



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

(10) **Patent No.:** **US 9,179,005 B2**  
(45) **Date of Patent:** **\*Nov. 3, 2015**

- (54) **PRODUCING ROUTING MESSAGES FOR VOICE OVER IP COMMUNICATIONS**
- (71) Applicant: **DIGIFONICA (INTERNATIONAL) LIMITED**, Vancouver (CA)
- (72) Inventors: **Clay Perreault**, Panama (PA); **Steve Nicholson**, Hamilton (NZ); **Rod Thomson**, North Vancouver (CA); **Johan Emil Viktor Björnell**, Vancouver (CA); **Fuad Arafa**, Vancouver (CA)
- (73) Assignee: **Digifonica (International) Limited**, Vancouver (CA)
- (\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 90 days.  
  
This patent is subject to a terminal disclaimer.

(58) **Field of Classification Search**  
CPC ..... H04M 1/573; H04M 3/42059; H04Q 3/0025; H04Q 2213/13091  
See application file for complete search history.

(56) **References Cited**  
U.S. PATENT DOCUMENTS

4,916,491 A 4/1990 Katoh  
4,992,971 A 2/1991 Hayashi

(Continued)

FOREIGN PATENT DOCUMENTS

BR PI 0718312-7 A2 11/2013  
BR PI 0719682-2 A2 1/2014

(Continued)

OTHER PUBLICATIONS

Extended European Search Report dated Dec. 20, 2013 for European Application No. 09849358.8 dated Jun. 18, 2012.

(Continued)

*Primary Examiner* — Simon Sing

(74) *Attorney, Agent, or Firm* — Knobbe Martens Olson & Bear LLP

(21) Appl. No.: **13/966,096**  
(22) Filed: **Aug. 13, 2013**

(65) **Prior Publication Data**

US 2013/0329722 A1 Dec. 12, 2013

**Related U.S. Application Data**

- (63) Continuation of application No. 12/513,147, filed as application No. PCT/CA2007/001956 on Nov. 1, 2007, now Pat. No. 8,542,815.
- (60) Provisional application No. 60/856,212, filed on Nov. 2, 2006.

(51) **Int. Cl.**  
**H04M 15/00** (2006.01)  
**H04L 9/32** (2006.01)  
(Continued)

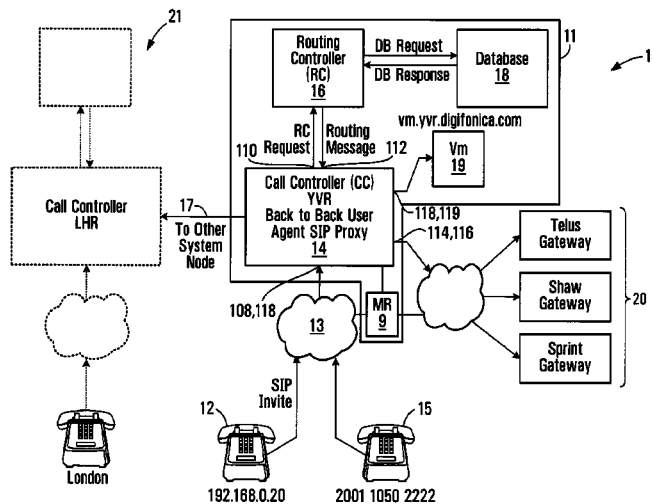
(52) **U.S. Cl.**  
CPC ..... **H04M 15/51** (2013.01); **H04L 9/3226** (2013.01); **H04L 12/14** (2013.01);

(Continued)

(57) **ABSTRACT**

A process and apparatus to facilitate communication between callers and callees in a system comprising a plurality of nodes with which callers and callees are associated is disclosed. In response to initiation of a call by a calling subscriber, a caller identifier and a callee identifier are received. Call classification criteria associated with the caller identifier are used to classify the call as a public network call or a private network call. A routing message identifying an address, on the private network, associated with the callee is produced when the call is classified as a private network call and a routing message identifying a gateway to the public network is produced when the call is classified as a public network call.

