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## (54) VOICE CONFERENCE CALL USING PSTN AND INTERNET NETWORKS

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This patent is subject to a terminal dis-

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- (60) Provisional application No. 60/453,307, filed on Mar. 10, 2003.
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(56) References Cited

## U.S. PATENT DOCUMENTS

5,805,805 A 9/1998 Civanlar et al. 6,041,166 A 3/2000 Hart et al.

(Continued)

## FOREIGN PATENT DOCUMENTS

WO WO 01/91397 A2 11/2001 WO WO 02/098063 A1 12/2002 WO WO 03003665 A1 1/2003

# OTHER PUBLICATIONS

Higgins, L. et al., "Tunneling Multicast Traffic Through Non-Multicast Aware Networks and Encryption Devices," MILCOM 2001. Proceedings. Communications for Network-Centric Operations: Creating the Information Force, McLean, VA Oct. 28-30, 2001; IEEE Military Communications Conference, New York, NY: IEEE, US, vol. 1 of 2, Oct. 28, 2001, pp. 296-300.

(Continued)

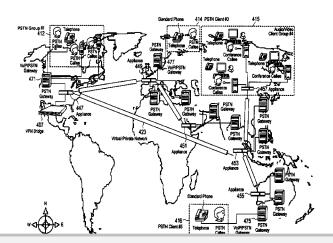
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(57) ABSTRACT

A system and method for supporting a multi-participant voice conference call using PSTN and Internet networks is described. The method for supporting a multi-participant voice conference call includes receiving voice from a PSTN client. The method also includes receiving voice data from a moderator and from at least one remote client connected to the Internet. The method then proceeds to mix the voice data from the PSTN client with the voice data from the moderator into a first mixed voice data that is transmitted to the remote client that is connected to the Internet. The method also mixes the voice data from the moderator with the voice data from the remote client connected to the Internet into a second mixed voice data that is transmitted to the PSTN client.

# 12 Claims, 6 Drawing Sheets





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` ′	CPC H04L29/06027 (2013.01); H04L 65/1009			
	(2013.01); <b>H04L 65/4038</b> (2013.01); <b>H04M</b> 3/567 (2013.01); <b>H04M</b> 7/1225 (2013.01); <b>H04N</b> 7/15 (2013.01); <b>H04M</b> 7/009 (2013.01);			
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#### (56)References Cited

### U.S. PATENT DOCUMENTS

6.047.225		4/2000	T : 4 1
6,047,325		4/2000	Jain et al.
6,298,062		10/2001	Gardell
6,526,056		2/2003	Rekhter et al.
	B1	10/2003	Wiget et al.
6,728,358		4/2004	Kwan 370/260
6,751,477		6/2004	Alperovich et al.
6,778,531	B1	8/2004	Kodialam et al.
, ,	B1	9/2004	Hurren et al.
6,870,842		3/2005	Caronni et al.
6,977,929		12/2005	Caronni et al.
, ,	B2	12/2005	Boundy
7,203,957		4/2007	Balissat et al.
7,281,058		10/2007	Shepherd et al.
7,330,468	В1	2/2008	Tse-Au
7,339,929	B2	3/2008	Zelig
7,366,894	B1	4/2008	Kalimuthu et al.
7,444,425	B2	10/2008	Lehmann et al.
7,447,203	B2	11/2008	Chen et al.
7,447,901	B1	11/2008	Sullenberger et al.
7,461,157	B2	12/2008	Ahlard
7,562,386	B2	7/2009	Balissat et al.
7,564,834	B1 *	7/2009	Suder et al 370/352
7,570,648	B2	8/2009	Hu et al.
7,653,192	B1	1/2010	Sylvain
7,664,056	B2	2/2010	Dye
7,724,744	B2	5/2010	Shur et al.
7,830,787	B1	11/2010	Wijnands et al.
8,339,997	B2	12/2012	Dye
8,477,778	B2	7/2013	Lehmann et al.
2002/0016926	$\mathbf{A}1$	2/2002	Nguyen
2002/0029350	A1	3/2002	Cooper et al.
2003/0110288	A1	6/2003	Ramanujan et al.
2003/0137976	Al	7/2003	Zhu et al.
2003/0147392	A1	8/2003	Hayashi et al.
2003/0235338	A1	12/2003	Dye
	A1	2/2004	Dye
2006/0039388		2/2006	Shur et al.
2010/0228879		9/2010	Wiget et al.
2011/0043601	A1	2/2011	Dye
2013/0162754		6/2013	Dye
		5, 2015	- , -

# OTHER PUBLICATIONS

International Search Report, International Application No. PCT/ US2004/007341, mailed Sep. 7, 2004.

