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Social media queue across multiple streaming media services

Abstract

A system that facilitates sharing of multimedia content includes a user interface, network circuitry; and one or more processors. The processors perform operations that include displaying, via the user interface, a list of one or more media playback devices available to be added to a social networking group. A selection of first and second media playback devices to be associated with a particular social networking group is received via the user interface. The first media playback device is associated with a first playback queue that specifies a first set of media items associated with first media content that can be streamed from a first streaming service to the first media playback device. An indication to the social networking system that specifies the selection of the first and second media playback devices to be associated with the group is communicated via the network circuitry. In response, the social networking system communicates second media content items associated with the first media content items to a second playback queue associated with the second media playback device. The second playback items facilitate streaming of second media content associated with the first media content from a second streaming service to the second media playback device.

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References Cited

U.S. PATENT DOCUMENTS

Patent No.	Issued Date	Patentee Name	U.S. Cl.	CPC
4296278	12/1980	Cullison et al.	N/A	N/A
4816989	12/1988	Finn et al.	N/A	N/A
5182552	12/1992	Paynting	N/A	N/A
5239458	12/1992	Suzuki	N/A	N/A
5299266	12/1993	Lumsden	N/A	N/A
5406634	12/1994	Anderson et al.	N/A	N/A
5440644	12/1994	Farinelli et al.	N/A	N/A
5467342	12/1994	Logston et al.	N/A	N/A
5491839	12/1995	Schotz	N/A	N/A
5553222	12/1995	Milne et al.	N/A	N/A
5563946	12/1995	Cooper et al.	N/A	N/A
5668884	12/1996	Clair, Jr. et al.	N/A	N/A
5673323	12/1996	Schotz et al.	N/A	N/A
5751819	12/1997	Dorrough	N/A	N/A
5761320	12/1997	Farinelli et al.	N/A	N/A
5774666	12/1997	Portuesi	N/A	N/A
5808662	12/1997	Kinney et al.	N/A	N/A
5815689	12/1997	Shaw et al.	N/A	N/A
5856827	12/1998	Sudo	N/A	N/A
5867691	12/1998	Shiraishi	N/A	N/A
5875354	12/1998	Charlton et al.	N/A	N/A
5887143	12/1998	Saito et al.	N/A	N/A

5923902	12/1998	Inagaki	N/A	N/A
5946343	12/1998	Schotz et al.	N/A	N/A
5956088	12/1998	Shen et al.	N/A	N/A
6002862	12/1998	Takaike	N/A	N/A
6009457	12/1998	Moller	N/A	N/A
6026150	12/1999	Frank et al.	N/A	N/A
6031818	12/1999	Lo et al.	N/A	N/A
6032202	12/1999	Lea et al.	N/A	N/A
6108686	12/1999	Williams, Jr.	N/A	N/A
6128318	12/1999	Sato	N/A	N/A
6157957	12/1999	Berthaud	N/A	N/A
6175872	12/2000	Neumann et al.	N/A	N/A
6181316	12/2000	Little et al.	N/A	N/A
6185737	12/2000	Northcutt et al.	N/A	N/A
6195436	12/2000	Scibora et al.	N/A	N/A
6199169	12/2000	Voth	N/A	N/A
6255961	12/2000	Van Ryzin et al.	N/A	N/A
6256554	12/2000	DiLorenzo	N/A	N/A
6308207	12/2000	Tseng et al.	N/A	N/A
6324586	12/2000	Johnson	N/A	N/A
6332147	12/2000	Moran et al.	N/A	N/A
6349339	12/2001	Williams	N/A	N/A
6351821	12/2001	Voth	N/A	N/A
6404811	12/2001	Cvetko et al.	N/A	N/A
6430353	12/2001	Honda et al.	N/A	N/A
6469633	12/2001	Wachter	N/A	N/A
6487296	12/2001	Allen et al.	N/A	N/A
6522886	12/2002	Youngs et al.	N/A	N/A
6526325	12/2002	Sussman et al.	N/A	N/A
6587127	12/2002	Leeke et al.	N/A	N/A
6594691	12/2002	McCollum et al.	N/A	N/A
6598172	12/2002	Vandeusen et al.	N/A	N/A
6611537	12/2002	Edens et al.	N/A	N/A
6631410	12/2002	Kowalski et al.	N/A	N/A
6674803	12/2003	Kesselring	N/A	N/A
6728531	12/2003	Lee et al.	N/A	N/A
6732155	12/2003	Meek	N/A	N/A
6757517	12/2003	Chang	N/A	N/A
6778869	12/2003	Champion	N/A	N/A
6826283	12/2003	Wheeler et al.	N/A	N/A
6836788	12/2003	Kim et al.	N/A	N/A
6898642	12/2004	Chafle et al.	N/A	N/A
6912610	12/2004	Spencer	N/A	N/A
6920373	12/2004	Xi et al.	N/A	N/A
6934766	12/2004	Russell	N/A	N/A
6985694	12/2005	De Bonet et al.	N/A	N/A
7007106	12/2005	Flood et al.	N/A	N/A
7017118	12/2005	Carroll	N/A	N/A
7020048	12/2005	McComas	N/A	N/A
7020791	12/2005	Aweya et al.	N/A	N/A

7043651	12/2005	Aweya et al.	N/A	N/A
7047308	12/2005	Deshpande	N/A	N/A
7113833	12/2005	Brown et al.	N/A	N/A
7113999	12/2005	Pestoni et al.	N/A	N/A
7115017	12/2005	Laursen et al.	N/A	N/A
7117451	12/2005	Sielken	N/A	N/A
7124125	12/2005	Cook et al.	N/A	N/A
7130608	12/2005	Hollstrom et al.	N/A	N/A
7130616	12/2005	Janik	N/A	N/A
7143141	12/2005	Morgan et al.	N/A	N/A
7143939	12/2005	Henzerling	N/A	N/A
7162315	12/2006	Gilbert	N/A	N/A
7185090	12/2006	Kowalski et al.	N/A	N/A
7187947	12/2006	White et al.	N/A	N/A
7206367	12/2006	Moore	N/A	N/A
7209795	12/2006	Sullivan et al.	N/A	N/A
7218708	12/2006	Berezowski et al.	N/A	N/A
7236739	12/2006	Chang	N/A	N/A
7236773	12/2006	Thomas	N/A	N/A
7281034	12/2006	Eyal	N/A	N/A
7293060	12/2006	Komsi	N/A	N/A
7295548	12/2006	Blank et al.	N/A	N/A
7302468	12/2006	Wijeratne	N/A	N/A
7312785	12/2006	Tsuk et al.	N/A	N/A
7324857	12/2007	Goddard	N/A	N/A
7333519	12/2007	Sullivan et al.	N/A	N/A
7358960	12/2007	Mak	N/A	N/A
7372846	12/2007	Zwack	N/A	N/A
7391791	12/2007	Balassanian et al.	N/A	N/A
7392102	12/2007	Sullivan et al.	N/A	N/A
7483538	12/2008	McCarty et al.	N/A	N/A
7483958	12/2008	Elabbady et al.	N/A	N/A
7496623	12/2008	Szeto et al.	N/A	N/A
7496633	12/2008	Szeto et al.	N/A	N/A
7571014	12/2008	Lambourne et al.	N/A	N/A
7574274	12/2008	Holmes	N/A	N/A
7599685	12/2008	Goldberg et al.	N/A	N/A
7630501	12/2008	Blank et al.	N/A	N/A
7643894	12/2009	Braithwaite et al.	N/A	N/A
7657224	12/2009	Goldberg et al.	N/A	N/A
7657644	12/2009	Zheng	N/A	N/A
7657910	12/2009	McAulay et al.	N/A	N/A
7668990	12/2009	Krzyzanowski et al.	N/A	N/A
7669219	12/2009	Scott, III et al.	N/A	N/A
7675943	12/2009	Mosig et al.	N/A	N/A
7676142	12/2009	Hung	N/A	N/A
7702279	12/2009	Ko et al.	N/A	N/A
7720096	12/2009	Klemets	N/A	N/A
7725533	12/2009	Szeto et al.	N/A	N/A

7725551	12/2009	Szeto et al.	N/A	N/A
7739271	12/2009	Cook et al.	N/A	N/A
7742740	12/2009	Goldberg et al.	N/A	N/A
7788138	12/2009	Viehmann et al.	N/A	N/A
7805682	12/2009	Lambourne	N/A	N/A
7835689	12/2009	Goldberg et al.	N/A	N/A
7853341	12/2009	McCarty et al.	N/A	N/A
7865137	12/2010	Goldberg et al.	N/A	N/A
7885622	12/2010	Krampf et al.	N/A	N/A
7916877	12/2010	Goldberg et al.	N/A	N/A
7917082	12/2010	Goldberg et al.	N/A	N/A
7921369	12/2010	Bill	N/A	N/A
7934239	12/2010	Dagman	N/A	N/A
7987294	12/2010	Bryce et al.	N/A	N/A
7996566	12/2010	Sylvain et al.	N/A	N/A
8014423	12/2010	Thaler et al.	N/A	N/A
8023663	12/2010	Goldberg	N/A	N/A
8028038	12/2010	Weel	N/A	N/A
8028323	12/2010	Weel	N/A	N/A
8045952	12/2010	Qureshey et al.	N/A	N/A
8050652	12/2010	Qureshey et al.	N/A	N/A
8074253	12/2010	Nathan	N/A	N/A
8086752	12/2010	Millington et al.	N/A	N/A
8103009	12/2011	McCarty et al.	N/A	N/A
8112032	12/2011	Ko et al.	N/A	N/A
8131390	12/2011	Braithwaite et al.	N/A	N/A
8169938	12/2011	Duchscher et al.	N/A	N/A
8200602	12/2011	Farrelly	N/A	N/A
8214873	12/2011	Weel	N/A	N/A
8230099	12/2011	Weel	N/A	N/A
8234395	12/2011	Millington	N/A	N/A
8271115	12/2011	Yoshida	N/A	N/A
8290603	12/2011	Lambourne	N/A	N/A
8315555	12/2011	Ko et al.	N/A	N/A
8370678	12/2012	Millington et al.	N/A	N/A
8423659	12/2012	Millington	N/A	N/A
8483853	12/2012	Lambourne	N/A	N/A
8521316	12/2012	Louboutin	N/A	N/A
8588949	12/2012	Lambourne et al.	N/A	N/A
8613385	12/2012	Hulet et al.	N/A	N/A
8666826	12/2013	Narayanan et al.	N/A	N/A
8775546	12/2013	Millington	N/A	N/A
8826135	12/2013	Durham et al.	N/A	N/A
8843500	12/2013	Nogues et al.	N/A	N/A
8892648	12/2013	Durham et al.	N/A	N/A
8910265	12/2013	Lang et al.	N/A	N/A
8942252	12/2014	Balassanian et al.	N/A	N/A
8990701	12/2014	Olofsson	N/A	N/A
9015588	12/2014	Cassidy	N/A	N/A
9052810	12/2014	Reimann et al.	N/A	N/A

9137564	12/2014	Reimann	N/A	N/A
9165255	12/2014	Shetty et al.	N/A	N/A
9229938	12/2015	Jaini et al.	N/A	N/A
9246866	12/2015	Sanders	N/A	N/A
9247363	12/2015	Triplett et al.	N/A	N/A
9286384	12/2015	Kuper et al.	N/A	N/A
9344292	12/2015	Griffiths et al.	N/A	N/A
9374607	12/2015	Bates et al.	N/A	N/A
9411809	12/2015	Sabbavarapu et al.	N/A	N/A
9478247	12/2015	Chen et al.	N/A	N/A
9489383	12/2015	Hyman et al.	N/A	N/A
9510055	12/2015	Kuper et al.	N/A	N/A
9524338	12/2015	Van Der Heide et al.	N/A	N/A
9654821	12/2016	Coburn, IV et al.	N/A	N/A
9665339	12/2016	Reimann et al.	N/A	N/A
9674587	12/2016	Triplett et al.	N/A	N/A
9680960	12/2016	Chen et al.	N/A	N/A
9696874	12/2016	Kulick et al.	N/A	N/A
9703521	12/2016	Kumar et al.	N/A	N/A
9715500	12/2016	Cue et al.	N/A	N/A
9727219	12/2016	Kumar et al.	N/A	N/A
9735978	12/2016	Kumar et al.	N/A	N/A
9756092	12/2016	Zhang et al.	N/A	N/A
9892118	12/2017	Kumar et al.	N/A	N/A
9942335	12/2017	Schneider et al.	N/A	N/A
9977561	12/2017	Bates et al.	N/A	N/A
10032233	12/2017	Papakipos et al.	N/A	N/A
10129599	12/2017	Van Der Heide	N/A	N/A
10157033	12/2017	Millington	N/A	N/A
10268352	12/2018	Coburn, IV et al.	N/A	N/A
10275135	12/2018	Coburn, IV et al.	N/A	N/A
10296884	12/2018	Lang et al.	N/A	N/A
10313761	12/2018	Alsina et al.	N/A	N/A
10469897	12/2018	Reimann et al.	N/A	N/A
2001/0009604	12/2000	Ando et al.	N/A	N/A
2001/0022823	12/2000	Renaud	N/A	N/A
2001/0032188	12/2000	Miyabe et al.	N/A	N/A
2001/0042107	12/2000	Palm	N/A	N/A
2002/0002039	12/2001	Qureshey et al.	N/A	N/A
2002/0002562	12/2001	Moran et al.	N/A	N/A
2002/0003548	12/2001	Krusche et al.	N/A	N/A
2002/0022453	12/2001	Balog et al.	N/A	N/A
2002/0026442	12/2001	Lipscomb et al.	N/A	N/A
2002/0034374	12/2001	Barton	N/A	N/A
2002/0042844	12/2001	Chiazzese	N/A	N/A
2002/0049843	12/2001	Barone et al.	N/A	N/A
2002/0054134	12/2001	Kelts et al.	N/A	N/A
2002/0056117	12/2001	Hasegawa et al.	N/A	N/A
2002/0065926	12/2001	Hackney et al.	N/A	N/A