**99 Claims, 32 Drawing Sheets**



|      |                              |  |         |                             |      |         |                               |  |  |
|------|------------------------------|--|---------|-----------------------------|------|---------|-------------------------------|--|--|
| (51) | <b>Int. Cl.</b>              |  |         |                             |      |         |                               |  |  |
|      | <i>H04L 12/14</i>            | (2006.01)  |         | 6,014,379                   | A    | 1/2000  | White et al.                  |  |  |
|      | <i>H04L 12/66</i>            | (2006.01)  |         | 6,021,126                   | A    | 2/2000  | White et al.                  |  |  |
|      | <i>H04Q 3/66</i>             | (2006.01)  |         | 6,029,062                   | A    | 2/2000  | Hanson                        |  |  |
|      | <i>H04Q 3/70</i>             | (2006.01)  |         | 6,052,445                   | A    | 4/2000  | Bashoura et al.               |  |  |
|      | <i>H04M 7/00</i>             | (2006.01)  |         | 6,058,300                   | A    | 5/2000  | Hanson                        |  |  |
| (52) | <b>U.S. Cl.</b>              |  |         | 6,069,890                   | A    | 5/2000  | White et al.                  |  |  |
|      | CPC .....                    | <i>H04L 12/1439</i> (2013.01); <i>H04L 12/1496</i>       |         | 6,073,013                   | A    | 6/2000  | Agre et al.                   |  |  |
|      |                              | (2013.01); <i>H04L 12/66</i> (2013.01); <i>H04M</i>      |         | 6,078,647                   | A    | 6/2000  | D'Eletto                      |  |  |
|      |                              | <i>7/0075</i> (2013.01); <i>H04M 15/56</i> (2013.01);    |         | 6,104,704                   | A    | 8/2000  | Buhler et al.                 |  |  |
|      |                              | <i>H04Q 3/66</i> (2013.01); <i>H04Q 3/70</i> (2013.01);  |         | 6,104,711                   | A    | 8/2000  | Voit                          |  |  |
|      |                              | <i>H04Q 2213/1322</i> (2013.01); <i>H04Q 2213/13091</i>  |         | 6,115,737                   | A    | 9/2000  | Ely et al.                    |  |  |
|      |                              | (2013.01); <i>H04Q 2213/13141</i> (2013.01); <i>H04Q</i> |         | 6,128,304                   | A    | 10/2000 | Gardell et al.                |  |  |
|      |                              | <i>2213/13196</i> (2013.01); <i>H04Q 2213/13384</i>      |         | 6,137,869                   | A    | 10/2000 | Voit et al.                   |  |  |
|      |                              | (2013.01)  |         | 6,141,404                   | A    | 10/2000 | Westerlage et al.             |  |  |
|      |                              |  |         | 6,151,385                   | A    | 11/2000 | Reich et al.                  |  |  |
|      |                              |  |         | 6,173,272                   | B1   | 1/2001  | Thomas et al.                 |  |  |
|      |                              |  |         | 6,188,752                   | B1   | 2/2001  | Lesley                        |  |  |
|      |                              |  |         | 6,243,689                   | B1   | 6/2001  | Norton                        |  |  |
|      |                              |  |         | 6,249,573                   | B1   | 6/2001  | Hudson                        |  |  |
|      |                              |  |         | 6,282,574                   | B1   | 8/2001  | Voit                          |  |  |
|      |                              |  |         | 6,298,062                   | B1   | 10/2001 | Gardell et al.                |  |  |
|      |                              |  |         | 6,327,351                   | B1   | 12/2001 | Walker et al.                 |  |  |
|      |                              |  |         | 6,351,464                   | B1   | 2/2002  | Galvin et al.                 |  |  |
|      |                              |  |         | 6,359,880                   | B1   | 3/2002  | Curry et al.                  |  |  |
|      |                              |  |         | 6,430,275                   | B1   | 8/2002  | Voit et al.                   |  |  |
|      |                              |  |         | 6,445,694                   | B1   | 9/2002  | Swartz                        |  |  |
|      |                              |  |         | 6,507,644                   | B1   | 1/2003  | Henderson et al.              |  |  |
|      |                              |  |         | 6,553,025                   | B1   | 4/2003  | Kung et al.                   |  |  |
|      |                              |  |         | 6,560,224                   | B1   | 5/2003  | Kung et al.                   |  |  |
|      |                              |  |         | 6,574,328                   | B1   | 6/2003  | Wood et al.                   |  |  |
|      |                              |  |         | 6,597,686                   | B1   | 7/2003  | Smyk                          |  |  |
|      |                              |  |         | 6,597,783                   | B1 * | 7/2003  | Tada et al. .... 379/265.09   |  |  |
|      |                              |  |         | 6,636,833                   | B1   | 10/2003 | Flitcroft et al.              |  |  |
|      |                              |  |         | 6,650,641                   | B1   | 11/2003 | Albert et al.                 |  |  |
|      |                              |  |         | 6,674,745                   | B1   | 1/2004  | Schuster et al.               |  |  |
|      |                              |  |         | 6,724,860                   | B2   | 4/2004  | Stumer et al.                 |  |  |
|      |                              |  |         | 6,744,858                   | B1   | 6/2004  | Ryan et al.                   |  |  |