International Telecommunications Union Recommendation H.323, Titled "Packet Based Multimedia Communication System," Nov. 2000, 258 pages.

International Telecommunications Union Recommendation H.261, Titled "Video Codec for Audio Visual Services at Px64 kbps," Mar. 1993, 29 pages.

International Telecommunications Untion Recommendation H.263, Titled "Video Coding for Low Bit-Rate Communications," Feb. 1998, 167 pages.

U.S. Appl. No. 14/590,791, filed Jan. 2015, Dye.

VPN Multicast Technologies LLC v. Dimension Data North America, Inc., Dimension Data Holdings PLC, and Dimension Data, LLC; Complaint; Case No. 2:14-cv-1014; Oct. 31, 2014; 8 pages.

VPN Multicast Technologies LLC v. AT&T Inc. and AT&T Corporation; VPN Multicast Technologies LLC v. Dimension Data North America, Inc., Dimension Data Holdings PLC, and Dimension Data, LLC; Dimension Data North America, Inc.'s Answer and Affirmative Defenses to Plaintiff's First Amended Complaint; Case Nos. 2:14cv-1013 and 2:14-cv-1014; Jan. 29, 2015; 15 pages.

VPN Multicast Technologies LLC v. AT&T Corp.; VPN Multicast Technologies LLC v. Dimension Data North America, Inc., et al., Plaintiff's Responses to Defendants' First Set of Common Interrogatories to VPN Multicast Technologies LLC, Case Nos. 2:14-cv-1013 and 2:14-cv-1014, Apr. 14, 2015, 28 pgs.

VPN Multicast Technologies LLC v. AT&T Corp.; VPN Multicast Technologies LLC v. Dimension Data North America, Inc., et al.; Defendants' Invalidity Contentions including Appendix A and Claim Charts; Case Nos. 2:14-cv-1013 and 2:14-cv-1014; Apr. 16, 2015; 2,274 pages.

VPN Multicast Technologies LLC v. AT&T Corp.; VPN Multicast Technologies LLC v. Dimension Data North America, Inc., et al.; AT&T's Objections and Responses to VPN's First Set of Common Interrogatories; Case Nos. 2:14-cv-1013 and 2:14-cv-1014; Apr. 23, 2015; 20 pages.

Alchaal et al., "Offering a Multicast Delivery Service in a Programmable Secure IP VPN Environment," Fourth International Workshop on Networked Group Communication (NGC '02), 2002, 6 pgs.

Bokun et al., "The MECCANO Internet Multimedia Conferencing Architecture," Multimedia Education and Conferencing Collaboration over ATM Networks and Others (MECCANO), Ver. 3.1.2, Dec. 1999, 67 pgs.

Cisco Systems, Inc., "Multicast VPN Design Guide-Cisco Systems," Aug. 9, 2003, 25 pgs.

Cisco Systems, Inc., "Multicast VPN-IP Multicast Support for MPLS VPNs," 2002, 86 pgs.

Cisco Systems, Inc., "Networkers: Multicast Support for MPLS/BGP VPNs: RST-322," cisco.com, 2001, 89 pgs.

Comer, "Internetworking with TCP/IP vol. I: Principles, Protocols, and Architecture," Third Edition, Mar. 1995, 628 pgs.

Costa et al., "An Introduction to Virtual Private Networks: Towards D-VPNs," Network and Information Systems Journal, vol. 2, Jun. 2000, 20 pgs.

Eriksson, "MBONE: The Multicast Backbone," ACM Communications of the ACM 37, Aug. 8, 1994, pp. 54-60, 11 pgs.