2002/0072816	12/2001	Shdema et al.	N/A	N/A
2002/0073228	12/2001	Cognet et al.	N/A	N/A
2002/0090914	12/2001	Kang et al.	N/A	N/A
2002/0093478	12/2001	Yeh	N/A	N/A
2002/0109710	12/2001	Holtz et al.	N/A	N/A
2002/0112244	12/2001	Liou et al.	N/A	N/A
2002/0116476	12/2001	Eyal et al.	N/A	N/A
2002/0124097	12/2001	Isely et al.	N/A	N/A
2002/0129156	12/2001	Yoshikawa	N/A	N/A
2002/0143998	12/2001	Rajagopal et al.	N/A	N/A
2002/0163361	12/2001	Parkin	N/A	N/A
2002/0165921	12/2001	Sapieyevski	N/A	N/A
2002/0178191	12/2001	Sielken	N/A	N/A
2002/0188762	12/2001	Tomassetti et al.	N/A	N/A
2003/0002609	12/2002	Faller et al.	N/A	N/A
2003/0020763	12/2002	Mayer et al.	N/A	N/A
2003/0023741	12/2002	Tomassetti et al.	N/A	N/A
2003/0035444	12/2002	Zwack	N/A	N/A
2003/0041173	12/2002	Hoyle	N/A	N/A
2003/0041174	12/2002	Wen et al.	N/A	N/A
2003/0043924	12/2002	Haddad et al.	N/A	N/A
2003/0066094	12/2002	Van Der Schaar et al.	N/A	N/A
2003/0088875	12/2002	Gay et al.	N/A	N/A
2003/0099212	12/2002	Anjum et al.	N/A	N/A
2003/0099221	12/2002	Rhee	N/A	N/A
2003/0105820	12/2002	Haims et al.	N/A	N/A
2003/0126211	12/2002	Anttila et al.	N/A	N/A
2003/0157951	12/2002	Hasty, Jr.	N/A	N/A
2003/0195964	12/2002	Mane	N/A	N/A
2003/0198257	12/2002	Sullivan et al.	N/A	N/A
2003/0210796	12/2002	McCarty et al.	N/A	N/A
2003/0220973	12/2002	Zhu et al.	N/A	N/A
2003/0231871	12/2002	Ushimaru	N/A	N/A
2003/0235304	12/2002	Evans et al.	N/A	N/A
2004/0001484	12/2003	Ozguner	N/A	N/A
2004/0001591	12/2003	Mani et al.	N/A	N/A
2004/0008852	12/2003	Also et al.	N/A	N/A
2004/0010727	12/2003	Fujinami	N/A	N/A
2004/0015252	12/2003	Aiso et al.	N/A	N/A
2004/0024478	12/2003	Hans et al.	N/A	N/A
2004/0024925	12/2003	Cypher et al.	N/A	N/A
2004/0025185	12/2003	Goci et al.	N/A	N/A
2004/0027166	12/2003	Mangum et al.	N/A	N/A
2004/0032348	12/2003	Lai et al.	N/A	N/A
2004/0066736	12/2003	Kroeger	N/A	N/A
2004/0075767	12/2003	Neuman et al.	N/A	N/A
2004/0078383	12/2003	Mercer et al.	N/A	N/A
2004/0078812	12/2003	Calvert	N/A	N/A
2004/0088328	12/2003	Cook et al.	N/A	N/A

2004/0131192	12/2003	Metcalfe	N/A	N/A
2004/0170383	12/2003	Mazur	N/A	N/A
2004/0203378	12/2003	Powers	N/A	N/A
2004/0215611	12/2003	Jawa et al.	N/A	N/A
2004/0249965	12/2003	Huggins et al.	N/A	N/A
2004/0249982	12/2003	Arnold et al.	N/A	N/A
2004/0252400	12/2003	Blank et al.	N/A	N/A
2004/0261040	12/2003	Radcliffe et al.	N/A	N/A
2005/0010691	12/2004	Oyadomari et al.	N/A	N/A
2005/0013394	12/2004	Rausch et al.	N/A	N/A
2005/0021590	12/2004	Debique et al.	N/A	N/A
2005/0047605	12/2004	Lee et al.	N/A	N/A
2005/0055716	12/2004	Louie et al.	N/A	N/A
2005/0058149	12/2004	Howe	N/A	N/A
2005/0081213	12/2004	Suzuoki et al.	N/A	N/A
2005/0108320	12/2004	Lord et al.	N/A	N/A
2005/0114538	12/2004	Rose	N/A	N/A
2005/0125357	12/2004	Saadat et al.	N/A	N/A
2005/0155072	12/2004	Kaczowka et al.	N/A	N/A
2005/0166157	12/2004	Ollis et al.	N/A	N/A
2005/0166258	12/2004	Vasilevsky et al.	N/A	N/A
2005/0177643	12/2004	Xu	N/A	N/A
2005/0181348	12/2004	Carey et al.	N/A	N/A
2005/0195205	12/2004	Abrams	N/A	N/A
2005/0201254	12/2004	Looney et al.	N/A	N/A
2005/0234875	12/2004	Auerbach et al.	N/A	N/A
2005/0281255	12/2004	Davies et al.	N/A	N/A
2005/0283820	12/2004	Richards et al.	N/A	N/A
2005/0288805	12/2004	Moore et al.	N/A	N/A
2005/0289224	12/2004	Deslippe et al.	N/A	N/A
2006/0095516	12/2005	Wijeratne	N/A	N/A
2006/0107237	12/2005	Kim	N/A	N/A
2006/0119497	12/2005	Miller et al.	N/A	N/A
2006/0143236	12/2005	Wu	N/A	N/A
2006/0168340	12/2005	Heller et al.	N/A	N/A
2006/0195462	12/2005	Rogers	N/A	N/A
2006/0195479	12/2005	Spiegelman et al.	N/A	N/A
2006/0195480	12/2005	Spiegelman et al.	N/A	N/A
2006/0248557	12/2005	Stark et al.	N/A	N/A
2006/0253436	12/2005	Cook et al.	N/A	N/A
2006/0253782	12/2005	Stark et al.	N/A	N/A
2006/0294074	12/2005	Chang	N/A	N/A
2007/0033402	12/2006	Williams et al.	N/A	N/A
2007/0038999	12/2006	Millington	N/A	N/A
2007/0043847	12/2006	Carter et al.	N/A	N/A
2007/0048713	12/2006	Plastina et al.	N/A	N/A
2007/0049256	12/2006	Wassingbo	N/A	N/A
2007/0054680	12/2006	Mo et al.	N/A	N/A
2007/0088747	12/2006	Cheng et al.	N/A	N/A
2007/0136778	12/2006	Birger et al.	N/A	N/A

2007/0142022	12/2006	Madonna et al.	N/A	N/A
2007/0142944	12/2006	Goldberg et al.	N/A	N/A
2007/0143493	12/2006	Mullig et al.	N/A	N/A
2007/0156883	12/2006	Thompson et al.	N/A	N/A
2007/0169115	12/2006	Ko et al.	N/A	N/A
2007/0180137	12/2006	Rajapakse	N/A	N/A
2007/0214182	12/2006	Rosenberg	N/A	N/A
2007/0224937	12/2006	Jung et al.	N/A	N/A
2007/0250194	12/2006	Rhoads et al.	N/A	N/A
2007/0271232	12/2006	Mattox et al.	N/A	N/A
2007/0271388	12/2006	Bowra et al.	N/A	N/A
2007/0288470	12/2006	Kauniskangas et al.	N/A	N/A
2007/0294131	12/2006	Roman et al.	N/A	N/A
2007/0299778	12/2006	Haveson et al.	N/A	N/A
2008/0005690	12/2007	Van Vugt	N/A	N/A
2008/0016465	12/2007	Foxenland	N/A	N/A
2008/0022320	12/2007	Ver Steeg	N/A	N/A
2008/0052371	12/2007	Partovi et al.	N/A	N/A
2008/0059510	12/2007	Cardamore et al.	N/A	N/A
2008/0077261	12/2007	Baudino et al.	N/A	N/A
2008/0086368	12/2007	Bauman et al.	N/A	N/A
2008/0086379	12/2007	Dion et al.	N/A	N/A
2008/0091771	12/2007	Allen et al.	N/A	N/A
2008/0109529	12/2007	Story	N/A	N/A
2008/0120429	12/2007	Millington et al.	N/A	N/A
2008/0144861	12/2007	Melanson et al.	N/A	N/A
2008/0152165	12/2007	Zacchi	N/A	N/A
2008/0154959	12/2007	Dunko	N/A	N/A
2008/0194276	12/2007	Lin et al.	N/A	N/A
2008/0301280	12/2007	Chasen et al.	N/A	N/A
2008/0319833	12/2007	Svendsen	N/A	N/A
2009/0005893	12/2008	Sugii et al.	N/A	N/A
2009/0031336	12/2008	Chavez et al.	N/A	N/A
2009/0041423	12/2008	Weber et al.	N/A	N/A
2009/0063414	12/2008	White et al.	N/A	N/A
2009/0076881	12/2008	Svendsen	N/A	N/A
2009/0076917	12/2008	Jablokov et al.	N/A	N/A
2009/0083117	12/2008	Svendsen et al.	N/A	N/A
2009/0133069	12/2008	Conness et al.	N/A	N/A
2009/0150806	12/2008	Evje et al.	N/A	N/A
2009/0157905	12/2008	Davis	N/A	N/A
2009/0175429	12/2008	Cohen et al.	N/A	N/A
2009/0179867	12/2008	Shim et al.	N/A	N/A
2009/0187939	12/2008	LaJoie	N/A	N/A
2009/0216855	12/2008	Lang et al.	N/A	N/A
2009/0222115	12/2008	Malcolm et al.	N/A	N/A
2009/0228919	12/2008	Zott et al.	N/A	N/A
2009/0249222	12/2008	Schmidt et al.	N/A	N/A
2009/0265426	12/2008	Svendsen et al.	N/A	N/A

2009/0307062	12/2008	Lutnick et al.	N/A	N/A
2009/0313369	12/2008	Wormington et al.	N/A	N/A
2010/0010648	12/2009	Bull et al.	N/A	N/A
2010/0017366	12/2009	Robertson et al.	N/A	N/A
2010/0017714	12/2009	Agarwal et al.	N/A	N/A
2010/0023578	12/2009	Brant et al.	N/A	N/A
2010/0031366	12/2009	Knight et al.	N/A	N/A
2010/0036950	12/2009	Bae et al.	N/A	N/A
2010/0049835	12/2009	Ko et al.	N/A	N/A
2010/0054275	12/2009	Noonan et al.	N/A	N/A
2010/0070490	12/2009	Amidon et al.	N/A	N/A
2010/0082731	12/2009	Haughay et al.	N/A	N/A
2010/0094728	12/2009	Denning et al.	N/A	N/A
2010/0094834	12/2009	Svendsen	N/A	N/A
2010/0095332	12/2009	Gran et al.	N/A	N/A
2010/0114979	12/2009	Petersen	707/E17.032	G06F 16/4387
2010/0131567	12/2009	Dorogusker et al.	N/A	N/A
2010/0162324	12/2009	Mehta et al.	N/A	N/A
2010/0185671	12/2009	Burba et al.	N/A	N/A
2010/0205222	12/2009	Gajdos et al.	N/A	N/A
2010/0228740	12/2009	Cannistraro et al.	N/A	N/A
2010/0235520	12/2009	Attanasio et al.	N/A	N/A
2010/0262909	12/2009	Hsieh	N/A	N/A
2010/0284389	12/2009	Ramsay et al.	N/A	N/A
2010/0299391	12/2009	Demarta et al.	N/A	N/A
2010/0299639	12/2009	Ramsay et al.	N/A	N/A
2010/0318917	12/2009	Holladay et al.	N/A	N/A
2010/0325218	12/2009	Castro et al.	N/A	N/A
2010/0332326	12/2009	Ishai	N/A	N/A
2011/0004330	12/2010	Rothkopf et al.	N/A	N/A
2011/0041080	12/2010	Fleischman et al.	N/A	N/A
2011/0066941	12/2010	Chipchase et al.	N/A	N/A
2011/0066943	12/2010	Brillon et al.	N/A	N/A
2011/0087842	12/2010	Lu et al.	N/A	N/A
2011/0119706	12/2010	Scott et al.	N/A	N/A
2011/0154173	12/2010	Herlein	N/A	N/A
2011/0196888	12/2010	Hanson et al.	N/A	N/A
2011/0202430	12/2010	Narayanan et al.	N/A	N/A
2011/0202842	12/2010	Weatherly et al.	N/A	N/A
2011/0211534	12/2010	Schmidt et al.	N/A	N/A
2011/0225417	12/2010	Maharajh et al.	N/A	N/A
2011/0238755	12/2010	Khan et al.	N/A	N/A
2011/0246383	12/2010	Gibson et al.	N/A	N/A
2011/0264732	12/2010	Robbin et al.	N/A	N/A
2011/0314388	12/2010	Wheatley	N/A	N/A
2012/0029671	12/2011	Millington et al.	N/A	N/A
2012/0030366	12/2011	Collart et al.	N/A	N/A
2012/0054278	12/2011	Taleb et al.	N/A	N/A
2012/0059495	12/2011	Weiss et al.	N/A	N/A

2012/0060046	12/2011	Millington	N/A	N/A
2012/0071996	12/2011	Svendsen	N/A	N/A
2012/0096526	12/2011	Brahmanapalli et al.	N/A	N/A
2012/0112986	12/2011	McCoy et al.	N/A	N/A
2012/0117168	12/2011	Sugiyama et al.	N/A	N/A
2012/0117185	12/2011	Cassidy	N/A	N/A
2012/0117586	12/2011	McCoy et al.	N/A	N/A
2012/0124176	12/2011	Curtis et al.	N/A	N/A
2012/0129446	12/2011	Ko et al.	N/A	N/A
2012/0151320	12/2011	McClements, IV	N/A	N/A
2012/0158531	12/2011	Dion et al.	N/A	N/A
2012/0159393	12/2011	Sethi et al.	N/A	N/A
2012/0206623	12/2011	Nakama	N/A	N/A
2012/0210205	12/2011	Sherwood et al.	N/A	N/A
2012/0210377	12/2011	Wong et al.	N/A	N/A
2012/0216296	12/2011	Kidron	N/A	N/A
2012/0221951	12/2011	Kidron	N/A	N/A
2012/0233067	12/2011	Matthew et al.	N/A	N/A
2012/0233639	12/2011	Zott et al.	N/A	N/A
2012/0263318	12/2011	Millington et al.	N/A	N/A
2012/0272156	12/2011	Kerger et al.	N/A	N/A
2012/0284423	12/2011	Weel et al.	N/A	N/A
2012/0290653	12/2011	Sharkey	N/A	N/A
2012/0311635	12/2011	Mushkatblat et al.	N/A	N/A
2012/0315884	12/2011	Forutanpour et al.	N/A	N/A
2012/0331386	12/2011	Hicken et al.	N/A	N/A
2013/0007617	12/2012	MacKenzie et al.	N/A	N/A
2013/0024880	12/2012	Moloney-Egnatios et al.	N/A	N/A
2013/0031162	12/2012	Willis et al.	N/A	N/A
2013/0061296	12/2012	Reddy et al.	N/A	N/A
2013/0070093	12/2012	Rivera et al.	N/A	N/A
2013/0073584	12/2012	Kuper et al.	N/A	N/A
2013/0073979	12/2012	Shepherd et al.	N/A	N/A
2013/0080599	12/2012	Ko et al.	N/A	N/A
2013/0080955	12/2012	Reimann et al.	N/A	N/A
2013/0081110	12/2012	McGowan	N/A	N/A
2013/0128038	12/2012	Cok et al.	N/A	N/A
2013/0129232	12/2012	Cok et al.	N/A	N/A
2013/0130729	12/2012	Cok et al.	N/A	N/A
2013/0159858	12/2012	Joffray et al.	N/A	N/A
2013/0166649	12/2012	Atzmon et al.	N/A	N/A
2013/0173531	12/2012	Rinearson et al.	N/A	N/A
2013/0173794	12/2012	Agerbak et al.	N/A	N/A
2013/0174204	12/2012	Coburn, IV et al.	N/A	N/A
2013/0191454	12/2012	Oliver et al.	N/A	N/A
2013/0198633	12/2012	Hyman	N/A	N/A
2013/0205243	12/2012	Rivera et al.	N/A	N/A
2013/0221951	12/2012	Anderson et al.	N/A	N/A