|      |                              |  |         | 6,766,159                   | B2   | 7/2004  | Lindholm                      |  |  |
|      |                              |  |         | 6,772,188                   | B1   | 8/2004  | Cloutier                      |  |  |
|      |                              |  |         | 6,775,534                   | B2   | 8/2004  | Lindgren et al.               |  |  |
|      |                              |  |         | 6,785,266                   | B2   | 8/2004  | Swartz                        |  |  |
|      |                              |  |         | 6,798,767                   | B1 * | 9/2004  | Alexander et al. .... 370/352 |  |  |
|      |                              |  |         | 6,819,929                   | B2   | 11/2004 | Antonucci et al.              |  |  |
|      |                              |  |         | 6,873,599                   | B1 * | 3/2005  | Han ..... 370/249             |  |  |
|      |                              |  |         | 6,892,184                   | B1   | 5/2005  | Komen et al.                  |  |  |
|      |                              |  |         | 6,934,279                   | B1   | 8/2005  | Sollee et al.                 |  |  |
|      |                              |  |         | 6,937,713                   | B1   | 8/2005  | Kung et al.                   |  |  |
|      |                              |  |         | 6,954,453                   | B1   | 10/2005 | Schindler                     |  |  |
|      |                              |  |         | 6,963,557                   | B2   | 11/2005 | Knox                          |  |  |
|      |                              |  |         | 6,963,739                   | B2   | 11/2005 | Dorenbosch et al.             |  |  |
|      |                              |  |         | 6,985,440                   | B1   | 1/2006  | Albert et al.                 |  |  |
|      |                              |  |         | 6,993,015                   | B2   | 1/2006  | Kobayashi                     |  |  |
|      |                              |  |         | 7,006,508                   | B2   | 2/2006  | Bondy et al.                  |  |  |
|      |                              |  |         | 7,010,727                   | B1 * | 3/2006  | Stucker ..... 714/52          |  |  |
|      |                              |  |         | 7,027,564                   | B2   | 4/2006  | James                         |  |  |
|      |                              |  |         | 7,046,658                   | B1   | 5/2006  | Kundaje                       |  |  |
|      |                              |  |         | 7,051,072                   | B2   | 5/2006  | Stewart et al.                |  |  |
|      |                              |  |         | 7,055,174                   | B1   | 5/2006  | Cope et al.                   |  |  |
|      |                              |  |         | 7,068,668                   | B2   | 6/2006  | Feuer                         |  |  |
|      |                              |  |         | 7,068,772                   | B1   | 6/2006  | Widger et al.                 |  |  |
|      |                              |  |         | 7,079,526                   | B1   | 7/2006  | Wipliez et al.                |  |  |
|      |                              |  |         | 7,120,682                   | B1   | 10/2006 | Salama                        |  |  |
|      |                              |  |         | 7,151,772                   | B1   | 12/2006 | Kalmanek, Jr. et al.          |  |  |
|      |                              |  |         | 7,177,399                   | B2   | 2/2007  | Dawson et al.                 |  |  |
|      |                              |  |         | 7,203,478                   | B2   | 4/2007  | Benco et al.                  |  |  |
|      |                              |  |         | 7,212,522                   | B1   | 5/2007  | Shankar et al.                |  |  |
|      |                              |  |         | 7,277,528                   | B2   | 10/2007 | Rao et al.                    |  |  |
|      |                              |  |         | 7,330,835                   | B2   | 2/2008  | Deggendorf                    |  |  |
|      |                              |  |         | 7,400,881                   | B2   | 7/2008  | Kallio                        |  |  |
|      |                              |  |         | 7,426,492                   | B1   | 9/2008  | Bishop et al.                 |  |  |
|      |                              |  |         | 7,436,835                   | B2   | 10/2008 | Castleberry et al.            |  |  |
|      |                              |  |         | 7,437,665                   | B2   | 10/2008 | Perham                        |  |  |
|      |                              |  |         | 7,440,442                   | B2   | 10/2008 | Grabelsky et al.              |  |  |
|      |                              |  |         | 7,447,707                   | B2   | 11/2008 | Gaurav et al.                 |  |  |
|      |                              |  |         | 7,454,200                   | B2   | 11/2008 | Cai et al.                    |  |  |
|      |                              |  |         | 7,454,510                   | B2   | 11/2008 | Kleyman et al.                |  |  |
|      |                              |  |         | 7,486,664                   | B2   | 2/2009  | Swartz                        |  |  |
| (56) | <b>References Cited</b>      |  |         |                             |      |         |                               |  |  |
|      | <b>U.S. PATENT DOCUMENTS</b> |  |         |                             |      |         |                               |  |  |
|      | 5,146,491                    | A  | 9/1992  | Silver et al.               |      |         |                               |  |  |
