012	Gladwin et al.	
8,479,251	B2	7/2013	Feinleib et al.	
8,499,059	B2	7/2013	Stoyanov	
8,595,786	B2*	11/2013	Choi H04L 1/005 725/151
8,769,035	B2	1/2014	Resch et al.	
8,719,505	B2	5/2014	Shribman et al.	
8,832,179	B2	9/2014	Owen et al.	
9,201,808	B2	12/2015	Shribman et al.	
9,253,164	B2	2/2016	Gouge	
9,990,295	B2	6/2018	Shribman et al.	
2001/0033583	A1	10/2001	Rabenko et al.	
2002/0007413	A1	1/2002	Garcia-Luna-Aceves et al.	
2002/0065930	A1	5/2002	Rhodes	
2002/0069241	A1	6/2002	Narlikar et al.	
2002/0120874	A1	8/2002	Shu et al.	
2002/0123895	A1	9/2002	Potekhin	
2002/0133621	A1	9/2002	Marco et al.	
2003/0009518	A1	1/2003	Harrow et al.	
2003/0009583	A1	1/2003	Chan et al.	
2003/0074403	A1	4/2003	Harrow et al.	
2003/0097408	A1	5/2003	Kageyama	
2003/0115364	A1	6/2003	Shu et al.	
2003/0174648	A1	9/2003	Wang et al.	
2003/0200307	A1	10/2003	Raju et al.	
2003/0204602	A1	10/2003	Hudson et al.	
2003/0210694	A1	11/2003	Jayaraman et al.	
2004/0088646	A1	5/2004	Yeager et al.	
2004/0107242	A1	6/2004	Vert et al.	
2004/0254907	A1	12/2004	Crow et al.	
2004/0264506	A1	12/2004	Furukawa	
2005/0015552	A1	1/2005	So et al.	
2005/0022236	A1	1/2005	Ito et al.	
2005/0097441	A1*	5/2005	Herbach G06F 21/10 715/229

2006/0212542	A1*	9/2006	Fang H04L 67/104 709/219
2006/0212584	A1*	9/2006	Yu G06F 17/30902 709/227
2006/0259728	A1	11/2006	Chandrasekaran et al.	
2007/0073878	A1	3/2007	Issa	
2007/0100839	A1	5/2007	Kim	
2007/0156855	A1	7/2007	Johnson	
2007/0226810	A1	9/2007	Hotti	
2007/0239655	A1	10/2007	Agetsuma	
2008/0008089	A1	1/2008	Bornstein et al.	
2008/0025506	A1	1/2008	Muraoka	
2008/0109446	A1	5/2008	Wang	
2008/0125123	A1	5/2008	Dorenbosch	
2008/0222291	A1	9/2008	Weller et al.	
2008/0235391	A1	9/2008	Painter et al.	
2008/0086730	A1	10/2008	Vertes	
2008/0256175	A1	10/2008	Lee	
2009/0037529	A1	2/2009	Armon-Kest	
2009/0182843	A1	7/2009	Hluchyj	
2009/0217122	A1	8/2009	Yokokawa et al.	
2009/0279559	A1	11/2009	Wong et al.	
2009/0319502	A1	12/2009	Chalouhi et al.	
2010/0066808	A1	3/2010	Tucker et al.	
2010/0085977	A1	4/2010	Khalid et al.	
2010/0094970	A1	4/2010	Zuckerman	
2010/0115063	A1	6/2010	Gladwin et al.	
2010/0154044	A1	6/2010	Manku	
2010/0235438	A1	9/2010	Narayanan et al.	
2010/0293555	A1	11/2010	Vepsalainen	
2010/0329270	A1	12/2010	Asati et al.	
2011/0035503	A1*	2/2011	Zaid H04L 63/0407 709/228
2011/0066924	A1	3/2011	Dorso	
2011/0087733	A1	4/2011	Shribman et al.	
2011/0128911	A1	6/2011	Shaheen	
2011/0314347	A1	12/2011	Nakano et al.	
2012/0099566	A1	4/2012	Laine et al.	
2012/0124173	A1	5/2012	De et al.	
2012/0124239	A1	5/2012	Shribman et al.	
2012/0254370	A1	10/2012	Bacher	
2012/0254456	A1	10/2012	Visharam et al.	
2013/0007253	A1	1/2013	Li	
2013/0157699	A1	6/2013	Talwar	
2013/0166768	A1	6/2013	Gouache et al.	
2013/0201316	A1	8/2013	Binder et al.	
2013/0272519	A1	10/2013	Huang	
2013/0326607	A1	12/2013	Feng	
2014/0082260	A1	3/2014	Oh et al.	
2014/0301334	A1	10/2014	Labranche	
2014/0376403	A1	12/2014	Shao	
2015/0033001	A1	1/2015	Ivanov	
2015/0067819	A1	3/2015	Shribman et al.	
2015/0358648	A1	12/2015	Limberg	
2016/0021430	A1	1/2016	LaBosco et al.	