2013/0246522	12/2012	Bilinski et al.	N/A	N/A
2013/0254663	12/2012	Bates et al.	N/A	N/A
2013/0275611	12/2012	Somekh et al.	N/A	N/A
2013/0297686	12/2012	Bilinski et al.	N/A	N/A
2013/0310316	12/2012	Hellstrom et al.	N/A	N/A
2013/0317936	12/2012	Hughes	N/A	N/A
2013/0339397	12/2012	Herasymchuk	N/A	N/A
2013/0339589	12/2012	Qawami et al.	N/A	N/A
2013/0343567	12/2012	Triplett et al.	N/A	N/A
2013/0346859	12/2012	Bates et al.	N/A	N/A
2014/0006483	12/2013	Garmark et al.	N/A	N/A
2014/0006947	12/2013	Garmark et al.	N/A	N/A
2014/0025688	12/2013	Andler et al.	N/A	N/A
2014/0047074	12/2013	Chung et al.	N/A	N/A
2014/0052770	12/2013	Gran et al.	N/A	N/A
2014/0059431	12/2013	Svendsen et al.	N/A	N/A
2014/0067828	12/2013	Archibong et al.	N/A	N/A
2014/0067998	12/2013	Garcia et al.	N/A	N/A
2014/0075308	12/2013	Sanders et al.	N/A	N/A
2014/0075316	12/2013	Li	N/A	N/A
2014/0081796	12/2013	Cohen	N/A	N/A
2014/0093219	12/2013	Trivedi	N/A	N/A
2014/0108528	12/2013	Papakipos et al.	N/A	N/A
2014/0108929	12/2013	Garmark et al.	N/A	N/A
2014/0108946	12/2013	Olofsson	715/739	G06F 3/0482
2014/0115061	12/2013	Reddy et al.	N/A	N/A
2014/0122590	12/2013	Svendsen	N/A	N/A
2014/0146982	12/2013	Pelosi	N/A	N/A
2014/0157300	12/2013	Childs et al.	N/A	N/A
2014/0188911	12/2013	Skeen et al.	N/A	N/A
2014/0201197	12/2013	Kumar et al.	N/A	N/A
2014/0201632	12/2013	Kunigita et al.	N/A	N/A
2014/0204076	12/2013	Kuper et al.	N/A	N/A
2014/0208205	12/2013	Bartholomew	N/A	N/A
2014/0222830	12/2013	Ringer et al.	N/A	N/A
2014/0223099	12/2013	Kidron	N/A	N/A
2014/0237361	12/2013	Martin et al.	N/A	N/A
2014/0244863	12/2013	Bradley et al.	N/A	N/A
2014/0282755	12/2013	Alsina et al.	N/A	N/A
2014/0310058	12/2013	Aral et al.	N/A	N/A
2014/0310779	12/2013	Lof et al.	N/A	N/A
2014/0330951	12/2013	Sukoff et al.	N/A	N/A
2014/0337959	12/2013	Garmark et al.	N/A	N/A
2014/0341528	12/2013	Mahate et al.	N/A	N/A
2014/0359680	12/2013	Shivadas et al.	N/A	N/A
2015/0039620	12/2014	Ning	N/A	N/A
2015/0046458	12/2014	Hu	N/A	N/A
2015/0066892	12/2014	Astore	N/A	N/A
2015/0067054	12/2014	Yoo et al.	N/A	N/A

2015/0067871	12/2014	Commons et al.	N/A	N/A
2015/0074534	12/2014	Didomenico et al.	N/A	N/A
2015/0095680	12/2014	Gossain et al.	N/A	N/A
2015/0113058	12/2014	Zhang et al.	N/A	N/A
2015/0121220	12/2014	Lee et al.	N/A	N/A
2015/0128162	12/2014	Ionescu et al.	N/A	N/A
2015/0185599	12/2014	Mullins	N/A	N/A
2015/0186110	12/2014	Kannan	N/A	N/A
2015/0220498	12/2014	Munoz et al.	N/A	N/A
2015/0242597	12/2014	Danciu	N/A	N/A
2015/0278357	12/2014	Wang	N/A	N/A
2015/0286360	12/2014	Wachter	N/A	N/A
2015/0331940	12/2014	Manning	N/A	N/A
2016/0063011	12/2015	Wehbi et al.	N/A	N/A
2016/0077710	12/2015	Lewis et al.	N/A	N/A
2016/0082348	12/2015	Kehoe et al.	N/A	N/A
2016/0147501	12/2015	Gilbert	N/A	N/A
2016/0180248	12/2015	Regan	N/A	N/A
2016/0253145	12/2015	Lee et al.	N/A	N/A
2017/0093943	12/2016	Alsina et al.	N/A	N/A
2017/0161119	12/2016	Boyle et al.	N/A	N/A
2017/0169522	12/2016	Hyman et al.	N/A	N/A
2017/0236512	12/2016	Williams et al.	N/A	N/A

FOREIGN PATENT DOCUMENTS

Patent No.	Application Date	Country	CPC
1818901	12/2005	CN	N/A
101410773	12/2008	CN	N/A
101427316	12/2008	CN	N/A
101714156	12/2009	CN	N/A
101910992	12/2009	CN	N/A
102450032	12/2011	CN	N/A
102656898	12/2011	CN	N/A
102947827	12/2012	CN	N/A
104126309	12/2013	CN	N/A
0251584	12/1987	EP	N/A
0672985	12/1994	EP	N/A
1111527	12/2000	EP	N/A
1389853	12/2003	EP	N/A
2004354721	12/2003	JP	N/A
2007520808	12/2006	JP	N/A
2009540638	12/2008	JP	N/A
2010141748	12/2009	JP	N/A
2011128957	12/2010	JP	N/A
2011223124	12/2010	JP	N/A
20010090215	12/2000	KR	N/A
20050051785	12/2004	KR	N/A
1020070040592	12/2006	KR	N/A
20070048922	12/2006	KR	N/A

100890993	12/2008	KR	N/A
20100060498	12/2009	KR	N/A
20100071724	12/2009	KR	N/A
20100134164	12/2009	KR	N/A
20110064635	12/2010	KR	N/A
20130083012	12/2012	KR	N/A
199525313	12/1994	WO	N/A
199961985	12/1998	WO	N/A
200147248	12/2000	WO	N/A
200153994	12/2000	WO	N/A
02052540	12/2001	WO	N/A
2002052540	12/2001	WO	N/A
2003093950	12/2002	WO	N/A
2005013047	12/2004	WO	N/A
2005079071	12/2004	WO	N/A
2007023120	12/2006	WO	N/A
2010018429	12/2009	WO	N/A
2011100264	12/2010	WO	N/A
2011157891	12/2010	WO	N/A
2012050927	12/2011	WO	N/A
2012056326	12/2011	WO	N/A
2012106269	12/2011	WO	N/A
2012170205	12/2011	WO	N/A
2013139239	12/2012	WO	N/A
2014004181	12/2013	WO	N/A
2014116693	12/2013	WO	N/A
2014145746	12/2013	WO	N/A

OTHER PUBLICATIONS

U.S. Appl. No. 60/490,768, filed Jul. 28, 2003, entitled “Method for synchronizing audio playback between multiple networked devices,” 13 pages. cited by applicant

U.S. Appl. No. 60/825,407, filed Sep. 12, 2006, entitled “Controlling and manipulating groupings in a multi-zone music or media system,” 82 pages. cited by applicant

UPnP; “Universal Plug and Play Device Architecture,” Jun. 8, 2000; version 1.0; Microsoft Corporation; pp. 1-54. cited by applicant

U.S. Appl. No. 12/070,933, filed Feb. 22, 2008. “System, Method, and Computer Program for Remotely Managing a Digital Device” Inventor: Jonathan Lang, et al. cited by applicant

U.S. Appl. No. 13/533,105, filed Jun. 26, 2012. “Systems, Methods, Apparatus, and Articles of Manufacture to Provide a Crowd-Sourced Playlist with Guess Access” Inventor: Paul Bates, et al. cited by applicant

U.S. Appl. No. 13/533,785, filed Jun. 26, 2012. “Networked Music Playback Including Remote Discovery and Add to Queue” Inventor: Mark Triplett, et al. cited by applicant

U.S. Appl. No. 13/748,357, filed Jan. 23, 2013. “System and Method for a Media Experience Social Interface” Inventor: Ron Kuper, et al. cited by applicant

U.S. Appl. No. 13/871,785, filed Apr. 26, 2013. “Systems, Methods, Apparatus, and Articles of Manufacture to Provide Guest Access” Inventor: Paul Bates, et al. cited by applicant

U.S. Appl. No. 13/871,795, filed Jun. 20, 2013. “Systems, Methods, Apparatus, and Articles of Manufacture to Provide Guest Access” Inventor: Paul Bates, et al. cited by applicant

U.S. Appl. No. 14/173,253, filed Feb. 5, 2014. “Remote Creation of a Playback Queue for a Future Event” Inventor: Jaime Munoz, et al. cited by applicant

Van Buskirk, Eliot, "Music Needs 'Connective Tissue' and Facebook Wants to Build It," E <http://evolver.fm/2011/09/01/music-needs-connective-tissue-and-facebook-wants-to-build-it>, 2011, 6 pages. cited by applicant

Yamaha DME 32 manual; copyright 2001. cited by applicant

Yamaha DME 64 Owner's Manual; copyright 2004, 80 pages. cited by applicant

Yamaha DME Designer 3.0 Owner's Manual; Copyright 2008, 501 pages. cited by applicant

Yamaha DME Designer 3.5 setup manual guide; copyright 2004, 16 pages. cited by applicant

Yamaha DME Designer 3.5 User Manual; Copyright 2004, 507 pages. cited by applicant

First Action Interview Office Action mailed on Jul. 22, 2016, issued in connection with U.S. Appl. No. 14/495,659, filed Sep. 24, 2014, 8 pages. cited by applicant

First Action Interview Pilot Program Pre-Interview Communication mailed on Oct. 28, 2015, issued in connection with U.S. Appl. No. 14/275,112, filed May 12, 2014, 4 pages. cited by applicant

First Action Interview Pilot Program Pre-Interview Communication mailed on Apr. 3, 2017, issued in connection with U.S. Appl. No. 14/495,590, filed Sep. 24, 2014, 5 pages. cited by applicant

Huang C.M., et al., "A Synchronization Infrastructure for Multicast Multimedia at the Presentation Layer," IEEE Transactions on Consumer Electronics, 1997, pp. 370-380, vol. 43, No. 3. cited by applicant

International Bureau, International Preliminary Report on Patentability mailed Jan. 30, 2014, issued in connection with International Application No. PCT/US2012/047620, filed on Jul. 20, 2012, 7 pages. cited by applicant

International Bureau, International Preliminary Report on Patentability mailed on Apr. 3, 2014, issued in connection with International Application No. PCT/US2012/056467, filed on Sep. 21, 2011, 11 pages. cited by applicant

International Bureau, International Preliminary Report on Patentability, mailed on Aug. 6, 2015, issued in connection with International Application No. PCT/US2014/012534, filed on Jan. 22, 2014, 6 pages. cited by applicant

International Bureau, International Preliminary Report on Patentability mailed on Dec. 15, 2016, issued in connection with International Application No. PCT/US2015/031934, filed on May 21, 2015, 11 pages. cited by applicant

International Bureau, International Preliminary Report on Patentability mailed on Aug. 18, 2016, issued in connection with International Application No. PCT/US2015/014156, filed on Feb. 3, 2015, 10 pages. cited by applicant

International Bureau, International Preliminary Report on Patentability mailed on Sep. 15, 2016, issued in connection with International Application No. PCT/US2015/018850, filed on Mar. 5, 2015, 10 pages. cited by applicant

International Searching Authority, International Preliminary Report on Patentability mailed on Apr. 6, 2017, issued in connection with International Application No. PCT/US2015/051968 filed on Sep. 24, 2015, 10 pages. cited by applicant

International Searching Authority, International Preliminary Report on Patentability mailed on Apr. 6, 2017, issued in connection with International Application No. PCT/US2015/051975 filed on Sep. 24, 2015, 9 pages. cited by applicant

International Searching Authority, International Preliminary Report on Patentability mailed on Apr. 6, 2017, issued in connection with International Application No. PCT/US2015/051983 filed on Sep. 24, 2015, 7 pages. cited by applicant

International Searching Authority, International Preliminary Report on Patentability mailed on Apr. 6, 2017, issued in connection with International Application No. PCT/US2015/051989 filed on Sep. 24, 2015, 7 pages. cited by applicant

International Searching Authority, International Preliminary Report on Patentability mailed on Apr. 6, 2017, issued in connection with International Application No. PCT/US2015/051993 filed on

Sep. 24, 2015, 8 pages. cited by applicant

International Searching Authority, International Preliminary Report on Patentability mailed on Feb. 23, 2017, issued in connection with International Application No. PCT/US2015/044218, filed on Aug. 7, 2015, 10 pages. cited by applicant

International Searching Authority, International Search Report and Written Opinion mailed on Nov. 6, 2015, issued in connection with International Application No. PCT/US2015/051993, filed on Sep. 24, 2015, 10 pages. cited by applicant

International Searching Authority, International Search Report and Written Opinion mailed on Dec. 7, 2015, issued in connection with International Application No. PCT/US2015/051968, filed on Sep. 24, 2015, 14 pages. cited by applicant

International Searching Authority, International Search Report and Written Opinion mailed on Dec. 16, 2015, issued in connection with International Application No. PCT/US2015/051989 filed on Sep. 24, 2015, 11 pages. cited by applicant

International Searching Authority, International Search Report and Written Opinion mailed on Dec. 21, 2015, issued in connection with International Application No. PCT/US2015/051983 filed on Sep. 24, 2015, 11 pages. cited by applicant

International Searching Authority, International Search Report and Written Opinion mailed on Nov. 23, 2015, issued in connection with International Application No. PCT/US2015/051975, filed on Sep. 24, 2015, 14 pages. cited by applicant

International Searching Authority, International Search Report and Written Opinion mailed on Apr. 24, 2015, issued in connection with International Application No. PCT/US2015/014156, filed on Feb. 3, 2015, 13 pages. cited by applicant

International Searching Authority, International Search Report and Written Opinion mailed on Aug. 27, 2015, issued in connection with International Application No. PCT/US2015/031934, filed on May 21, 2015, 14 pages. cited by applicant

International Searching Authority, International Search Report and Written Opinion mailed on Nov. 27, 2015, issued in connection with International Application No. PCT/US2015/044218, filed on Aug. 7, 2015, 13 pages. cited by applicant

International Searching Authority, International Search Report and Written Opinion mailed on May 29, 2015, issued in connection with International Application No. PCT/US2015/018850, filed on Mar. 5, 2015, 13 pages. cited by applicant

International Searching Authority, International Search Report mailed May 8, 2014, issued in connection with International Application No. PCT/US2014/012534, filed on Jan. 24, 2014, 3 pages. cited by applicant

International Searching Authority, International Search Report mailed on Dec. 27, 2012, issued in connection with International Application No. PCT/US2012/047620, filed on Jul. 20, 2011, 3 pages. cited by applicant

International Searching Authority, Written Opinion mailed on Dec. 27, 2012, issued in connection with International Application No. PCT/US2012/047620, filed on Jul. 20, 2011, 5 pages. cited by applicant