|      | 5,247,571                    | A  | 9/1993  | Kay et al.                  |      |         |                               |  |  |
|      | 5,303,297                    | A  | 4/1994  | Hillis                      |      |         |                               |  |  |
|      | 5,325,421                    | A  | 6/1994  | Hou et al.                  |      |         |                               |  |  |
|      | 5,359,642                    | A  | 10/1994 | Castro                      |      |         |                               |  |  |
|      | 5,425,085                    | A  | 6/1995  | Weinberger et al.           |      |         |                               |  |  |
|      | 5,440,621                    | A  | 8/1995  | Castro                      |      |         |                               |  |  |
|      | 5,454,030                    | A  | 9/1995  | de Oliveira et al.          |      |         |                               |  |  |
|      | 5,469,497                    | A  | 11/1995 | Pierce et al.               |      |         |                               |  |  |
|      | 5,506,893                    | A  | 4/1996  | Buscher et al.              |      |         |                               |  |  |
|      | 5,519,769                    | A  | 5/1996  | Weinberger et al.           |      |         |                               |  |  |
|      | 5,559,871                    | A  | 9/1996  | Smith                       |      |         |                               |  |  |
|      | 5,590,133                    | A  | 12/1996 | Billstrom et al.            |      |         |                               |  |  |
|      | 5,608,786                    | A  | 3/1997  | Gordon                      |      |         |                               |  |  |
|      | 5,621,787                    | A  | 4/1997  | McKoy et al.                |      |         |                               |  |  |
|      | 5,633,913                    | A  | 5/1997  | Talarmo                     |      |         |                               |  |  |
|      | 5,661,790                    | A  | 8/1997  | Hsu                         |      |         |                               |  |  |
|      | 5,677,955                    | A  | 10/1997 | Doggett et al.              |      |         |                               |  |  |
|      | 5,712,907                    | A  | 1/1998  | Wegner et al.               |      |         |                               |  |  |
|      | 5,719,926                    | A  | 2/1998  | Hill                        |      |         |                               |  |  |
|      | 5,722,067                    | A  | 2/1998  | Fognies et al.              |      |         |                               |  |  |
|      | 5,724,355                    | A  | 3/1998  | Bruno et al.                |      |         |                               |  |  |
|      | 5,726,984                    | A  | 3/1998  | Kubler et al.               |      |         |                               |  |  |
|      | 5,737,414                    | A  | 4/1998  | Walker et al.               |      |         |                               |  |  |
|      | 5,751,961                    | A  | 5/1998  | Smyk                        |      |         |                               |  |  |
|      | 5,793,762                    | A  | 8/1998  | Penners et al.              |      |         |                               |  |  |
|      | 5,799,072                    | A  | 8/1998  | Vulcan et al.               |      |         |                               |  |  |
|      | 5,802,502                    | A  | 9/1998  | Gell et al.                 |      |         |                               |  |  |
|      | 5,825,863                    | A  | 10/1998 | Walker                      |      |         |                               |  |  |
|      | 5,828,740                    | A  | 10/1998 | Khuc et al.                 |      |         |                               |  |  |
|      | 5,838,682                    | A  | 11/1998 | Dekelbaum et al.            |      |         |                               |  |  |
|      | 5,845,267                    | A  | 12/1998 | Ronen                       |      |         |                               |  |  |
|      | 5,850,433                    | A  | 12/1998 | Rondeau                     |      |         |                               |  |  |
|      | 5,864,610                    | A  | 1/1999  | Ronen                       |      |         |                               |  |  |
|      | 5,867,495                    | A  | 2/1999  | Elliott et al.              |      |         |                               |  |  |
|      | 5,883,810                    | A  | 3/1999  | Franklin et al.             |      |         |                               |  |  |
|      | 5,883,891                    | A  | 3/1999  | Williams et al.             |      |         |                               |  |  |
|      | 5,889,774                    | A  | 3/1999  | Mirashrafi et al.           |      |         |                               |  |  |
|      | 5,905,736                    | A  | 5/1999  | Ronen et al.                |      |         |                               |  |  |
|      | 5,907,547                    | A  | 5/1999  | Foladare et al.             |      |         |                               |  |  |
|      | 5,910,946                    | A  | 6/1999  | Csapo                       |      |         |                               |  |  |
|      | 5,915,005                    | A  | 6/1999  | He                          |      |         |                               |  |  |
|      | 5,915,093                    | A  | 6/1999  | Berlin et al.               |      |         |                               |  |  |