Finlayson, "The UDP Multicast Tunneling Protocol," Network Working Group, Internet Draft, Nov. 19, 1997, 6 pgs.

Higgins, L. et al. "Tunneling Multicast Traffic Through Non-Multicast A ware Networks and Encryption Devices," MILCOM 2001. Proceedings. Communications for Network-Centric Operations: Creating the Information Force. McLean, VA Oct. 28-30, 2001: IEEE Military Communications Conference. New York, NY: IEEE, US. vol. 1 of 2, Oct. 28, 2001. pp. 296-300.

Kent et al., "Security Architecure for the Internet Protocol," Network Working Group, Request for Comments: 2401, Obsoletes: 1825, Category: Standards Track, Nov. 1998, 61 pgs.

Kirstein et al., "The RadioActive Networking Architecture," IEEE, DARPA Active Networks Conference and Exposition, 2002. Proceedings, May 2002, 16 pgs.

Kumar, "MBone: Interactive Multimedia on the Internet," New Riders Publishing, 1996, 242 pgs.

Labonte et al., "Group Management Strategies for Secure Multicasting on Active Virtual Private Networks," IEEE, 25th annual IEEE Conference on Local Computer Networks, pp. 213-222, Nov. 2000, 10 pgs.

Lamaster et al., "Internet technologies and requirements for telemedicine," Minimally Invasive Therapy and Allied Technologies 1997, vol. 8, No. 5-6, pp. 436-443, 1997, 8 pgs.

Macedonia et al., "MBone Provides Audio and Video Across the



# US 9,253,332 B2

Page 3

#### (56)**References Cited**

# OTHER PUBLICATIONS

Rosen et al., "Multicast in MPLS/BGP VPNs," Network Working Group, Internet Draft, Nov. 2000, 17 pgs.
Savetz et al., "MBONE: Multicasting Tomorrow's Internet," IDG Books Worldwide, Inc., 1996, 259 pgs.

Waitzman et al., "Distance Vector Multicast Routing Protocol," Networks Working Group, Request For Comments: 1075, Nov. 1988, 24

pgs.
Wittmann et al., "Multicast Communication: Protocols and Applications," Morgan Kaufmann Publishers, 1999, 362 pgs.

\* cited by examiner



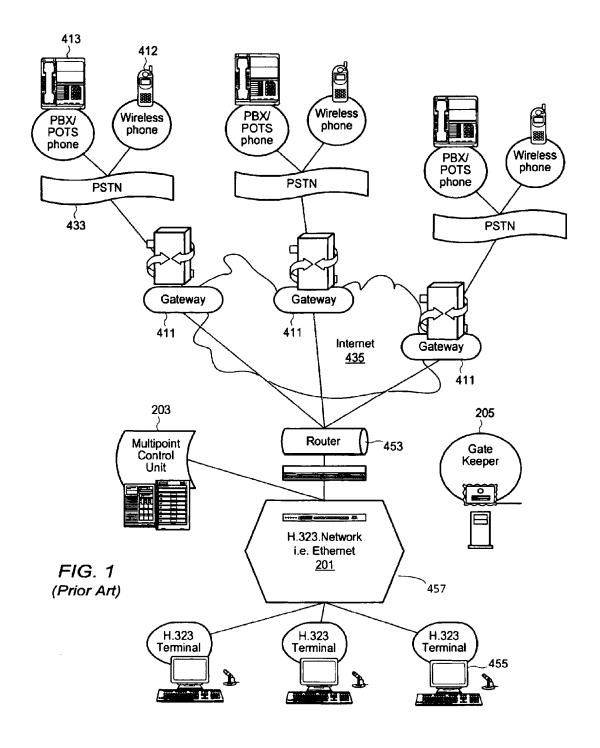




FIG. 2 (Prior Art) **5**0 T.120 Data 225 Collaboration Data I/O H.245 Control Signaling H.225.0 Q.931 Call Signaling Transport protocol and network interface  $\overline{300}$ System Control Unit 459 H.225.0 RAS 219 RTCP 217 Video I/O 451 Real-Time Network Protocol Video Codec 213 (RTP) <u>215</u> Audio I/O <u>452</u> Audio Codec G.7xx H.323 Protocol Stack



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