International Searching Authority, International Search Report and Written Opinion mailed on Feb. 28, 2013, issued in connection with International Application No. PCT/US2012/056467, filed on Sep. 21, 2012, 12 pages. cited by applicant

Ishibashi et al., "A Group Synchronization Mechanism for Live Media in Multicast Communications," IEEE Global Telecommunications Conference, 1997, pp. 746-752, vol. 2. cited by applicant

Ishibashi et al., "A Group Synchronization Mechanism for Stored Media in Multicast Communications," IEEE Information Revolution and Communications, 1997, pp. 692-700, vol. 2. cited by applicant

Japanese Patent Office, Full English Translation of Office Action mailed on Nov. 28, 2017, issued

in connection with Japanese Patent Application No. 2016-555529, 2 pages. cited by applicant

Japanese Patent Office, Notice of Rejection mailed on Nov. 8, 2016, issued in connection with Japanese Application No. 2015-555237, 6 pages. cited by applicant

Japanese Patent Office, Office Action mailed on Nov. 28, 2017, issued in connection with Japanese Patent Application No. 2016-555529, 5 pages. cited by applicant

Japanese Patent Office, Office Action mailed on Nov. 7, 2017, issued in connection with Japanese Patent Application No. 2016-550231, 5 pages. cited by applicant

Jo et al., "Synchronized One-to-many Media Streaming with Adaptive Playout Control," Proceedings of SPIE, 2002, pp. 71-82, vol. 4861. cited by applicant

Jones, Stephen, "Dell Digital Audio Receiver: Digital upgrade for your analog stereo," Analog Stereo, Jun. 24, 2000 <http://www.reviewsonline.com/articles/961906864.htm> retrieved Jun. 18, 2014, 2 pages. cited by applicant

Louderback, Jim, "Affordable Audio Receiver Furnishes Homes With MP3," TechTV Vault. Jun. 28, 2000 retrieved Jul. 10, 2014, 2 pages. cited by applicant

Mills David L., "Network Time Protocol (Version 3) Specification, Implementation and Analysis," Network Working Group, Mar. 1992, 7 pages. cited by applicant

Mills, David L., "Precision Synchronization of Computer Network Clocks," ACM SIGCOMM Computer Communication Review, 1994, pp. 28-43, vol. 24, No. 2. cited by applicant

Motorola, "Simplefi, Wireless Digital Audio Receiver, Installation and User Guide," Dec. 31, 2001, 111 pages. cited by applicant

Nilsson, M., "ID3 Tag Version 2," Mar. 26, 1998, 28 pages. cited by applicant

Non-Final Office Action mailed on Nov. 1, 2016, issued in connection with U.S. Appl. No. 14/173,253, filed Feb. 5, 2014, 21 pages. cited by applicant

Non-Final Office Action mailed on Oct. 1, 2015, issued in connection with U.S. Appl. No. 13/748,357, filed Jan. 23, 2013, 18 pages. cited by applicant

Non-Final Office Action mailed on Oct. 3, 2017, issued in connection with U.S. Appl. No. 14/495,633, filed Sep. 24, 2014, 18 pages. cited by applicant

Non-Final Office Action mailed on Apr. 6, 2016, issued in connection with U.S. Appl. No. 14/297,193, filed Jun. 5, 2014, 26 pages. cited by applicant

Non-Final Office Action mailed on May 6, 2015, issued in connection with U.S. Appl. No. 13/748,357, filed Jan. 23, 2013, 17 pages. cited by applicant

Non-Final Office Action mailed on Mar. 1, 2023, issued in connection with U.S. Appl. No. 17/485,901, filed Sep. 27, 2021, 15 pages. cited by applicant

Non-Final Office Action mailed on Jul. 10, 2017, issued in connection with U.S. Appl. No. 14/297,193, filed Jun. 5, 2014, 33 pages. cited by applicant

Non-Final Office Action mailed on Sep. 10, 2015, issued in connection with U.S. Appl. No. 14/197,403, filed Mar. 5, 2014, 16 pages. cited by applicant

Advisory Action mailed on Feb. 1, 2017, issued in connection with U.S. Appl. No. 14/297,193, filed Jun. 5, 2014, 6 pages. cited by applicant

Advisory Action mailed on Feb. 3, 2017, issued in connection with U.S. Appl. No. 14/495,659, filed Sep. 24, 2014, 5 pages. cited by applicant

Advisory Action mailed on Sep. 11, 2019, issued in connection with U.S. Appl. No. 14/495,633, filed Sep. 24, 2014, 3 pages. cited by applicant

Advisory Action mailed on Jul. 12, 2016, issued in connection with U.S. Appl. No. 14/173,253, filed Feb. 5, 2014, 5 pages. cited by applicant

Advisory Action mailed on Mar. 19, 2019, issued in connection with U.S. Appl. No. 15/595,519, filed May 15, 2017, 3 pages. cited by applicant

Advisory Action mailed on Oct. 21, 2019, issued in connection with U.S. Appl. No. 15/664,634, filed Jul. 31, 2017, 4 pages. cited by applicant

Advisory Action mailed on Apr. 22, 2024, issued in connection with U.S. Appl. No. 18/067,720,

filed Dec. 18, 2022, 5 pages. cited by applicant

Advisory Action mailed on Aug. 22, 2017, issued in connection with U.S. Appl. No. 14/173,253, filed Feb. 5, 2014, 4 pages. cited by applicant

Advisory Action mailed on Mar. 22, 2024, issued in connection with U.S. Appl. No. 17/101,549, filed Nov. 23, 2020, 5 pages. cited by applicant

Advisory Action mailed on Nov. 25, 2019, issued in connection with U.S. Appl. No. 15/607,267, filed May 26, 2017, 5 pages. cited by applicant

Advisory Action mailed on Oct. 25, 2019, issued in connection with U.S. Appl. No. 15/966,337, filed Apr. 30, 2018, 4 pages. cited by applicant

Advisory Action mailed on Dec. 27, 2022, issued in connection with U.S. Appl. No. 17/536,408, filed Nov. 29, 2021, 5 pages. cited by applicant

Advisory Action mailed on May 29, 2020, issued in connection with U.S. Appl. No. 15/595,519, filed May 15, 2017, 2 pages. cited by applicant

Advisory Action mailed on Mar. 8, 2021, issued in connection with U.S. Appl. No. 14/297,193, filed Jun. 5, 2014, 3 pages. cited by applicant

Advisory Action mailed on Mar. 8, 2024, issued in connection with U.S. Appl. No. 17/485,901, filed Sep. 27, 2021, 4 pages. cited by applicant

Akyildiz et al., "Multimedia Group Synchronization Protocols for Integrated Services Networks," IEEE Journal on Selected Areas in Communications, 1996 pp. 162-173, vol. 14, No. 1. cited by applicant

Anonymous: "Email Parser Tool—customizable email parsing software by ITG," May 17, 2014, [online] Retrieved from the Internet on Nov. 5, 2019:
(URL:<https://web.archive.org/web/20140517050139://emailparser.net/>). cited by applicant

AudioTron Quick Start Guide, Version 1.0, Mar. 2001, 24 pages. cited by applicant

AudioTron Reference Manual, Version 3.0, May 2002, 70 pages. cited by applicant

AudioTron Setup Guide, Version 3.0, May 2002, 38 pages. cited by applicant

Benslimane Abderrahim, "A Multimedia Synchronization Protocol for Multicast Groups," Proceedings of the 26th Euromicro Conference, 2000, pp. 456-463, vol. 1. cited by applicant

Biersack et al., "Intra- and Inter-Stream Synchronization for Stored Multimedia Streams," IEEE International Conference on Multimedia Computing and Systems, 1996, pp. 372-381. cited by applicant

Bluetooth. "Specification of the Bluetooth System: The ad hoc SCATTERNET for affordable and highly functional wireless connectivity," Core, Version 1.0 A, Jul. 26, 1999, 1068 pages. cited by applicant

Bluetooth. "Specification of the Bluetooth System: Wireless connections made easy," Core, Version 1.0 B, Dec. 1, 1999, 1076 pages. cited by applicant

Bretl W.E., et al., MPEG2 Tutorial [online], 2000 [retrieved on Jan. 13, 2009] Retrieved from the Internet:(<http://www.bretl.com/mpeghtml/MPEGindex.htm>), pp. 1-23. cited by applicant

Chinese Patent Office, First Office Action and Translation mailed on Feb. 2, 2019, issued in connection with Chinese Application No. 201580011640.5, 12 pages. cited by applicant

Chinese Patent Office, First Office Action and Translation mailed on Aug. 26, 2020, issued in connection with Chinese Application No. 201910608857.4, 17 pages. cited by applicant

Chinese Patent Office, First Office Action mailed on Feb. 27, 2019, issued in connection with Chinese Application No. 201580007534.X, 9 pages. cited by applicant

Chinese Patent Office, First Office Action mailed on Sep. 4, 2017, issued in connection with Chinese Application No. 2014800172148.0, 16 pages. cited by applicant

Chinese Patent Office, Second Office Action mailed on Apr. 11, 2018, issued in connection with Chinese Application No. 201480017214.8, 7 pages. cited by applicant

Chinese Patent Office, Third Office Action mailed on Oct. 18, 2018, issued in connection with Chinese Application No. 2014800172148, 8 pages. cited by applicant

Co-pending U.S. Application No. 202017006972, inventors LIN; Ted M et al., filed on Aug. 31, 2020. cited by applicant

Corrected Notice of Allowability mailed on Jan. 19, 2017, issued in connection with U.S. Appl. No. 14/197,403, filed Mar. 5, 2014, 2 pages. cited by applicant

Dell, Inc. "Dell Digital Audio Receiver: Reference Guide," Jun. 2000, 70 pages. cited by applicant

Dell, Inc. "Start Here," Jun. 2000, 2 pages. cited by applicant

"Denon 2003-2004 Product Catalog," Denon, 2003-2004, 44 pages. cited by applicant

European Patent Office, Decision to Refuse EP Application mailed on Oct. 16, 2018, issued in connection with European Application No. 157758970, 48 pages. cited by applicant

European Patent Office, Decision to Refuse EP Application mailed on Sep. 27, 2018, issued in connection with European Application No. 15781794.1, 54 pages. cited by applicant

European Patent Office, Decision to Refuse mailed on Aug. 2, 2021, issued in connection with European Application No. 15829058.5, 13 pages. cited by applicant

European Patent Office, EP Supplemental Search mailed Dec. 19, 2017, issued in connection with EP Application No. 15829058.5, 12 pages. cited by applicant

European Patent Office, European Extended Search Report mailed on Feb. 5, 2018, issued in connection with EP Application No. 15803430.6, 8 pages. cited by applicant

European Patent Office, European Office Action mailed on Nov. 13, 2019, issued in connection with European Application No. 15829058.5, 8 pages. cited by applicant

European Patent Office, European Office Action mailed on Jan. 2, 2019, issued in connection with European Application No. 15829058.5, 4 pages. cited by applicant

European Patent Office, European Office Action mailed on Aug. 3, 2017, issued in connection with EP Application No. 15781794.1, 6 pages. cited by applicant

European Patent Office, European Supplemental Search Report mailed on Sep. 18, 2017, issued in connection with EP Application No. 15829058.5, 13 pages. cited by applicant

European Patent Office, European Supplemental Search Report mailed on Jan. 27, 2016, issued in connection with European Application No. 14743335.3, 8 pages. cited by applicant

European Patent Office, Examination Report mailed on Feb. 3, 2017, issued in connection with European Patent Application No. 14743335.3, 5 pages. cited by applicant

European Patent Office, Extended European Search Report mailed on Mar. 15, 2017, issued in connection with European Application No. 15758460.8, 9 pages. cited by applicant

European Patent Office, Extended European Search Report mailed on Dec. 23, 2016, issued in connection with European Application No. 15746781.2, 10 pages. cited by applicant

European Patent Office, Notice of Appeal European Patent Application mailed on Mar. 16, 2023, issued in connection with European Application No. 15781794.1, 13 pages. cited by applicant

Non-Final Office Action mailed on Jan. 12, 2017, issued in connection with U.S. Appl. No. 14/275,112, filed May 12, 2014, 25 pages. cited by applicant

Non-Final Office Action mailed on Jan. 12, 2021, issued in connection with U.S. Appl. No. 16/952,217, filed Nov. 19, 2020, 8 pages. cited by applicant

Non-Final Office Action mailed on May 12, 2020, issued in connection with U.S. Appl. No. 16/516,767, filed Jul. 19, 2019, 12 pages. cited by applicant

Non-Final Office Action mailed on Mar. 13, 2020, issued in connection with U.S. Appl. No. 15/664,634, filed Jul. 31, 2017, 20 pages. cited by applicant

Non-Final Office Action mailed on Nov. 13, 2018, issued in connection with U.S. Appl. No. 16/143,301, filed Sep. 26, 2018, 27 pages. cited by applicant

Non-Final Office Action mailed on Jan. 14, 2020, issued in connection with U.S. Appl. No. 15/966,337, filed Apr. 30, 2018, 16 pages. cited by applicant

Non-Final Office Action mailed on Jun. 14, 2017, issued in connection with U.S. Appl. No. 14/495,659, filed Sep. 24, 2014, 15 pages. cited by applicant

Non-Final Office Action mailed on Oct. 14, 2022, issued in connection with U.S. Appl. No.