|      | 5,917,899                    | A *  | 6/1999  | Moss et al. .... 379/221.08 |      |         |                               |  |  |
|      | 5,923,659                    | A  | 7/1999  | Curry et al.                |      |         |                               |  |  |
|      | 5,930,343                    | A  | 7/1999  | Vasquez                     |      |         |                               |  |  |
|      | 5,937,045                    | A  | 8/1999  | Yaoya et al.                |      |         |                               |  |  |
|      | 5,940,598                    | A  | 8/1999  | Strauss et al.              |      |         |                               |  |  |
|      | 5,953,504                    | A  | 9/1999  | Sokal et al.                |      |         |                               |  |  |
|      | 5,956,391                    | A  | 9/1999  | Melen et al.                |      |         |                               |  |  |
|      | 5,970,477                    | A  | 10/1999 | Roden                       |      |         |                               |  |  |
|      | 5,974,043                    | A  | 10/1999 | Solomon                     |      |         |                               |  |  |
|      | 5,991,291                    | A  | 11/1999 | Asai et al.                 |      |         |                               |  |  |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|           |    |         |                  |              |    |         |                    |
|-----------|----|---------|------------------|--------------|----|---------|--------------------|
| 7,565,131 | B2 | 7/2009  | Rollender        | 8,493,931    | B1 | 7/2013  | Nix                |
| 7,573,982 | B2 | 8/2009  | Breen et al.     | 8,509,225    | B2 | 8/2013  | Grabelsky et al.   |
| 7,580,886 | B1 | 8/2009  | Schulz           | 8,526,306    | B2 | 9/2013  | Jungck et al.      |
| 7,587,036 | B2 | 9/2009  | Wood et al.      | 8,532,075    | B2 | 9/2013  | Rassool et al.     |
| 7,593,390 | B2 | 9/2009  | Lebizay          | 8,537,805    | B2 | 9/2013  | Björnsell et al.   |
| 7,593,884 | B2 | 9/2009  | Rothman et al.   | 8,542,815    | B2 | 9/2013  | Perreault et al.   |
| 7,599,944 | B2 | 10/2009 | Gaurav et al.    | 8,543,477    | B2 | 9/2013  | Love et al.        |
| 7,639,792 | B2 | 12/2009 | Qiu et al.       | 8,599,747    | B1 | 12/2013 | Saleem et al.      |
| 7,644,037 | B1 | 1/2010  | Ostrovsky        | 8,599,837    | B2 | 12/2013 | Kyle               |
| 7,647,500 | B2 | 1/2010  | Machiraju et al. | 8,605,714    | B2 | 12/2013 | Lebizay            |
| 7,657,011 | B1 | 2/2010  | Zielinski et al. | 8,605,869    | B1 | 12/2013 | Mobarak et al.     |
| 7,664,495 | B1 | 2/2010  | Bonner et al.    | 8,607,323    | B2 | 12/2013 | Yuan               |
| 7,676,215 | B2 | 3/2010  | Chin et al.      | 8,611,354    | B2 | 12/2013 | Keränen et al.     |
| 7,676,431 | B2 | 3/2010  | O'Leary et al.   | 8,625,578    | B2 | 1/2014  | Roy et al.         |
| 7,680,114 | B2 | 3/2010  | Yazaki et al.    | 8,627,211    | B2 | 1/2014  | Kropivny           |
| 7,680,737 | B2 | 3/2010  | Smith et al.     | 8,630,234    | B2 | 1/2014  | Björnsell et al.   |
| 7,702,308 | B2 | 4/2010  | Rollender        | 8,634,838    | B2 | 1/2014  | Hellwig et al.     |
| 7,715,821 | B2 | 5/2010  | Rollender        | 8,675,566    | B2 | 3/2014  | Huttunen et al.    |
| 7,734,544 | B2 | 6/2010  | Schleicher       | 8,682,919    | B1 | 3/2014  | Golliher           |
| 7,738,384 | B2 | 6/2010  | Pelletier        | 8,702,505    | B2 | 4/2014  | Kropivny           |
| 7,764,777 | B2 | 7/2010  | Wood et al.      | 8,713,098    | B1 | 4/2014  | Adya et al.        |
| 7,764,944 | B2 | 7/2010  | Rollender        | 8,724,643    | B2 | 5/2014  | Feuer              |
| 7,765,261 | B2 | 7/2010  | Kropivny         | 8,749,610    | B1 | 6/2014  | Gossweiler et al.  |
| 7,765,266 | B2 | 7/2010  | Kropivny         | 8,750,290    | B2 | 6/2014  | Vance et al.       |
| 7,797,459 | B1 | 9/2010  | Roy et al.       | 8,763,081    | B2 | 6/2014  | Bogdanovic et al.  |
| 7,882,011 | B2 | 2/2011  | Sandhu et al.    | 8,767,717    | B2 | 7/2014  | Siegel et al.      |
| 7,894,441 | B2 | 2/2011  | Yazaki et al.    | 8,768,951    | B2 | 7/2014  | Crago              |
| 7,899,742 | B2 | 3/2011  | Berkert et al.   | 8,774,171    | B2 | 7/2014  | Mitchell           |
| 7,907,551 | B2 | 3/2011  | Croy et al.      | 8,774,378    | B2 | 7/2014  | Björnsell et al.   |
| 7,929,955 | B1 | 4/2011  | Bonner           | 8,774,721    | B2 | 7/2014  | Hertel et al.      |
| 7,944,909 | B2 | 5/2011  | James            | 8,780,703    | B1 | 7/2014  | Eidelson et al.    |
| 7,950,046 | B2 | 5/2011  | Kropivny         | 8,792,374    | B1 | 7/2014  | Jain et al.        |
| 7,958,233 | B2 | 6/2011  | Gutierrez        | 8,792,905    | B1 | 7/2014  | Li et al.          |
| 7,965,645 | B2 | 6/2011  | Pelletier        | 8,804,705    | B2 | 8/2014  | Fangman et al.     |
| 7,979,529 | B2 | 7/2011  | Kreusch et al.   | 8,805,345    | B2 | 8/2014  | Ling et al.        |
| 7,995,589 | B2 | 8/2011  | Sollee et al.    | 8,810,392    | B1 | 8/2014  | Teller et al.      |
| 8,024,785 | B2 | 9/2011  | Andress et al.   | 8,819,566    | B2 | 8/2014  | Mehin et al.       |
| 8,027,333 | B2 | 9/2011  | Grabelsky et al. | 8,837,360    | B1 | 9/2014  | Mishra et al.      |
| 8,041,022 | B1 | 10/2011 | Andreasen et al. | 8,838,539    | B1 | 9/2014  | Ashcraft et al.    |
| 8,050,273 | B2 | 11/2011 | Gass             | 8,848,887    | B2 | 9/2014  | Willman et al.     |
| 8,060,887 | B2 | 11/2011 | Kropivny         | 8,862,701    | B2 | 10/2014 | Havriluk           |
| 8,078,164 | B2 | 12/2011 | Ganesan          | 8,885,609    | B2 | 11/2014 | Nix                |
| 8,111,690 | B2 | 2/2012  | Hussain et al.   | 8,903,051    | B2 | 12/2014 | Li et al.          |
| 8,116,307 | B1 | 2/2012  | Thesayi et al.   | 8,903,360    | B2 | 12/2014 | Celi, Jr. et al.   |