FOREIGN PATENT DOCUMENTS

EP	0948176	A2	10/1999
EP	2597869	A1	12/2013
EP	2597869	A1	5/2015
JP	2007280388		10/2007
KR	1020090097034		9/2009
RU	2343536	C2	10/2009
WO	2000/018078	A1	3/2000
WO	2010090562	A1	8/2010
WO	2011068784	A1	6/2011
WO	2015034752	A1	3/2015

OTHER PUBLICATIONS

Notice of Preliminary Rejection in KR Application No. 10-2012-7011711 dated Jul. 15, 2016.
 Kei Suzuki, a study on Cooperative Peer Selection Method in P2P Video Delivery, vol. 109, No. 37, IEICE Technical Report, The

(56)

References Cited

OTHER PUBLICATIONS

International Search Report dated in PCT Application No. PCT/US2010/051881 dated Dec. 9, 2010.

Supplementary European Search Report dated in EP Application No. 10822724 dated Apr. 24, 2013.

Screen captures from YouTube video clip entitle “nVpn.net | Double your Safety and use Socks5 + nVpn” 38 pages, last accessed Nov. 20, 2018 <<https://www.youtube.com/watch?v=L0Hct2kSnn4>>.

Screen captures from YouTube video clip entitle “Andromeda” 47 pages, publicly known and available as of at least 2011 <<https://www.youtube.com/watch?v=yRRYpFLbKNU>>.

SpyEye, <https://www.symantec.com/security-center/writeup/2010-020216-0135-9>; <http://seuresql.info/riskyclouds/spyeye-user-manual>; known as of at least 2010 (13 pages).

Screen captures from YouTube video clip entitle “Change Your Country IP Address & Location with Easy Hide IP Software” 9 pages, publicly known and available as of at least 2011, <<https://www.youtube.com/watch?v=ulwkflsOfdA> and <https://www.youtube.com/watch?v=iFEMT-o9DTc>>.

CoralCDN (“CoralCDN”), <https://pdos.csail.mit.edu/6.824/papers/freedman-coral.pdf> (14 Pages).

European Search Report for EP 14182547.1, dated Jul. 30, 2015.
R. Fielding et al, RFC 2616: Hypertext Transfer Protocol—HTTP/1.1, Jun. 1999, retrieved from the Internet <http://rfc-editor.org> [retrieved Apr. 15, 2002].

“On the leakage of personally identifiable information via online social networks”, Wills et al. AT&T, Apr. 2009 <http://www2.research.att.com/~bala/papers/wosn09.pdf>.

“Slice Embedding Solutions for Distributed Service Architectures”—Esposito et al., Boston University, Computer Science Dept., Oct. 2011 <http://www.cs.bu.edu/techreports/pdf/2011-025-slice-embedding.pdf>.

International Search Report of PCT/US2010/034072 dated Jul. 1, 2010.

YouTube video clip entitled “nVpn.net | Double your Safety and use Socks5 + nVpn” <<https://www.youtube.com/watch?v=L0Hct2kSnn4>>.

YouTube video clip entitled “Andromeda” <<https://www.youtube.com/watch?v=yRRYpFLbKNU>>.

YouTube video clip entitled “Change Your Country IP Address & Location with Easy Hide IP Software” <<https://www.youtube.com/watch?v=ulwkflsOfdA> and <https://www.youtube.com/watch?v=iFEMT-o9DTc>>.