17/101,549, filed Nov. 23, 2020, 18 pages. cited by applicant
Non-Final Office Action mailed on Feb. 16, 2021, issued in connection with U.S. Appl. No. 16/866,159, filed May 4, 2020, 10 pages. cited by applicant
Non-Final Office Action mailed on Jan. 16, 2019, issued in connection with U.S. Appl. No. 15/664,634, filed Jul. 31, 2017, 17 pages. cited by applicant
Non-Final Office Action mailed on Dec. 17, 2015, issued in connection with U.S. Appl. No. 14/173,253, filed Feb. 5, 2014, 18 pages. cited by applicant
Non-Final Office Action mailed on Jun. 17, 2016, issued in connection with U.S. Appl. No. 14/495,706, filed Sep. 24, 2014, 19 pages. cited by applicant
Non-Final Office Action mailed on May 18, 2016, issued in connection with U.S. Appl. No. 14/197,403, filed Mar. 5, 2014, 21 pages. cited by applicant
Non-Final Office Action mailed on Feb. 19, 2019, issued in connection with U.S. Appl. No. 15/966,337, filed Apr. 30, 2018, 14 pages. cited by applicant
Non-Final Office Action mailed on Mar. 19, 2019, issued in connection with U.S. Appl. No. 15/607,267, filed May 26, 2017, 18 pages. cited by applicant
Non-Final Office Action mailed on Sep. 20, 2021, issued in connection with U.S. Appl. No. 17/131,001, filed Dec. 22, 2020, 14 pages. cited by applicant
Non-Final Office Action mailed on Jun. 21, 2018, issued in connection with U.S. Appl. No. 15/692,090, filed Aug. 31, 2017, 20 pages. cited by applicant
Non-Final Office Action mailed on Jan. 22, 2019, issued in connection with U.S. Appl. No. 16/174,703, filed Oct. 30, 2018, 15 pages. cited by applicant
Non-Final Office Action mailed on Jul. 22, 2022, issued in connection with U.S. Appl. No. 17/536,408, filed Nov. 29, 2021, 9 pages. cited by applicant
Non-Final Office Action mailed on Jan. 23, 2024, issued in connection with U.S. Appl. No. 18/345,031, filed Jun. 30, 2023, 10 pages. cited by applicant
Non-Final Office Action mailed on Mar. 23, 2018, issued in connection with U.S. Appl. No. 15/227,074, filed Aug. 3, 2016, 11 pages. cited by applicant
Non-Final Office Action mailed on Apr. 24, 2024, issued in connection with U.S. Appl. No. 17/485,901, filed Sep. 27, 2021, 19 pages. cited by applicant
Non-Final Office Action mailed on Jan. 24, 2018, issued in connection with U.S. Appl. No. 15/607,267, filed May 26, 2017, 17 pages. cited by applicant
Non-Final Office Action mailed on Sep. 24, 2021, issued in connection with U.S. Appl. No. 17/121,027, filed Dec. 14, 2020, 11 pages. cited by applicant
Non-Final Office Action mailed on Dec. 27, 2018, issued in connection with U.S. Appl. No. 14/297,193, filed Jun. 5, 2014, 37 pages. cited by applicant
Non-Final Office Action mailed on Jul. 27, 2023, issued in connection with U.S. Appl. No. 17/838,827, filed Jun. 13, 2022, 16 pages. cited by applicant
Non-Final Office Action mailed on Oct. 27, 2021, issued in connection with U.S. Appl. No. 16/866,159, filed May 4, 2020, 14 pages. cited by applicant
Non-Final Office Action mailed on Apr. 28, 2020, issued in connection with U.S. Appl. No. 14/297,193, filed Jun. 5, 2014, 34 pages. cited by applicant
Non-Final Office Action mailed on Nov. 28, 2017, issued in connection with U.S. Appl. No. 14/821,513, filed Aug. 7, 2015, 17 pages. cited by applicant
Non-Final Office Action mailed on Sep. 28, 2023, issued in connection with U.S. Appl. No. 17/534,217, filed Nov. 23, 2021, 29 pages. cited by applicant
Non-Final Office Action mailed on Sep. 30, 2020, issued in connection with U.S. Appl. No. 15/595,519, filed May 15, 2017, 18 pages. cited by applicant
Non-Final Office Action mailed on Aug. 31, 2023, issued in connection with U.S. Appl. No. 17/822,851, filed Aug. 29, 2022, 21 pages. cited by applicant
Non-Final Office Action mailed on Jul. 31, 2019, issued in connection with U.S. Appl. No.

15/595,519, filed May 15, 2017, 14 pages. cited by applicant
Non-Final Office Action mailed on Apr. 4, 2019, issued in connection with U.S. Appl. No. 15/612,126, filed Jun. 2, 2017, 9 pages. cited by applicant
Non-Final Office Action mailed on Aug. 4, 2020, issued in connection with U.S. Appl. No. 16/812,638, filed Mar. 9, 2020, 13 pages. cited by applicant
Non-Final Office Action mailed on Dec. 6, 2018, issued in connection with U.S. Appl. No. 14/495,633, filed Sep. 24, 2014, 15 pages. cited by applicant
Non-Final Office Action mailed on Jan. 6, 2023, issued in connection with U.S. Appl. No. 17/822,851, filed Aug. 29, 2022, 18 pages. cited by applicant
Non-Final Office Action mailed on Jun. 6, 2023, issued in connection with U.S. Appl. No. 17/930,917, filed Sep. 9, 2022, 31 pages. cited by applicant
Non-Final Office Action mailed on Jun. 6, 2024, issued in connection with U.S. Appl. No. 18/452,857, filed Aug. 21, 2023, 22 pages. cited by applicant
Non-Final Office Action mailed on May 7, 2021, issued in connection with U.S. Appl. No. 15/664,634, filed Jul. 31, 2017, 22 pages. cited by applicant
Non-Final Office Action mailed on Sep. 7, 2022, issued in connection with U.S. Appl. No. 17/006,972, filed Aug. 31, 2020, 14 pages. cited by applicant
Non-Final Office Action mailed on May 8, 2024, issued in connection with U.S. Appl. No. 17/947,610, filed Sep. 19, 2022, 12 pages. cited by applicant
Non-Final Office Action mailed on May 9, 2024, issued in connection with U.S. Appl. No. 17/822,851, filed Aug. 29, 2022, 23 pages. cited by applicant
North American MPEG-2 Information, "The MPEG-2 Transport Stream," Retrieved from the Internet: URL: <http://www.coolstf.com/mpeg/#ts>, 2006, pp. 1-5. cited by applicant
Notice of Allowance mailed Jul. 9, 2021, issued in connection with U.S. Appl. No. 16/952,217, filed Nov. 19, 2020, 8 pages. cited by applicant
Notice of Allowance mailed on May 4, 2016, issued in connection with U.S. Appl. No. 13/748,357, filed Jan. 23, 2013, 11 pages. cited by applicant
Notice of Allowance mailed on Nov. 4, 2022, issued in connection with U.S. Appl. No. 17/569,008, filed Jan. 5, 2022, 8 pages. cited by applicant
Notice of Allowance mailed on Apr. 5, 2023, issued in connection with U.S. Appl. No. 17/528,808, filed Nov. 17, 2021, 11 pages. cited by applicant
Notice of Allowance mailed on Apr. 6, 2017, issued in connection with U.S. Appl. No. 14/197,403, filed Mar. 5, 2014, 5 pages. cited by applicant
Notice of Allowance mailed on Dec. 1, 2023, issued in connection with U.S. Appl. No. 17/838,827, filed Jun. 13, 2022, 10 pages. cited by applicant
Notice of Allowance mailed on Oct. 1, 2021, issued in connection with U.S. Appl. No. 16/846,620, filed Apr. 13, 2020, 11 pages. cited by applicant
Notice of Allowance mailed on Apr. 10, 2020, issued in connection with U.S. Appl. No. 16/188,186, filed Nov. 12, 2018, 10 pages. cited by applicant
Notice of Allowance mailed on Feb. 11, 2019, issued in connection with U.S. Appl. No. 15/692,090, filed Aug. 31, 2017, 8 pages. cited by applicant
Notice of Allowance mailed on Feb. 11, 2019, issued in connection with U.S. Appl. No. 16/143,301, filed Sep. 26, 2018, 15 pages. cited by applicant
Notice of Allowance mailed on May 11, 2022, issued in connection with U.S. Appl. No. 17/340,370, filed Jun. 7, 2021, 12 pages. cited by applicant
Notice of Allowance mailed on Jan. 12, 2017, issued in connection with U.S. Appl. No. 14/495,595, filed Sep. 24, 2014, 5 pages. cited by applicant
Notice of Allowance mailed on Apr. 13, 2022, issued in connection with U.S. Appl. No. 17/131,001, filed Dec. 22, 2020, 8 pages. cited by applicant
Notice of Allowance mailed on Sep. 13, 2023, issued in connection with U.S. Appl. No.

17/930,917, filed Sep. 9, 2022, 11 pages. cited by applicant
Notice of Allowance mailed on Dec. 17, 2019, issued in connection with U.S. Appl. No. 16/174,703, filed Oct. 30, 2018, 11 pages. cited by applicant
Notice of Allowance mailed on Jan. 17, 2020, issued in connection with U.S. Appl. No. 15/612,126, filed Jun. 2, 2017, 5 pages. cited by applicant
Notice of Allowance mailed on Jul. 18, 2018, issued in connection with U.S. Appl. No. 15/227,074, filed Aug. 3, 2016, 8 pages. cited by applicant
Notice of Allowance mailed on Sep. 19, 2017, issued in connection with U.S. Appl. No. 14/455,651, filed Aug. 8, 2014, 12 pages. cited by applicant
Notice of Allowance mailed on Aug. 20, 2020, issued in connection with U.S. Appl. No. 15/607,267, filed May 26, 2017, 8 pages. cited by applicant
Notice of Allowance mailed on Sep. 20, 2021, issued in connection with U.S. Appl. No. 17/129,060, filed Dec. 21, 2020, 9 pages. cited by applicant
Notice of Allowance mailed on Jul. 21, 2020, issued in connection with U.S. Appl. No. 15/966,337, filed Apr. 30, 2018, 11 pages. cited by applicant
Notice of Allowance mailed on Aug. 24, 2017, issued in connection with U.S. Appl. No. 14/495,590, filed Sep. 24, 2014, 10 pages. cited by applicant
Notice of Allowance mailed on Aug. 24, 2020, issued in connection with U.S. Appl. No. 16/516,767, filed Jul. 19, 2019, 9 pages. cited by applicant
Notice of Allowance mailed on Jan. 26, 2017, issued in connection with U.S. Appl. No. 14/495,706, filed Sep. 24, 2014, 8 pages. cited by applicant
Notice of Allowance mailed on Dec. 27, 2017, issued in connection with U.S. Appl. No. 14/495,659, filed Sep. 24, 2014, 6 pages. cited by applicant
Notice of Allowance mailed on Dec. 27, 2019, issued in connection with U.S. Appl. No. 14/495,633, filed Sep. 24, 2014, 7 pages. cited by applicant
Notice of Allowance mailed on Oct. 27, 2021, issued in connection with U.S. Appl. No. 15/664,634, filed Jul. 31, 2017, 7 pages. cited by applicant
Notice of Allowance mailed on Apr. 28, 2020, issued in connection with U.S. Appl. No. 15/612,126, filed Jun. 2, 2017, 5 pages. cited by applicant
Notice of Allowance mailed on Dec. 29, 2016, issued in connection with U.S. Appl. No. 14/197,403, filed Mar. 5, 2014, 5 pages. cited by applicant
Notice of Allowance mailed on Jul. 3, 2023, issued in connection with U.S. Appl. No. 17/006,972, filed Aug. 31, 2020, 6 pages. cited by applicant
Notice of Allowance mailed on Aug. 30, 2018, issued in connection with U.S. Appl. No. 14/821,513, filed Aug. 7, 2015, 10 pages. cited by applicant
Notice of Allowance mailed on Oct. 30, 2019, issued in connection with U.S. Appl. No. 16/458,453, filed Jul. 1, 2019, 7 pages. cited by applicant
Notice of Allowance mailed on May 31, 2017, issued in connection with U.S. Appl. No. 14/495,684, filed Sep. 24, 2014, 5 pages. cited by applicant
Notice of Allowance mailed on Feb. 4, 2021, issued in connection with U.S. Appl. No. 16/812,638, filed Mar. 9, 2020, 7 pages. cited by applicant
Notice of Allowance mailed on Feb. 4, 2022, issued in connection with U.S. Appl. No. 17/121,027, filed Dec. 14, 2020, 9 pages. cited by applicant
Notice of Allowance mailed on May 4, 2017, issued in connection with U.S. Appl. No. 14/495,595, filed Sep. 24, 2014, 5 pages. cited by applicant
Notice of Allowance mailed on May 4, 2022, issued in connection with U.S. Appl. No. 16/866,159, filed May 4, 2020, 8 pages. cited by applicant
Notice of Allowance mailed on Oct. 4, 2023, issued in connection with U.S. Appl. No. 17/536,408, filed Nov. 29, 2021, 7 pages. cited by applicant
Notice of Allowance mailed on Aug. 5, 2019, issued in connection with U.S. Appl. No. 15/612,126,

filed Jun. 2, 2017, 5 pages. cited by applicant
Notice of Allowance mailed on Aug. 5, 2020, issued in connection with U.S. Appl. No. 16/188,186, filed Nov. 12, 2018, 11 pages. cited by applicant
Notice of Allowance mailed on May 5, 2021, issued in connection with U.S. Appl. No. 15/595,519, filed May 15, 2017, 7 pages. cited by applicant
Palm, Inc., "Handbook for the Palm VII Handheld," May 2000, 311 pages. cited by applicant
Park et al., "Group Synchronization in MultiCast Media Communications," Proceedings of the 5th Research on Multicast Technology Workshop, 2003, 5 pages. cited by applicant
Polycom Conference Composer User Guide, copyright 2001, 29 pages. cited by applicant
Pre-Brief Conference Decision mailed on Sep. 7, 2018, issued in connection with U.S. Appl. No. 14/297,193, filed Jun. 5, 2014, 2 pages. cited by applicant
Preinterview First Office Action mailed on May 4, 2016, issued in connection with U.S. Appl. No. 14/455,651, filed Aug. 8, 2014, 7 pages. cited by applicant
Preinterview First Office Action mailed on May 4, 2016, issued in connection with U.S. Appl. No. 14/495,659, filed Sep. 24, 2014, 6 pages. cited by applicant
Preinterview First Office Action mailed on May 5, 2016, issued in connection with U.S. Appl. No. 14/495,595, filed Sep. 24, 2014, 6 pages. cited by applicant
Preinterview First Office Action mailed on May 16, 2016, issued in connection with U.S. Appl. No. 14/495,633, filed Sep. 24, 2014, 6 pages. cited by applicant
Preinterview First Office Action mailed on Oct. 19, 2016, issued in connection with U.S. Appl. No. 14/821,513, filed Aug. 7, 2016, 5 pages. cited by applicant
Preinterview First Office Action mailed on May 23, 2016, issued in connection with U.S. Appl. No. 14/495,684, filed Sep. 24, 2014, 6 pages. cited by applicant
Presentations at WinHEC 2000, May 2000, 138 pages. cited by applicant
PRISMIQ, Inc., "PRISMIQ Media Player User Guide," 2003, 44 pages. cited by applicant
Rothermel et al., "An Adaptive Stream Synchronization Protocol," 5th International Workshop on Network and Operating System Support for Digital Audio and Video, 1995, 13 pages. cited by applicant
Schulzrinne H., et al., "RTP: A Transport Protocol for Real-Time Applications, RFC 3550," Network Working Group, 2003, pp. 1-89. cited by applicant
European Patent Office, Office Action mailed on Mar. 2, 2017, issued in connection with European Application No. 15775566.1, 7 pages. cited by applicant
European Patent Office, Office Action mailed on Apr. 4, 2017, issued in connection with European Application No. 15775897.0, 6 pages. cited by applicant
European Patent Office, Office Action mailed on Jan. 13, 2017, issued in connection with European Application No. 15781794.1, 8 pages. cited by applicant
European Patent Office, Office Action mailed on Mar. 13, 2017, issued in connection with European Application No. 15781200.9, 5 pages. cited by applicant
European Patent Office, Summons to Attend Oral Proceedings mailed on Jun. 11, 2019, issued in connection with European Application No. 14743335.3, 10 pages. cited by applicant
European Patent Office, Summons to Attend Oral Proceedings mailed on Nov. 20, 2020, issued in connection with European Application No. 15829058.5, 7 pages. cited by applicant
European Patent Office, Summons to Attend Oral Proceedings mailed on Mar. 27, 2018, issued in connection with European Patent Application No. 15781794.1, 11 pages. cited by applicant
European Patent Office, Summons to Oral Proceedings mailed on Apr. 11, 2022, issued in connection with European Application No. 15781794.1, 2 pages. cited by applicant
Final Office Action mailed on Nov. 2, 2017, issued in connection with U.S. Appl. No. 14/275,112, filed May 12, 2014, 20 pages. cited by applicant
Final Office Action mailed on Oct. 2, 2019, issued in connection with U.S. Appl. No. 14/297,193, filed Jun. 5, 2014, 47 pages. cited by applicant