| 8,125,982 | B2 | 2/2012  | Feuer            | 8,909,556    | B2 | 12/2014 | Huxham             |
| 8,127,005 | B2 | 2/2012  | Gutierrez        | 8,938,209    | B2 | 1/2015  | Crawford et al.    |
| 8,145,182 | B2 | 3/2012  | Rudolf et al.    | 8,938,534    | B2 | 1/2015  | Le et al.          |
| 8,161,078 | B2 | 4/2012  | Gaurav et al.    | 8,948,061    | B2 | 2/2015  | Sridhar            |
| 8,166,533 | B2 | 4/2012  | Yuan             | 8,972,612    | B2 | 3/2015  | Le et al.          |
| 8,166,547 | B2 | 4/2012  | Bevan et al.     | 8,982,719    | B2 | 3/2015  | Seetharaman et al. |
| 8,189,568 | B2 | 5/2012  | Qiu et al.       | 8,995,428    | B2 | 3/2015  | Haster             |
| 8,190,739 | B2 | 5/2012  | Gutierrez        | 9,003,306    | B2 | 4/2015  | Mehin et al.       |
| 8,200,575 | B2 | 6/2012  | Torres et al.    | 2001/0027478 | A1 | 10/2001 | Meier et al.       |
| 8,204,044 | B2 | 6/2012  | Lebizay          | 2001/0052081 | A1 | 12/2001 | McKibben et al.    |
| 8,219,115 | B1 | 7/2012  | Nelissen         | 2002/0002041 | A1 | 1/2002  | Lindgren et al.    |
| 8,223,927 | B2 | 7/2012  | Di Serio et al.  | 2002/0018445 | A1 | 2/2002  | Kobayashi          |
| 8,228,837 | B2 | 7/2012  | Sheriff et al.   | 2002/0051518 | A1 | 5/2002  | Bondy et al.       |
| 8,228,897 | B2 | 7/2012  | Mitchell         | 2002/0116464 | A1 | 8/2002  | Mak                |
| 8,243,730 | B1 | 8/2012  | Wong et al.      | 2002/0122391 | A1 | 9/2002  | Shalit             |
| 8,244,204 | B1 | 8/2012  | Chen et al.      | 2002/0141352 | A1 | 10/2002 | Fangman et al.     |
| 8,275,404 | B2 | 9/2012  | Berger et al.    | 2003/0012196 | A1 | 1/2003  | Ramakrishnan       |
| 8,300,632 | B2 | 10/2012 | Davis et al.     | 2003/0095539 | A1 | 5/2003  | Feuer              |
| 8,306,063 | B2 | 11/2012 | Erdal et al.     | 2003/0179747 | A1 | 9/2003  | Pyke et al.        |
| 8,315,521 | B2 | 11/2012 | Leiden et al.    | 2003/0200311 | A1 | 10/2003 | Baum               |
| 8,363,647 | B2 | 1/2013  | Fangman et al.   | 2003/0219103 | A1 | 11/2003 | Rao et al.         |
| 8,364,172 | B2 | 1/2013  | Guanfeng et al.  | 2004/0022237 | A1 | 2/2004  | Elliott et al.     |
| 8,396,445 | B2 | 3/2013  | Crawford et al.  | 2004/0034793 | A1 | 2/2004  | Yuan               |
| 8,410,907 | B2 | 4/2013  | Twitchell, Jr.   | 2004/0157629 | A1 | 8/2004  | Kallio et al.      |
| 8,417,791 | B1 | 4/2013  | Peretz et al.    | 2004/0165709 | A1 | 8/2004  | Pence et al.       |
| 8,422,507 | B2 | 4/2013  | Björnsell et al. | 2004/0181599 | A1 | 9/2004  | Kreusch et al.     |
| 8,423,791 | B1 | 4/2013  | Yu et al.        | 2004/0202295 | A1 | 10/2004 | Shen et al.        |
| 8,427,981 | B2 | 4/2013  | Wyss et al.      | 2004/0203565 | A1 | 10/2004 | Chin et al.        |
| 8,437,340 | B2 | 5/2013  | James            | 2004/0203582 | A1 | 10/2004 | Dorenbosch et al.  |
|           |    |         |                  | 2004/0240439 | A1 | 12/2004 | Castleberry et al. |
|           |    |         |                  | 2004/0255126 | A1 | 12/2004 | Reith              |
|           |    |         |                  | 2005/0025043 | A1 | 2/2005  | Mussman et al.     |
|           |    |         |                  | 2005/0063519 | A1 | 3/2005  | James              |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |     |         |                       |              |    |         |                    |
|--------------|-----|---------|-----------------------|--------------|----|---------|--------------------|
| 2005/0131813 | A1  | 6/2005  | Gallagher et al.      | 2009/0135724 | A1 | 5/2009  | Zhang et al.       |
| 2005/0169248 | A1  | 8/2005  | Truesdale et al.      | 2009/0135735 | A1 | 5/2009  | Zhang et al.       |
| 2005/0171898 | A1  | 8/2005  | Bishop et al.         | 2009/0141883 | A1 | 6/2009  | Bastien            |
| 2005/0174937 | A1  | 8/2005  | Scoggins et al.       | 2009/0213839 | A1 | 8/2009  | Davis et al.       |
| 2005/0177843 | A1  | 8/2005  | Williams              | 2009/0214000 | A1 | 8/2009  | Patel et al.       |
| 2005/0188081 | A1  | 8/2005  | Gibson et al.         | 2009/0268615 | A1 | 10/2009 | Pelletier          |
| 2005/0190892 | A1  | 9/2005  | Dawson et al.         | 2009/0292539 | A1 | 11/2009 | Jaroker            |
| 2005/0192897 | A1  | 9/2005  | Rogers et al.         | 2009/0296900 | A1 | 12/2009 | Breen et al.       |
| 2005/0192901 | A1  | 9/2005  | McCoy et al.          | 2009/0325558 | A1 | 12/2009 | Pridmore et al.    |
| 2005/0198499 | A1  | 9/2005  | Salapaka et al.       | 2010/0008345 | A1 | 1/2010  | Lebizay            |
| 2005/0202799 | A1  | 9/2005  | Rollender             | 2010/0039946 | A1 | 2/2010  | Imbimbo et al.     |
| 2005/0222952 | A1  | 10/2005 | Garrett et al.        | 2010/0083364 | A1 | 4/2010  | Gutierrez          |
| 2005/0267842 | A1  | 12/2005 | Weichert et al.       | 2010/0086119 | A1 | 4/2010  | De Luca et al.     |
| 2005/0287979 | A1  | 12/2005 | Rollender             | 2010/0105379 | A1 | 4/2010  | Bonner et al.      |
| 2006/0006224 | A1  | 1/2006  | Modi                  | 2010/0114896 | A1 | 5/2010  | Clark et al.       |
| 2006/0007940 | A1  | 1/2006  | Sollee et al.         | 2010/0115018 | A1 | 5/2010  | Yoon et al.        |
| 2006/0013266 | A1  | 1/2006  | Vega-Garcia et al.    | 2010/0128729 | A1 | 5/2010  | Yazaki et al.      |
| 2006/0030290 | A1  | 2/2006  | Rudolf et al.         | 2010/0142382 | A1 | 6/2010  | Jungck et al.      |
| 2006/0036522 | A1  | 2/2006  | Perham                | 2010/0150138 | A1 | 6/2010  | Björnsell et al.   |
| 2006/0072547 | A1  | 4/2006  | Florkey et al.        | 2010/0150328 | A1 | 6/2010  | Perreault et al.   |
| 2006/0072550 | A1  | 4/2006  | Davis et al.          | 2010/0172345 | A1 | 7/2010  | Björnsell et al.   |
| 2006/0078094 | A1  | 4/2006  | Breen et al.          | 2010/0177671 | A1 | 7/2010  | Qiu et al.         |