* cited by examiner

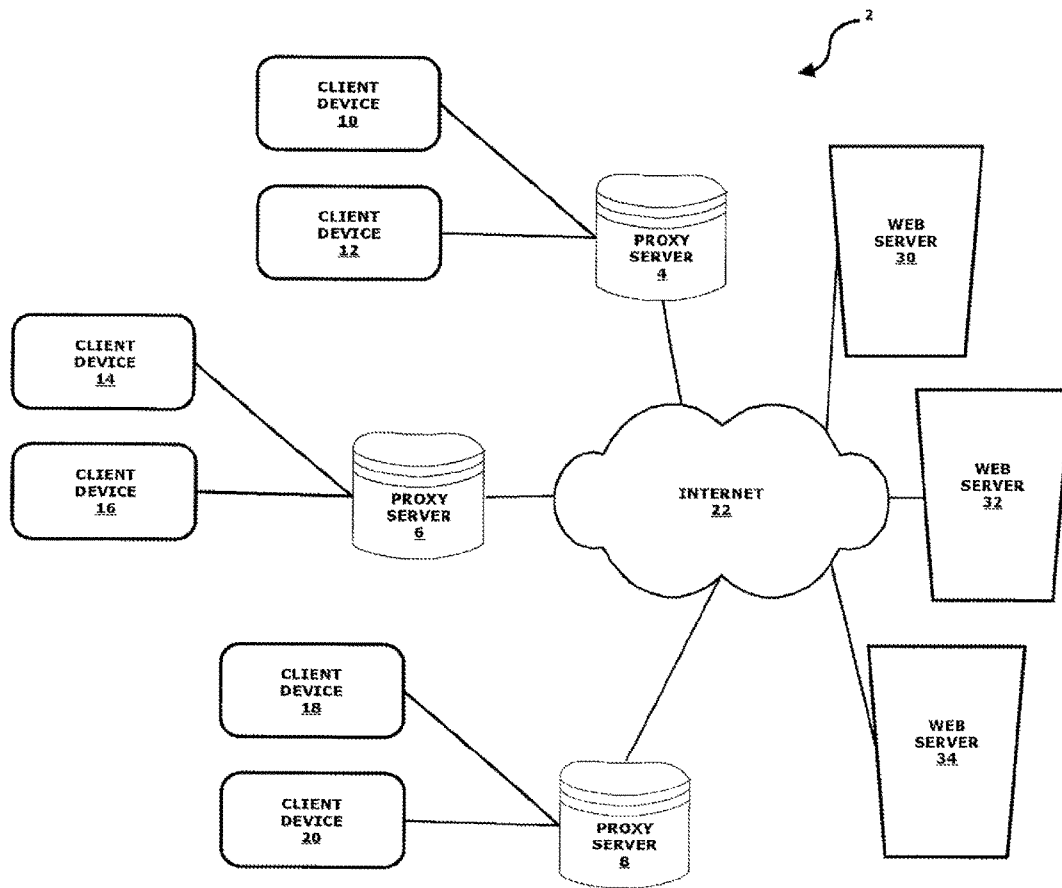


FIG. 1

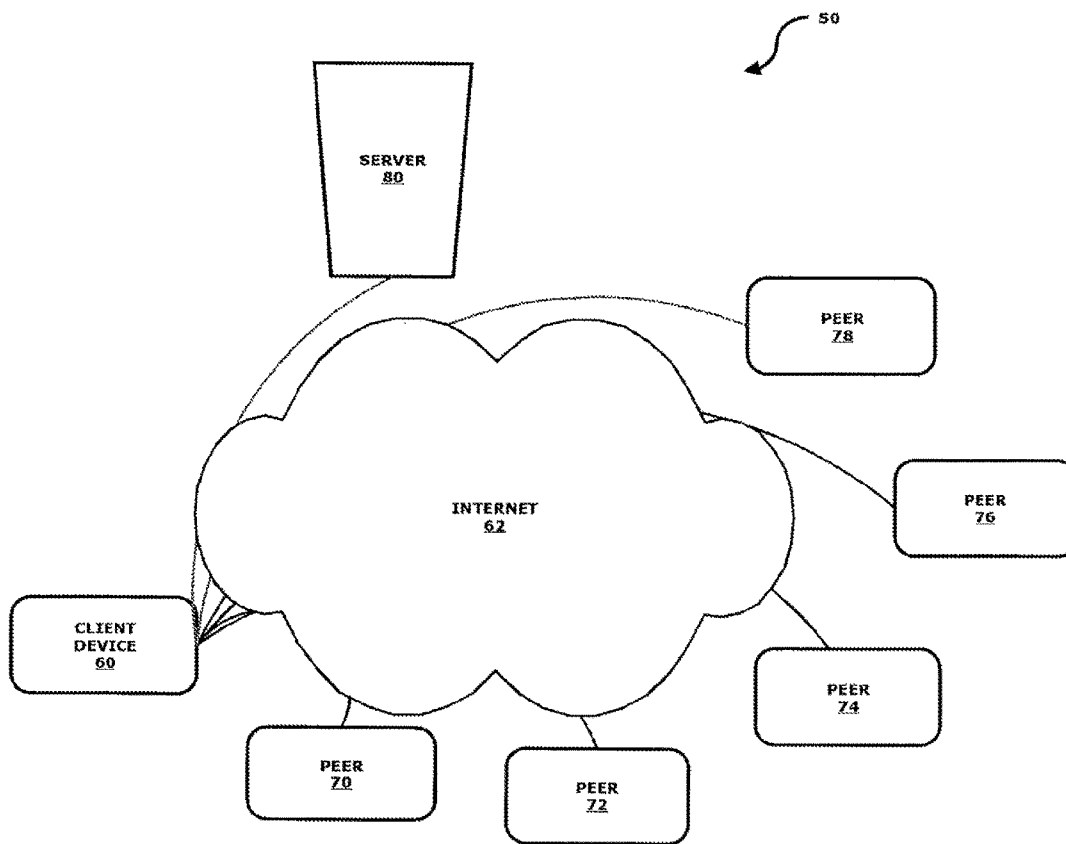


FIG. 2

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.