Final Office Action mailed on Nov. 3, 2016, issued in connection with U.S. Appl. No. 14/495,684, filed Sep. 24, 2014, 16 pages. cited by applicant

Final Office Action mailed on Oct. 3, 2019, issued in connection with U.S. Appl. No. 16/174,703, filed Oct. 30, 2018, 17 pages. cited by applicant

Final Office Action mailed on Apr. 6, 2016, issued in connection with U.S. Appl. No. 14/173,253, filed Feb. 5, 2014, 20 pages. cited by applicant

Final Office Action mailed on Feb. 7, 2017, issued in connection with U.S. Appl. No. 14/455,651, filed Aug. 8, 2014, 22 pages. cited by applicant

Final Office Action mailed on Oct. 7, 2016, issued in connection with U.S. Appl. No. 14/495,595, filed Sep. 24, 2014, 16 pages. cited by applicant

Final Office Action mailed on Nov. 8, 2016, issued in connection with U.S. Appl. No. 14/495,659, filed Sep. 24, 2014, 14 pages. cited by applicant

Final Office Action mailed on Feb. 1, 2024, issued in connection with U.S. Appl. No. 18/067,720, filed Dec. 18, 2022, 25 pages. cited by applicant

Final Office Action mailed on Feb. 10, 2016, issued in connection with U.S. Appl. No. 14/197,403, filed Mar. 5, 2014, 21 pages. cited by applicant

Final Office Action mailed on Feb. 11, 2020, issued in connection with U.S. Appl. No. 15/595,519, filed May 15, 2017, 15 pages. cited by applicant

Final Office Action mailed on Feb. 16, 2017, issued in connection with U.S. Appl. No. 14/495,633, filed Sep. 24, 2014, 15 pages. cited by applicant

Final Office Action mailed on May 16, 2023, issued in connection with U.S. Appl. No. 17/822,851, filed Aug. 29, 2022, 21 pages. cited by applicant

Final Office Action mailed on Sep. 16, 2016, issued in connection with U.S. Appl. No. 14/275,112, filed May 12, 2014, 19 pages. cited by applicant

Final Office Action mailed on Jan. 19, 2018, issued in connection with U.S. Appl. No. 14/297,193, filed Jun. 5, 2014, 32 pages. cited by applicant

Final Office Action mailed on Oct. 19, 2022, issued in connection with U.S. Appl. No. 17/536,408, filed Nov. 29, 2021, 8 pages. cited by applicant

Final Office Action mailed on Jan. 2, 2019, issued in connection with U.S. Appl. No. 15/595,519, filed May 15, 2017, 14 pages. cited by applicant

Final Office Action mailed on Aug. 20, 2019, issued in connection with U.S. Appl. No. 15/607,267, filed May 26, 2017, 19 pages. cited by applicant

Final Office Action mailed on Oct. 20, 2016, issued in connection with U.S. Appl. No. 14/197,403, filed Mar. 5, 2016, 17 pages. cited by applicant

Final Office Action mailed on Dec. 22, 2022, issued in connection with U.S. Appl. No. 17/006,972, filed Aug. 31, 2020, 16 pages. cited by applicant

Final Office Action mailed on Dec. 26, 2023, issued in connection with U.S. Appl. No. 17/822,851, filed Aug. 29, 2022, 22 pages. cited by applicant

Final Office Action mailed on Mar. 28, 2018, issued in connection with U.S. Appl. No. 14/495,633, filed Sep. 24, 2014, 21 pages. cited by applicant

Final Office Action mailed on Oct. 29, 2018, issued in connection with U.S. Appl. No. 15/607,267, filed May 26, 2017, 17 pages. cited by applicant

Final Office Action mailed on Sep. 3, 2020, issued in connection with U.S. Appl. No. 15/664,634, filed Jul. 31, 2017, 24 pages. cited by applicant

Final Office Action mailed on Jun. 30, 2023, issued in connection with U.S. Appl. No. 17/536,408, filed Nov. 29, 2021, 8 pages. cited by applicant

Final Office Action mailed on Sep. 30, 2016, issued in connection with U.S. Appl. No. 14/297,193, filed Jun. 5, 2014, 34 pages. cited by applicant

Final Office Action mailed on Dec. 31, 2020, issued in connection with U.S. Appl. No. 14/297,193, filed Jun. 5, 2014, 26 pages. cited by applicant

Final Office Action mailed on Jul. 31, 2019, issued in connection with U.S. Appl. No. 15/664,634, filed Jul. 31, 2017, 16 pages. cited by applicant
Final Office Action mailed on May 31, 2017, issued in connection with U.S. Appl. No. 14/173,253, filed Feb. 5, 2014, 22 pages. cited by applicant
Final Office Action mailed on May 31, 2017, issued in connection with U.S. Appl. No. 14/821,513, filed Aug. 7, 2015, 16 pages. cited by applicant
Final Office Action mailed on Jul. 5, 2019, issued in connection with U.S. Appl. No. 14/495,633, filed Sep. 24, 2014, 16 pages. cited by applicant
Final Office Action mailed on Jul. 5, 2019, issued in connection with U.S. Appl. No. 15/966,337, filed Apr. 30, 2018, 16 pages. cited by applicant
Final Office Action mailed on Jun. 7, 2021, issued in connection with U.S. Appl. No. 16/866,159, filed May 4, 2020, 14 pages. cited by applicant
Final Office Action mailed on Sep. 8, 2023, issued in connection with U.S. Appl. No. 17/485,901, filed Sep. 27, 2021, 17 pages. cited by applicant
First Action Interview Office Action mailed on Apr. 4, 2016, issued in connection with U.S. Appl. No. 14/275,112, filed May 12, 2014, 8 pages. cited by applicant
First Action Interview Office Action mailed on Jul. 7, 2016, issued in connection with U.S. Appl. No. 14/495,595, filed Sep. 24, 2014, 6 pages. cited by applicant
First Action Interview Office Action mailed on Jul. 11, 2016, issued in connection with U.S. Appl. No. 14/495,684, filed Sep. 24, 2014, 8 pages. cited by applicant
First Action Interview Office Action mailed on Jul. 13, 2016, issued in connection with U.S. Appl. No. 14/455,651, filed Aug. 8, 2014, 10 pages. cited by applicant
First Action Interview Office Action mailed on Oct. 13, 2016, issued in connection with U.S. Appl. No. 14/495,633, filed Sep. 24, 2014, 8 pages. cited by applicant
First Action Interview Office Action mailed on Dec. 14, 2016, issued in connection with U.S. Appl. No. 14/821,513, filed Aug. 7, 2015, 10 pages. cited by applicant
First Action Interview Office Action mailed on Nov. 14, 2019, issued in connection with U.S. Appl. No. 16/188,186, filed Nov. 12, 2018, 14 pages. cited by applicant
First Action Interview Office Action mailed on Jan. 17, 2020, issued in connection with U.S. Appl. No. 16/188,186, filed Nov. 12, 2018, 14 pages. cited by applicant

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS (1) This application is a continuation of U.S. application Ser. No. 17/536,408 titled “Multimedia Content Distribution System and Method,” filed on Nov. 29, 2021, and issued on Feb. 13, 2024, as U.S. Pat. No. 11,899,708; U.S. application Ser. No. 17/536,408 is a continuation of U.S. application Ser. No. 16/952,217 titled “Multimedia Content Distribution System and Method,” filed on Nov. 19, 2020, and issued on Nov. 30, 2021 as U.S. Pat. No. 11,190,564; which U.S. application Ser. No. 16/952,217 is a continuation of U.S. application Ser. No. 14/297,193 titled “Social Queue,” filed on Jun. 5, 2014, and now abandoned. The entire content of these the Ser. Nos. 17/536,408; 16/952,217; and 14/297,193 applications is incorporated herein by reference.

FIELD OF THE DISCLOSURE

(1) The disclosure is related to consumer goods and, more particularly, to methods, systems,

products, features, services, and other elements directed to media playback or some aspect thereof.

BACKGROUND

(2) Options for accessing and listening to digital audio in an out-loud setting were limited until in 2003, when SONOS, Inc. filed for one of its first patent applications, entitled “Method for Synchronizing Audio Playback between Multiple Networked Devices,” and began offering a media playback system for sale in 2005. The Sonos Wireless HiFi System enables people to experience music from many sources via one or more networked playback devices. Through a software control application installed on a smartphone, tablet, or computer, one can play what he or she wants in any room that has a networked playback device. Additionally, using the controller, for example, different songs can be streamed to each room with a playback device, rooms can be grouped together for synchronous playback, or the same song can be heard in all rooms synchronously.

(3) Given the ever growing interest in digital media, there continues to be a need to develop consumer-accessible technologies to further enhance the listening experience.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) Features, aspects, and advantages of the presently disclosed technology may be better understood with regard to the following description, appended claims, and accompanying drawings where:

(2) FIG. 1 shows an example media playback system configuration in which certain embodiments may be practiced;

(3) FIG. 2 shows a functional block diagram of an example playback device;

(4) FIG. 3 shows a functional block diagram of an example control device;

(5) FIG. 4 shows an example controller interface;

(6) FIG. 5 shows a functional block diagram of an example computing device;

(7) FIG. 6 is a simplified representation of an example system for cloud computing;

(8) FIG. 7 shows an example environment in which the present methods may be implemented;

(9) FIG. 8 shows an example flow diagram for generating a social queue;

(10) FIG. 9 shows an example flow diagram to facilitate a social queue for use by a group of media playback systems;

(11) FIG. 10 shows a second example flow diagram to facilitate a social queue for use by a group of media playback systems;

(12) FIGS. 11A and 11B show example user interfaces to facilitate group formation;

(13) FIGS. 12A and 12B show example user interfaces to facilitate social queue interaction.

(14) The drawings are for the purpose of illustrating example embodiments, but it is understood that the inventions are not limited to the arrangements and instrumentality shown in the drawings.

DETAILED DESCRIPTION

I. Overview

(15) In some arrangements, a device within a media playback system may generate a playback queue of media items. The media playback system may then perform various operations with respect to the playback queue. For instance, the media playback system may play back media items in the playback queue. Further, input received by the media playback system may modify the playback queue by adding media items to or removing media items from the playback queue. Some such uses of the playback queue might be limited to use by the media playback system itself.

(16) Examples described herein involve a “social” queue of media items for use by a group of two or more media playback systems. Media playback systems in the group may collaboratively interact with the social queue. For instance, each media playback system in the group may contribute media items to the social queue, such that the social queue includes media items

contributed from multiple media playback system in the group. Further, each media playback system in the group may play back the media items in the social queue.

(17) In one example, a group of media playback systems may include a first media playback system and a second media playback system. The first media playback system and the second media playback system may be in different locations, such as at a first user's home or workplace and at a second user's home or workplace, respectively. The first media playback system may communicate with the second media playback system over a network, such as the Internet. A first control device of the first media playback system may create, access, and modify the social queue. Likewise, a second control device of the second media playback system may create, access, and modify the social queue. Further, the first control device and the second control device may cause playback of media items in the social queue at one or more first playback devices of the first media playback system and one or more second playback devices of the second media playback system, respectively. In this way, the first control device and the second control device may facilitate collaborative interaction to control playback of media items at their respective media playback systems by interaction with the social queue.

(18) As members of a group, the first media playback system and the second media playback system may have certain defined relationships with one another. They may share information, such as media items to add to the social queue or an indication of whether the media system is presently accessing the social queue. Further, they may operate according to one or more group rules. One group rule may require the first media playback system and the second media playback system to have access to one or more of the same audio content sources, to facilitate access by both media playback systems to media playback items in the social queue. Many other examples of information sharing and group rules are possible as well.

(19) In some cases, a cloud service, such as a social networking service, may facilitate group formation and use of the social queue. For instance, a social networking service may provide an interface for selecting media playback systems for grouping. Such selectable media playback systems may be registered to users with whom the particular user of the social networking service has formed connections within the social networking service. For example, the a media playback system registered to a particular user may offer to group with media playback systems of one or more of the user's "friends" on a social networking service. The interface of the social networking service may also provide transport controls for causing playback of the social queue on the media playback system and media selection controls for selecting media items to add to the social queue.

(20) As indicated above, the present application involves a social queue for a group of media playback systems. In one aspect, a method is provided. The method involves receiving, from a first media playback system, a first message indicating a first set of media items and receiving, from a second media playback system, a second message indicating a second set of media items. The method also involves generating a playback queue comprising the first set of media items indicated in the first message and the second set of media items indicated in the second message. The method further involves transmitting, to at least one of the first media playback system and the second media playback system, the generated playback queue.

(21) In another aspect, a device is provided. The device includes a processor, a network interface, a non-transitory computer-readable storage medium, and program logic stored on the non-transitory computer-readable medium and executable by the processor to perform functions. The functions include receiving, from a first media playback system, a first message indicating a first set of media items and receiving, from a second media playback system, a second message indicating a second set of media items. The functions also include generating a playback queue comprising the first set of media items indicated in the first message and the second set of media items indicated in the second message. The functions further include transmitting, to at least one of the first media playback system and the second media playback system, the generated playback queue.

(22) In yet another aspect, a non-transitory computer readable memory is provided. The non-

transitory computer readable memory has stored thereon instructions executable by a computing device to cause the computing device to perform functions. The functions include receiving, from a first media playback system, a first message indicating a first set of media items and receiving, from a second media playback system, a second message indicating a second set of media items. The functions also include generating a playback queue comprising the first set of media items indicated in the first message and the second set of media items indicated in the second message. The functions further include transmitting, to at least one of the first media playback system and the second media playback system, the generated playback queue.

(23) In another aspect, a method is provided. The method involves receiving, at a computing device associated with a first media playback system, a command to form a group of media playback systems that comprises the first media playback system and at least one other media playback system. The method also involves receiving, at the computing device, an identification of at least one source of audio for playback by the group of media playback systems. The method further involve sending, by the computing device to the at least one other media playback system, a message comprising (i) an indication of the received command to form the group of media playback systems and (ii) an indication of the at least one source of audio for playback by the group of media playback systems.

(24) In yet another aspect, a device is provided. The device includes a processor, a network interface, a non-transitory computer-readable storage medium, and program logic stored on the non-transitory computer-readable medium and executable by the processor to perform functions. The functions include receiving, at a computing device associated with a first media playback system, a command to form a group of media playback systems that comprises the first media playback system and at least one other media playback system. The function also include receiving, at the computing device, an identification of at least one source of audio for playback by the group of media playback systems. The functions further include sending, by the computing device to the at least one other media playback system, a message comprising (i) an indication of the received command to form the group of media playback systems and (ii) an indication of the at least one source of audio for playback by the group of media playback systems.

(25) In another aspect, a non-transitory computer readable memory is provided. The non-transitory computer readable memory has stored thereon instructions executable by a computing device to cause the computing device to perform functions. The functions include receiving, at a computing device associated with a first media playback system, a command to form a group of media playback systems that comprises the first media playback system and at least one other media playback system. The function also include receiving, at the computing device, an identification of at least one source of audio for playback by the group of media playback systems. The functions further include sending, by the computing device to the at least one other media playback system, a message comprising (i) an indication of the received command to form the group of media playback systems and (ii) an indication of the at least one source of audio for playback by the group of media playback systems.