| 2006/0093135 | A1  | 5/2006  | Fiatal et al.         | 2010/0220852 | A1 | 9/2010  | Willman et al.     |
| 2006/0095320 | A1  | 5/2006  | Jones                 | 2010/0233991 | A1 | 9/2010  | Crawford et al.    |
| 2006/0111116 | A1  | 5/2006  | Palmer et al.         | 2010/0246589 | A1 | 9/2010  | Pelletier          |
| 2006/0116892 | A1  | 6/2006  | Grimes et al.         | 2010/0272242 | A1 | 10/2010 | Croy et al.        |
| 2006/0142011 | A1  | 6/2006  | Kallio                | 2010/0278534 | A1 | 11/2010 | Leiden et al.      |
| 2006/0146797 | A1  | 7/2006  | Lebizay               | 2010/0316195 | A1 | 12/2010 | Di Serio et al.    |
| 2006/0153342 | A1  | 7/2006  | Sasaki                | 2011/0013541 | A1 | 1/2011  | Croy et al.        |
| 2006/0160565 | A1  | 7/2006  | Singh et al.          | 2011/0072095 | A1 | 3/2011  | Havriluk           |
| 2006/0177035 | A1  | 8/2006  | Cope et al.           | 2011/0122827 | A1 | 5/2011  | Björnsell et al.   |
| 2006/0189303 | A1  | 8/2006  | Rollender             | 2011/0153809 | A1 | 6/2011  | Ghanem et al.      |
| 2006/0195398 | A1  | 8/2006  | Dheer et al.          | 2011/0167164 | A1 | 7/2011  | Gutierrez          |
| 2006/0205383 | A1  | 9/2006  | Rollender et al.      | 2011/0176541 | A1 | 7/2011  | James              |
| 2006/0209768 | A1  | 9/2006  | Yan et al.            | 2011/0201321 | A1 | 8/2011  | Bonner             |
| 2006/0248186 | A1  | 11/2006 | Smith                 | 2011/0208859 | A1 | 8/2011  | Gutierrez          |
| 2006/0251056 | A1  | 11/2006 | Feuer                 | 2011/0235543 | A1 | 9/2011  | Seetharaman et al. |
| 2006/0258328 | A1  | 11/2006 | Godoy                 | 2011/0255553 | A1 | 10/2011 | Bobba et al.       |
| 2006/0264200 | A1  | 11/2006 | Laiho et al.          | 2011/0261717 | A1 | 10/2011 | Akuzuwa et al.     |
| 2006/0268921 | A1  | 11/2006 | Ekstrom et al.        | 2011/0267986 | A1 | 11/2011 | Grabelsky et al.   |
| 2006/0281437 | A1  | 12/2006 | Cook                  | 2011/0273526 | A1 | 11/2011 | Mehin et al.       |
| 2007/0016524 | A1  | 1/2007  | Diveley et al.        | 2011/0276903 | A1 | 11/2011 | Mehin et al.       |
| 2007/0036143 | A1  | 2/2007  | Alt et al.            | 2011/0276904 | A1 | 11/2011 | Mehin et al.       |
| 2007/0047548 | A1  | 3/2007  | Yazaki et al.         | 2011/0292929 | A1 | 12/2011 | Haster             |
| 2007/0053382 | A1  | 3/2007  | Bevan et al.          | 2012/0014383 | A1 | 1/2012  | Geromel et al.     |
| 2007/0092070 | A1  | 4/2007  | Croy et al.           | 2012/0089717 | A1 | 4/2012  | Chen               |
| 2007/0112964 | A1  | 5/2007  | Guedalia et al.       | 2012/0096145 | A1 | 4/2012  | Le et al.          |
| 2007/0115935 | A1  | 5/2007  | Qiu et al.            | 2012/0099599 | A1 | 4/2012  | Keränen et al.     |
| 2007/0121593 | A1  | 5/2007  | Vance et al.          | 2012/0113981 | A1 | 5/2012  | Feuer              |
| 2007/0127676 | A1  | 6/2007  | Khadri                | 2012/0155333 | A1 | 6/2012  | Yoon et al.        |
| 2007/0174469 | A1  | 7/2007  | Andress et al.        | 2012/0170574 | A1 | 7/2012  | Huttunen et al.    |
| 2007/0217354 | A1* | 9/2007  | Buckley ..... 370/328 | 2012/0195236 | A1 | 8/2012  | Knight             |
| 2007/0220038 | A1  | 9/2007  | Crago                 | 2012/0195415 | A1 | 8/2012  | Wyss et al.        |
| 2007/0253418 | A1  | 11/2007 | Shiri et al.          | 2012/0227101 | A1 | 9/2012  | Yuan               |
| 2007/0253429 | A1  | 11/2007 | James                 | 2012/0250624 | A1 | 10/2012 | Lebizay            |
| 2007/0263609 | A1  | 11/2007 | Mitchell              | 2012/0259975 | A1 | 10/2012 | Le et al.          |
| 2007/0297376 | A1  | 12/2007 | Gass                  | 2012/0270554 | A1 | 10/2012 | Hellwig et al.     |
| 2008/0013523 | A1  | 1/2008  | Nambakkam             | 2012/0282881 | A1 | 11/2012 | Mitchell           |
| 2008/0037715 | A1  | 2/2008  | Prozeniuk et al.      | 2012/0314699 | A1 | 12/2012 | Qiu et al.         |
| 2008/0056235 | A1  | 3/2008  | Albina et al.         | 2013/0039226 | A1 | 2/2013  | Sridhar            |
| 2008/0056243 | A1  | 3/2008  | Roy et al.            | 2013/0097308 | A1 | 4/2013  | Le et al.          |
| 2008/0056302 | A1  | 3/2008  | Erdal et al.          | 2013/0114589 | A1 | 5/2013  | Fangman et al.     |
| 2008/0063153 | A1  | 3/2008  | Krivorot et al.       | 2013/0128879 | A1 | 5/2013  | Kyle               |
| 2008/0166999 | A1  | 7/2008  | Guedalia et al.       | 2013/0148549 | A1 | 6/2013  | Crawford et al.    |
| 2008/0167019 | A1  | 7/2008  | Guedalia et al.       | 2013/0173534 | A1 | 7/2013  | Nelakonda et al.   |
| 2008/0167020 | A1  | 7/2008  | Guedalia et al.       | 2013/0223276 | A1 | 8/2013  | Padgett            |
| 2008/0167039 | A1  | 7/2008  | Guedalia et al.       | 2013/0229950 | A1 | 9/2013  | Björnsell et al.   |
| 2008/0187122 | A1  | 8/2008  | Baker                 | 2013/0237198 | A1 | 9/2013  | Vashi et al.       |
| 2008/0188198 | A1  | 8/2008  | Patel et al.          | 2013/0254301 | A1 | 9/2013  | Lin et al.         |
| 2008/0188227 | A1  | 8/2008  | Guedalia et al.       | 2013/0272297 | A1 | 10/2013 | Breen et al.       |
| 2008/0205378 | A1  | 8/2008  | Wyss et al.           | 2013/0281147 | A1 | 10/2013 | Denman et al.      |
| 2008/0310599 | A1  | 12/2008 | Purnadi et al.        | 2013/0287006 | A1 | 10/2013 | Nix                |
| 2009/0003535 | A1  | 1/2009  | Grabelsky et al.      | 2013/0310002 | A1 | 11/2013 | Celi, Jr. et al.   |
|              |     |         |                       | 2013/0318166 | A1 | 11/2013 | Jungck et al.      |
|              |     |         |                       | 2013/0329864 | A1 | 12/2013 | Björnsell et al.   |
|              |     |         |                       | 2014/0010119 | A1 | 1/2014  | Björnsell et al.   |
|              |     |         |                       | 2014/0016764 | A1 | 1/2014  | Björnsell et al.   |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