(26) In yet one aspect, a method is provided. The method involves receiving an instruction that causes at least a first media playback system and a second media playback system to form a group of media playback systems. The method also involves receiving, from a third-party service provider, a first message indicating a first set of media items and a second message indicating a second set of media items. The method further involves generating a playback queue comprising the first set of media items indicated in the received first message and the second set of media items indicated in the received second message. The method also involves transmitting, to each media playback system in the group of media playback system, the generated playback queue.

(27) In another aspect, a device is provided. The device includes a processor, a network interface, a non-transitory computer-readable storage medium, and program logic stored on the non-transitory computer-readable medium and executable by the processor to perform functions. The functions

include receiving an instruction that causes at least a first media playback system and a second media playback system to form a group of media playback systems. The functions also include receiving, from a third-party service provider, a first message indicating a first set of media items and a second message indicating a second set of media items. The functions further include generating a playback queue comprising the first set of media items indicated in the received first message and the second set of media items indicated in the received second message. The functions also include transmitting, to each media playback system in the group of media playback system, the generated playback queue.

(28) In yet another aspect, a non-transitory computer readable memory is provided. The non-transitory computer readable memory has stored thereon instructions executable by a computing device to cause the computing device to perform functions. The functions include receiving an instruction that causes at least a first media playback system and a second media playback system to form a group of media playback systems. The functions also include receiving, from a third-party service provider, a first message indicating a first set of media items and a second message indicating a second set of media items. The functions further include generating a playback queue comprising the first set of media items indicated in the received first message and the second set of media items indicated in the received second message. The functions also include transmitting, to each media playback system in the group of media playback system, the generated playback queue.

(29) It will be understood by one of ordinary skill in the art that this disclosure includes numerous other embodiments. While some examples described herein may refer to functions performed by given actors such as “users” and/or other entities, it should be understood that this description is for purposes of explanation only. The claims should not be interpreted to require action by any such example actor unless explicitly required by the language of the claims themselves.

II. Example Operating Environment

(30) FIG. 1 shows an example configuration of a media playback system **100** in which one or more embodiments disclosed herein may be practiced or implemented. The media playback system **100** as shown is associated with an example home environment having several rooms and spaces, such as for example, a master bedroom, an office, a dining room, and a living room. As shown in the example of FIG. 1, the media playback system **100** includes playback devices **102-124**, control devices **126** and **128**, and a wired or wireless network router **130**.

(31) Further discussions relating to the different components of the example media playback system **100** and how the different components may interact to provide a user with a media experience may be found in the following sections. While discussions herein may generally refer to the example media playback system **100**, technologies described herein are not limited to applications within, among other things, the home environment as shown in FIG. 1. For instance, the technologies described herein may be useful in environments where multi-zone audio may be desired, such as, for example, a commercial setting like a restaurant, mall or airport, a vehicle like a sports utility vehicle (SUV), bus or car, a ship or boat, an airplane, and so on.

a. Example Playback Devices

(32) FIG. 2 shows a functional block diagram of an example playback device **200** that may be configured to be one or more of the playback devices **102-124** of the media playback system **100** of FIG. 1. The playback device **200** may include a processor **202**, software components **204**, memory **206**, audio processing components **208**, audio amplifier(s) **210**, speaker(s) **212**, and a network interface **214** including wireless interface(s) **216** and wired interface(s) **218**. In one case, the playback device **200** may not include the speaker(s) **212**, but rather a speaker interface for connecting the playback device **200** to external speakers. In another case, the playback device **200** may include neither the speaker(s) **212** nor the audio amplifier(s) **210**, but rather an audio interface for connecting the playback device **200** to an external audio amplifier or audio-visual receiver.

(33) In one example, the processor **202** may be a clock-driven computing component configured to process input data according to instructions stored in the memory **206**. The memory **206** may be a

tangible computer-readable medium configured to store instructions executable by the processor **202**. For instance, the memory **206** may be data storage that can be loaded with one or more of the software components **204** executable by the processor **202** to achieve certain functions. In one example, the functions may involve the playback device **200** retrieving audio data from an audio source or another playback device. In another example, the functions may involve the playback device **200** sending audio data to another device or playback device on a network. In yet another example, the functions may involve pairing of the playback device **200** with one or more playback devices to create a multi-channel audio environment.

(34) Certain functions may involve the playback device **200** synchronizing playback of audio content with one or more other playback devices. During synchronous playback, a listener will preferably not be able to perceive time-delay differences between playback of the audio content by the playback device **200** and the one or more other playback devices. U.S. Pat. No. 8,234,395 entitled, "System and method for synchronizing operations among a plurality of independently clocked digital data processing devices," which is hereby incorporated by reference, provides in more detail some examples for audio playback synchronization among playback devices.

(35) The memory **206** may further be configured to store data associated with the playback device **200**, such as one or more zones and/or zone groups the playback device **200** is a part of, audio sources accessible by the playback device **200**, or a playback queue that the playback device **200** (or some other playback device) may be associated with. The data may be stored as one or more state variables that are periodically updated and used to describe the state of the playback device **200**. The memory **206** may also include the data associated with the state of the other devices of the media system, and shared from time to time among the devices so that one or more of the devices have the most recent data associated with the system. Other embodiments are also possible.

(36) The audio processing components **208** may include one or more digital-to-analog converters (DAC), an audio preprocessing component, an audio enhancement component or a digital signal processor (DSP), and so on. In one embodiment, one or more of the audio processing components **208** may be a subcomponent of the processor **202**. In one example, audio content may be processed and/or intentionally altered by the audio processing components **208** to produce audio signals. The produced audio signals may then be provided to the audio amplifier(s) **210** for amplification and playback through speaker(s) **212**. Particularly, the audio amplifier(s) **210** may include devices configured to amplify audio signals to a level for driving one or more of the speakers **212**. The speaker(s) **212** may include an individual transducer (e.g., a "driver") or a complete speaker system involving an enclosure with one or more drivers. A particular driver of the speaker(s) **212** may include, for example, a subwoofer (e.g., for low frequencies), a mid-range driver (e.g., for middle frequencies), and/or a tweeter (e.g., for high frequencies). In some cases, each transducer in the one or more speakers **212** may be driven by an individual corresponding audio amplifier of the audio amplifier(s) **210**. In addition to producing analog signals for playback by the playback device **200**, the audio processing components **208** may be configured to process audio content to be sent to one or more other playback devices for playback.

(37) Audio content to be processed and/or played back by the playback device **200** may be received from an external source, such as via an audio line-in input connection (e.g., an auto-detecting 3.5 mm audio line-in connection) or the network interface **214**.

(38) The network interface **214** may be configured to facilitate a data flow between the playback device **200** and one or more other devices on a data network. As such, the playback device **200** may be configured to receive audio content over the data network from one or more other playback devices in communication with the playback device **200**, network devices within a local area network, or audio content sources over a wide area network such as the Internet. In one example, the audio content and other signals transmitted and received by the playback device **200** may be transmitted in the form of digital packet data containing an Internet Protocol (IP)-based source address and IP-based destination addresses. In such a case, the network interface **214** may be

configured to parse the digital packet data such that the data destined for the playback device **200** is properly received and processed by the playback device **200**.

(39) As shown, the network interface **214** may include wireless interface(s) **216** and wired interface(s) **218**. The wireless interface(s) **216** may provide network interface functions for the playback device **200** to wirelessly communicate with other devices (e.g., other playback device(s), speaker(s), receiver(s), network device(s), control device(s) within a data network the playback device **200** is associated with) in accordance with a communication protocol (e.g., any wireless standard including IEEE 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac, 802.15, 4G mobile communication standard, and so on). The wired interface(s) **218** may provide network interface functions for the playback device **200** to communicate over a wired connection with other devices in accordance with a communication protocol (e.g., IEEE 802.3). While the network interface **214** shown in FIG. 2 includes both wireless interface(s) **216** and wired interface(s) **218**, the network interface **214** may in some embodiments include only wireless interface(s) or only wired interface(s).

(40) In one example, the playback device **200** and one other playback device may be paired to play two separate audio components of audio content. For instance, playback device **200** may be configured to play a left channel audio component, while the other playback device may be configured to play a right channel audio component, thereby producing or enhancing a stereo effect of the audio content. The paired playback devices (also referred to as “bonded playback devices”) may further play audio content in synchrony with other playback devices.

(41) In another example, the playback device **200** may be sonically consolidated with one or more other playback devices to form a single, consolidated playback device. A consolidated playback device may be configured to process and reproduce sound differently than an unconsolidated playback device or playback devices that are paired, because a consolidated playback device may have additional speaker drivers through which audio content may be rendered. For instance, if the playback device **200** is a playback device designed to render low frequency range audio content (i.e., a subwoofer), the playback device **200** may be consolidated with a playback device designed to render full frequency range audio content. In such a case, the full frequency range playback device, when consolidated with the low frequency playback device **200**, may be configured to render only the mid and high frequency components of audio content, while the low frequency range playback device **200** renders the low frequency component of the audio content. The consolidated playback device may further be paired with a single playback device or yet another consolidated playback device.

(42) By way of illustration, SONOS, Inc. presently offers (or has offered) for sale certain playback devices including a “PLAY:1,” “PLAY:3,” “PLAY:5,” “PLAYBAR,” “CONNECT:AMP,” “CONNECT,” and “SUB.” Any other past, present, and/or future playback devices may additionally or alternatively be used to implement the playback devices of example embodiments disclosed herein. Additionally, it is understood that a playback device is not limited to the example illustrated in FIG. 2 or to the SONOS product offerings. For example, a playback device may include a wired or wireless headphone. In another example, a playback device may include or interact with a docking station for personal mobile media playback devices. In yet another example, a playback device may be integral to another device or component such as a television, a lighting fixture, or some other device for indoor or outdoor use.

b. Example Playback Zone Configurations

(43) Referring back to the media playback system **100** of FIG. 1, the environment may have one or more playback zones, each with one or more playback devices. The media playback system **100** may be established with one or more playback zones, after which one or more zones may be added, or removed to arrive at the example configuration shown in FIG. 1. Each zone may be given a name according to a different room or space such as an office, bathroom, master bedroom, bedroom, kitchen, dining room, living room, and/or balcony. In one case, a single playback zone

may include multiple rooms or spaces. In another case, a single room or space may include multiple playback zones.

(44) As shown in FIG. 1, the balcony, dining room, kitchen, bathroom, office, and bedroom zones each have one playback device, while the living room and master bedroom zones each have multiple playback devices. In the living room zone, playback devices **104**, **106**, **108**, and **110** may be configured to play audio content in synchrony as individual playback devices, as one or more bonded playback devices, as one or more consolidated playback devices, or any combination thereof. Similarly, in the case of the master bedroom, playback devices **122** and **124** may be configured to play audio content in synchrony as individual playback devices, as a bonded playback device, or as a consolidated playback device.

(45) In one example, one or more playback zones in the environment of FIG. 1 may each be playing different audio content. For instance, the user may be grilling in the balcony zone and listening to hip hop music being played by the playback device **102** while another user may be preparing food in the kitchen zone and listening to classical music being played by the playback device **114**. In another example, a playback zone may play the same audio content in synchrony with another playback zone. For instance, the user may be in the office zone where the playback device **118** is playing the same rock music that is being playing by playback device **102** in the balcony zone. In such a case, playback devices **102** and **118** may be playing the rock music in synchrony such that the user may seamlessly (or at least substantially seamlessly) enjoy the audio content that is being played out-loud while moving between different playback zones.

Synchronization among playback zones may be achieved in a manner similar to that of synchronization among playback devices, as described in previously referenced U.S. Pat. No. 8,234,395.

(46) As suggested above, the zone configurations of the media playback system **100** may be dynamically modified, and in some embodiments, the media playback system **100** supports numerous configurations. For instance, if a user physically moves one or more playback devices to or from a zone, the media playback system **100** may be reconfigured to accommodate the change(s). For instance, if the user physically moves the playback device **102** from the balcony zone to the office zone, the office zone may now include both the playback device **118** and the playback device **102**. The playback device **102** may be paired or grouped with the office zone and/or renamed if so desired via a control device such as the control devices **126** and **128**. On the other hand, if the one or more playback devices are moved to a particular area in the home environment that is not already a playback zone, a new playback zone may be created for the particular area.

(47) Further, different playback zones of the media playback system **100** may be dynamically combined into zone groups or split up into individual playback zones. For instance, the dining room zone and the kitchen zone **114** may be combined into a zone group for a dinner party such that playback devices **112** and **114** may render audio content in synchrony. On the other hand, the living room zone may be split into a television zone including playback device **104**, and a listening zone including playback devices **106**, **108**, and **110**, if the user wishes to listen to music in the living room space while another user wishes to watch television.

c. Example Control Devices

(48) FIG. 3 shows a functional block diagram of an example control device **300** that may be configured to be one or both of the control devices **126** and **128** of the media playback system **100**. As shown, the control device **300** may include a processor **302**, memory **304**, a network interface **306**, and a user interface **308**. In one example, the control device **300** may be a dedicated controller for the media playback system **100**. In another example, the control device **300** may be a network device on which media playback system controller application software may be installed, such as for example, an iPhone™, iPad™ or any other smart phone, tablet or network device (e.g., a networked computer such as a PC or Mac™).

(49) The processor **302** may be configured to perform functions relevant to facilitating user access, control, and configuration of the media playback system **100**. The memory **304** may be configured to store instructions executable by the processor **302** to perform those functions. The memory **304** may also be configured to store the media playback system controller application software and other data associated with the media playback system **100** and the user.

(50) In one example, the network interface **306** may be based on an industry standard (e.g., infrared, radio, wired standards including IEEE 802.3, wireless standards including IEEE 802.11a, 802.11b, 802.11g, 802.11n, 802.11ac, 802.15, 4G mobile communication standard, and so on). Control device **300** may communicate with other devices in the media playback system **100** via network interface **306**. In one example, data and information (e.g., such as a state variable) may be communicated between control device **300** and other devices via the network interface **306**. For instance, playback zone and zone group configurations in the media playback system **100** may be received by the control device **300** from a playback device or another network device, or transmitted by the control device **300** to another playback device or network device via the network interface **306**. In some cases, the other network device may be another control device.

(51) Playback device control commands such as volume control and audio playback control may also be communicated from the control device **300** to a playback device via the network interface **306**. As suggested above, changes to configurations of the media playback system **100** may also be performed by a user using the control device **300**. The configuration changes may include adding/removing one or more playback devices to/from a zone, adding/removing one or more zones to/from a zone group, forming a bonded or consolidated player, separating one or more playback devices from a bonded or consolidated player, among others. Accordingly, the control device **300** may sometimes be referred to as a controller, whether the control device **300** is a dedicated controller or a network device on which media playback system controller application software is installed.

(52) The user interface **308** of the control device **300** may be configured to facilitate user access and control of the media playback system **100**, by providing a controller interface such as the controller interface **400** shown in FIG. 4. The controller interface **400** includes a playback control region **410**, a playback zone region **420**, a playback status region **430**, a playback queue region **440**, and an audio content sources region **450**. The user interface **400** as shown is just one example of a user interface that may be provided on a network device such as the control device **300** of FIG. 3 (and/or the control devices **126** and **128** of FIG. 1) and accessed by users to control a media playback system such as the media playback system **100**. Other user interfaces of varying formats, styles, and interactive sequences may alternatively be implemented on one or more network devices to provide comparable control access to a media playback system.