2014/0141884 A1 5/2014 Kropivny  
 2014/0153477 A1 6/2014 Huttunen et al.  
 2014/0211789 A1 7/2014 Feuer  
 2014/0215642 A1 7/2014 Huxham  
 2014/0220944 A1 8/2014 Balasubramanian  
 2014/0244393 A1 8/2014 Rimmer et al.  
 2014/0247730 A1 9/2014 Thota et al.  
 2014/0269624 A1 9/2014 Khay-Ibbat et al.  
 2014/0307858 A1 10/2014 Li et al.  
 2014/0321333 A1 10/2014 Björnsell et al.  
 2014/0324969 A1 10/2014 Riddle  
 2014/0337961 A1 11/2014 Chien et al.  
 2014/0337962 A1 11/2014 Brandstatter  
 2014/0349602 A1 11/2014 Majumdar et al.

## FOREIGN PATENT DOCUMENTS

CA 2 218 218 A1 10/1997  
 CA 2249668 4/1999  
 CA 2 299 037 A1 8/2000  
 CA 2 437 275 A1 10/2002  
 CA 2598200 A1 2/2008  
 CA 2668025 A1 5/2008  
 CA 2670510 A1 6/2008  
 CA 2681984 A1 10/2008  
 CA 2 690 236 A1 12/2008  
 CA 2 659 007 A1 9/2009  
 CA 2732148 A1 2/2010  
 CA 2 778 905 A1 8/2010  
 CA 2812174 A1 3/2011  
 CN 1498029 A 5/2004  
 CN 1498482 A 5/2004  
 CN 1668137 A 9/2005  
 CN 1274114 C 9/2006  
 CN 101005503 A 7/2007  
 CN 101069390 A 11/2007  
 CN 101095329 A 12/2007  
 CN 101584150 A 11/2009  
 CN 101584166 A 11/2009  
 CN 101605342 A 12/2009  
 CN 1498029 B 5/2010  
 CN 101772929 A 7/2010  
 CN 101069390 B 12/2010  
 CN 102137024 A 7/2011  
 CN 102457494 A 5/2012  
 CN 102484656 A 5/2012  
 CN 102572123 A 7/2012  
 CN 101095329 B 10/2012  
 CN 101605342 B 12/2012  
 CN 102833232 A 12/2012  
 CN 101005503 B 1/2013  
 CN 101772929 B 7/2014  
 CN 102457494 B 10/2014  
 DE 602 01 827 T2 11/2005  
 DE 11 2005 003 306 T5 1/2008  
 DE 601 33 316 T2 7/2008  
 DE 603 17 751 T2 11/2008  
 EP 0 841 832 A2 5/1998  
 EP 0 841 832 A3 5/1999  
 EP 1 032 224 A2 8/2000  
 EP 1 032 224 A3 8/2000  
 EP 1 244 250 A1 9/2002  
 EP 1 266 516 A2 12/2002  
 EP 1 362 456 A2 11/2003  
 EP 1 371 173 A1 12/2003  
 EP 1 389 862 A1 2/2004  
 EP 1 411 743 A1 4/2004  
 EP 1 389 862 B1 11/2004  
 EP 1 526 697 A2 4/2005  
 EP 1 362 456 A4 5/2005  
 EP 1 575 327 A1 9/2005  
 EP 1 610 583 A1 12/2005

EP 1 829 300 A1 9/2007  
 EP 1 371 173 B1 11/2007  
 EP 1 411 743 B1 11/2007  
 EP 1 362 456 B1 3/2008  
 EP 1 974 304 A2 10/2008  
 EP 1 974 304 A4 10/2008  
 EP 1 610 583 B1 8/2009  
 EP 2 084 868 8/2009  
 EP 2 090 024 8/2009  
 EP 2 127 232 A1 12/2009  
 EP 2 165 489 A1 3/2010  
 EP 2 215 755 A1 8/2010  
 EP 2 227 048 A1 9/2010  
 EP 2 127 232 A4 3/2011  
 EP 2 165 489 A4 3/2011  
 EP 2 311 292 4/2011  
 EP 1 829 300 A4 5/2012  
 EP 2 449 749 A1 5/2012  
 EP 2 478 678 7/2012  
 EP 2 215 755 A4 10/2012  
 EP 1 829 300 B1 11/2012  
 EP 2 449 749 B1 3/2014  
 EP 1 266 516 B1 5/2014  
 ID W002008/116296 9/2009  
 IN 24/2009 6/2009  
 IN 29/2009 7/2009  
 JP 2011-199384 A 10/2011  
 KR 10-2009-0086428 A 8/2009  
 KR 10-2009-0095621 A 9/2009  
 MX 2009004811 A 8/2009  
 MX 2009005751 A 8/2009  
 SG 151991 A1 6/2009  
 SG 152752 A1 6/2009  
 SG 155474 10/2009  
 WO WO 01/50693 A1 7/2001  
 WO WO 01/69899 A2 9/2001  
 WO WO 01/69899 A3 9/2001  
 WO WO 01/80587 A1 10/2001  
 WO WO 01/89145 A2 11/2001  
 WO WO 02/082728 A1 10/2002  
 WO WO 02/082782 A2 10/2002  
 WO WO 02/082782 A3 10/2002  
 WO WO 03/027801 A2 4/2003  
 WO WO 2005/084002 A1 9/2005  
 WO WO 2006/067269 A1 6/2006  
 WO WO 2006/072099 A1 7/2006  
 WO WO 2006/078175 A2 7/2006  
 WO WO 2006/078175 A3 7/2006  
 WO WO 2007/044454 A2 4/2007  
 WO WO 2007/056158 A2 5/2007  
 WO WO 2007/087077 A2 8/2007  
 WO WO 2007/087077 A3 8/2007  
 WO WO 2008/027065 A1 3/2008  
 WO WO 2008/052340 A1 5/2008  
 WO WO 2008/064481 A1 6/2008  
 WO WO 2008/085614 A2 7/2008  
 WO WO 2008/085614 A3 7/2008  
 WO WO 2008/086350 A2 7/2008  
 WO WO 2008/086350 A3 7/2008  
 WO WO 2008/103652 A1 8/2008  
 WO WO 2008/116296 A1 10/2008  
 WO WO 2008/085614 A8 12/2008  
 WO WO 2008/151406 A1 12/2008  
 WO WO 2008/151406 A8 12/2008  
 WO WO 2009/070202 A1 6/2009  
 WO WO 2009/070278 A1 6/2009  
 WO WO 2010/012090 A2 2/2010  
 WO WO 2011/000405 A1 1/2011  
 WO WO 2011/032256 A1 3/2011  
 WO WO 2013/013189 A2 1/2013  
 WO WO 2013/120069 A1 8/2013  
 WO WO 2014/066155 A2 5/2014  
 WO WO 2014/117599 A1 8/2014  
 WO WO 2014-166258 A1 10/2014

## OTHER PUBLICATIONS



# 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.