(53) The playback control region **410** may include selectable (e.g., by way of touch or by using a cursor) icons to cause playback devices in a selected playback zone or zone group to play or pause, fast forward, rewind, skip to next, skip to previous, enter/exit shuffle mode, enter/exit repeat mode, enter/exit cross fade mode. The playback control region **410** may also include selectable icons to modify equalization settings, and playback volume, among other possibilities.

(54) The playback zone region **420** may include representations of playback zones within the media playback system **100**. In some embodiments, the graphical representations of playback zones may be selectable to bring up additional selectable icons to manage or configure the playback zones in the media playback system, such as a creation of bonded zones, creation of zone groups, separation of zone groups, and renaming of zone groups, among other possibilities.

(55) For example, as shown, a “group” icon may be provided within each of the graphical representations of playback zones. The “group” icon provided within a graphical representation of a particular zone may be selectable to bring up options to select one or more other zones in the media playback system to be grouped with the particular zone. Once grouped, playback devices in the zones that have been grouped with the particular zone will be configured to play audio content

in synchrony with the playback device(s) in the particular zone. Analogously, a “group” icon may be provided within a graphical representation of a zone group. In this case, the “group” icon may be selectable to bring up options to deselect one or more zones in the zone group to be removed from the zone group. Other interactions and implementations for grouping and ungrouping zones via a user interface such as the user interface **400** are also possible. The representations of playback zones in the playback zone region **420** may be dynamically updated as playback zone or zone group configurations are modified.

(56) The playback status region **430** may include graphical representations of audio content that is presently being played, previously played, or scheduled to play next in the selected playback zone or zone group. The selected playback zone or zone group may be visually distinguished on the user interface, such as within the playback zone region **420** and/or the playback status region **430**. The graphical representations may include track title, artist name, album name, album year, track length, and other relevant information that may be useful for the user to know when controlling the media playback system via the user interface **400**.

(57) The playback queue region **440** may include graphical representations of audio content in a playback queue associated with the selected playback zone or zone group. In some embodiments, each playback zone or zone group may be associated with a playback queue containing information corresponding to zero or more audio items for playback by the playback zone or zone group. For instance, each audio item in the playback queue may comprise a uniform resource identifier (URI), a uniform resource locator (URL) or some other identifier that may be used by a playback device in the playback zone or zone group to find and/or retrieve the audio item from a local audio content source or a networked audio content source, possibly for playback by the playback device.

(58) In one example, a playlist may be added to a playback queue, in which case information corresponding to each audio item in the playlist may be added to the playback queue. In another example, audio items in a playback queue may be saved as a playlist. In a further example, a playback queue may be empty, or populated but “not in use” when the playback zone or zone group is playing continuously streaming audio content, such as Internet radio that may continue to play until otherwise stopped, rather than discrete audio items that have playback durations. In an alternative embodiment, a playback queue can include Internet radio and/or other streaming audio content items and be “in use” when the playback zone or zone group is playing those items. Other examples are also possible.

(59) When playback zones or zone groups are “grouped” or “ungrouped,” playback queues associated with the affected playback zones or zone groups may be cleared or re-associated. For example, if a first playback zone including a first playback queue is grouped with a second playback zone including a second playback queue, the established zone group may have an associated playback queue that is initially empty, that contains audio items from the first playback queue (such as if the second playback zone was added to the first playback zone), that contains audio items from the second playback queue (such as if the first playback zone was added to the second playback zone), or a combination of audio items from both the first and second playback queues. Subsequently, if the established zone group is ungrouped, the resulting first playback zone may be re-associated with the previous first playback queue, or be associated with a new playback queue that is empty or contains audio items from the playback queue associated with the established zone group before the established zone group was ungrouped. Similarly, the resulting second playback zone may be re-associated with the previous second playback queue, or be associated with a new playback queue that is empty, or contains audio items from the playback queue associated with the established zone group before the established zone group was ungrouped. Other examples are also possible.

(60) Referring back to the user interface **400** of FIG. 4, the graphical representations of audio content in the playback queue region **440** may include track titles, artist names, track lengths, and other relevant information associated with the audio content in the playback queue. In one example,

graphical representations of audio content may be selectable to bring up additional selectable icons to manage and/or manipulate the playback queue and/or audio content represented in the playback queue. For instance, a represented audio content may be removed from the playback queue, moved to a different position within the playback queue, or selected to be played immediately, or after any currently playing audio content, among other possibilities. A playback queue associated with a playback zone or zone group may be stored in a memory on one or more playback devices in the playback zone or zone group, on a playback device that is not in the playback zone or zone group, and/or some other designated device.

(61) The audio content sources region **450** may include graphical representations of selectable audio content sources from which audio content may be retrieved and played by the selected playback zone or zone group. Discussions pertaining to audio content sources may be found in the following section.

d. Example Audio Content Sources

(62) As indicated previously, one or more playback devices in a zone or zone group may be configured to retrieve for playback audio content (e.g., according to a corresponding URI or URL for the audio content) from a variety of available audio content sources. In one example, audio content may be retrieved by a playback device directly from a corresponding audio content source (e.g., a line-in connection). In another example, audio content may be provided to a playback device over a network via one or more other playback devices or network devices.

(63) Example audio content sources may include a memory of one or more playback devices in a media playback system such as the media playback system **100** of FIG. **1**, local music libraries on one or more network devices (such as a control device, a network-enabled personal computer, or a networked-attached storage (NAS), for example), streaming audio services providing audio content via the Internet (e.g., the cloud), or audio sources connected to the media playback system via a line-in input connection on a playback device or network device, among other possibilities.

(64) In some embodiments, audio content sources may be regularly added or removed from a media playback system such as the media playback system **100** of FIG. **1**. In one example, an indexing of audio items may be performed whenever one or more audio content sources are added, removed or updated. Indexing of audio items may involve scanning for identifiable audio items in all folders/directory shared over a network accessible by playback devices in the media playback system, and generating or updating an audio content database containing metadata (e.g., title, artist, album, track length, among others) and other associated information, such as a URI or URL for each identifiable audio item found. Other examples for managing and maintaining audio content sources may also be possible.

e. Example Cloud Computing Functions

(65) Various references are made herein to “cloud computing” The term “cloud computing” is used to refer to services delivered using distributed computing over a network, such as the Internet. A non-exhaustive list of services delivered via the cloud include electronic mail (e.g., Gmail® or Hotmail®), social networking (e.g., Facebook®, LinkedIn®, or Twitter®), file hosting (e.g., Dropbox®), and streaming audio (e.g., Spotify®, Pandora®, or BeatsAudio®). Other cloud services are certainly offered as well.

(66) Cloud service providers may offer one or more interfaces for accessing their service over a network. For instance, some cloud services may be accessed by visiting a web site using a web browser. Other cloud services are accessed by executing a particular application specific to the cloud service on a computing device. Some cloud services may offer an application programming interface (API) to facilitate access to the service by a third-party web site or application. In many cases, a user who has access to a given cloud service can access the service from any computing device that is connected to the network, provided that the computing device has a supported interface to the cloud service.

(67) In one instance, accessing a cloud service may involve accessing, with a first computing

device (i.e., a client), a second computing device (i.e., a server). Example client devices may include playback device **200** of FIG. 2, or control device **300** of FIG. 3, among other possible devices. One or more programs or applications (i.e., instructions) may execute on the server to perform computing tasks supported by the cloud service. The client may send various commands to the server to instruct the server to perform the computing tasks supported by the cloud service.

(68) FIG. 5 illustrates an example computing device **500** that may provide a cloud service to one or more users. Example computing device **500** includes at least one processor **502**, memory **504**, and a network interface **506**. The memory **504** may contain instructions executable by the processor **502** to perform computing tasks supported by a cloud service. The computing device **500** may communicate with other computing devices via the network interface **506**.

(69) In aggregate, the provision of a cloud service may involve multiple instances of computing device **500**. Each instance of computing device **500** may provide the cloud service to one or more users. Cloud service providers may scale the number of instances of computing device **500** involved in providing the cloud service based on user demand.

(70) FIG. 6 illustrates an example cloud **600**. The example cloud **600** may include any number of computing devices which are interconnected via one or more networks. For instance, cloud **600** may include one or more instances of computing device **500**. As shown in FIG. 6, media playback systems **610** and **620** are connected to cloud **600**. In particular, media playback system **610** includes playback devices **612** and **614** and control device **616**, each having a respective connection to cloud **600**. Likewise, media playback system **620** includes playback devices **622** and **624** and control device **626**, each having a respective connection to cloud **600**.

(71) Using the cloud **600**, media playback systems **610** and **620** may access various cloud services. For example, a cloud service provider may provide one or more first-party services **602**. In one instance, a manufacturer of media playback systems **610** and **620** may provide the one or more first-party services **602** to media playback systems **610** and **620**. The one or more first-party services **602** may support various features of the media playback systems **610** and **620**. Alternatively, another cloud service provider may provide the one or more first-party services **602** to media playback systems **610** and **620** under the direction of the manufacturer of media playback systems **610** and **620**.

(72) Media playback systems **610** and **620** may also access one or more streaming audio services **604**. As noted above, streaming audio services may provide audio content to media playback systems. Several example streaming audio services that are currently available include Spotify®, Pandora®, BeatsAudio®, Rdio®, Google Play Music All Access®, Sony Music Unlimited®, iTunes Radio®, Xbox Music®, and TuneIn Radio®. Other streaming audio services certainly exist, and other streaming audio services may be offered in the future.

(73) Media playback systems **610** and **620** may also access one or more social network services **606**. Social network services are often characterized at least in part by various links between users of the service. Such links are referred to by different names, such as “friends”, “connections”, “followers”, or “favorites,” among other examples. Users may create such links for various reasons. For instance, in some cases, the users may have a relationship outside of the social network (e.g., co-workers, relatives, or college friends). In other cases, two users may have similar interests (e.g., fans of a particular band or genre) or belong to a certain group and then form a link in the social network because they share these similar interests.

(74) Social network services may provide access to various other cloud services. For instance, a social network service may provide an interface for accessing a streaming audio service. Such an interface may include transport controls controlling play back with respect to the streaming audio service. Further, such an interface could include media content controls for selecting media items provided by the streaming audio service for play back.

(75) The above discussions relating to playback devices, controller devices, playback zone configurations, media content sources, and cloud computing provide only some examples of

operating environments within which functions and methods described below may be implemented. Other operating environments and configurations of media playback systems, playback devices, and network devices not explicitly described herein may also be applicable and suitable for implementation of the functions and methods.

III. Example Social Queue for a Group of Media Playback Systems

(76) As discussed above, embodiments described herein may involve a “social” queue for use by two or more media playback systems that are grouped together. For instance, two or more media playback systems may form a group of media playback systems. Then, the two or more grouped media playback systems may interact with a social queue.

(77) Example entities that may carry out one or more of the functions described herein include, without limitation, a playback device (e.g., playback device **200**), a control device (e.g., control device **300**), or any suitable computing device (e.g., computing device **500**). Accordingly, while in describing various functions, reference is made to a media playback system performing those various functions, it will be understood that each of these functions could be performed by any suitable component of a media playback system or by any suitable computing device that is connected to the media playback system.

a. Example Group of Media Playback Systems

(78) In one example, a first media playback system may form a group with one or more other media playback systems, including at least a second media playback system. As members of the group, the first media playback system and the second media playback system may have a defined relationship with one another. For instance, the first media playback system and the second media playback system may have permission to exchange certain information with one another, or otherwise communicate. Further, the defined relationship may involve the first media playback system and the second media playback system acting accordingly to certain group rules.

(79) FIG. 7 is an example environment in which example embodiments may be implemented. FIG. 7 represents an office environment **700** having offices **710**, **720**, and **730**, a reception area **740** and a conference room **750**. Office **710** has therein a first media playback system that includes playback devices **712** and **714** and control devices **716** and **718**. Office **730** has a second media playback system that includes playback devices **732** and **736** and control device **736**.

(80) The first media playback system and the second media playback system may belong to a first user that is assigned to office **710** and a second user that is assigned to office **730**, respectively. From time to time, such as while working in their respective assigned offices, the first and second users may play back media items, such as audio tracks, on the first media playback system and the second media playback system, respectively. Further, the first and second users may have a variety of social and/or professional relationships. For instance, they may be co-workers, and they may also share similar tastes in music. Because of this shared taste in music, the first and second users may desire to share or mutually engage in a common listening experience. Accordingly, the first and second users may desire to group the first media playback system and the second media playback system to share a social queue. While the first and second user are described by way of example to aid in comprehension of the present invention, the first user, second user, and the relationships between them are not aspects of the present invention.

(81) The first media playback system may initiate group formation with the second media playback system. For instance, the first media playback system may send to the second media playback system a first message that invites the second media playback system to group with the first media playback system. The second media playback system may then accept the invitation to form a group in a second message to the first media playback system. Or, the second media playback system may reject the invitation by not sending a second message or by indicating that the invitation is rejected in the second message.

(82) Alternatively, the first media playback system may send to the second media playback system a first message that instructs the second media playback system to group with the first media

playback system. In some cases, the second media playback system may have prior authorization to form a group in response to receiving a message that instructs or invites group formation. For example, the second media playback system may receive user input indicating authorization to form groups. The authorization may be limited to certain designated media playback systems.

(83) The first media playback system and the second media playback system may exchange messages over a network using respective network interfaces, such as network interface **214** of playback device **200** or network interface **306** of control device **300**. The network may be a local area network or a wide area network. In office environment **700**, the network may be a local area network. However, the first media playback system and the second media playback system could also be located in different houses that are connected using a wide area network (e.g., the Internet).

(84) The first media playback system and the second media playback system may exchange messages via a computing device, such as computing device **500** of FIG. 5. In some examples, the computing device may be one of multiple computing devices that provide a cloud service, such as first-party service **602** of FIG. 6. The computing device may connect to the first media playback system and the second media playback via respective connections over a wide area network, such as the Internet. For instance, media playback system **610** and **620** may connect to a computing device that provides a cloud service of cloud **600** using a network of cloud **600**.

(85) To facilitate message exchange between the first media playback system and the second media playback system, the computing device may maintain or have access to data indicating the configurations of the media playback systems. For each media playback system, the configuration data may include network addressing information, such as the IP address(es) of the media playback system. The configuration data may also include user information, such as the user profiles of one or more users that have registered with the media playback system. Further, the configuration data may include information indicating groups that the media playback system has joined.

(86) To aid in forming the group of media playback systems, the first media playback system may also maintain or have access to data indicating media playback systems that are available to group with the first media playback system. Before forming a group, such as during a setup procedure, a media playback system may receive user registration information. The user registration information may include information that identifies one or more users of the first media playback system (e.g., a name and an email address). For instance, the first user and the second user may provide user registration information to the first media playback system and the second media playback system, respectively.

(87) Based on such information, the second media playback device may indicate availability to group. For instance, the second media playback system may receive user input that indicates an email address (e.g., the email address of the first user) and willingness to group with a media playback system with which that email address is registered (e.g., the first media playback system). Based on that received user input, the second media playback system may send to the first media playback system an indication that the second media playback system is available to group.

(88) In some cases, the first media playback system may receive such availability data over a network from a computing device, such as computing device **500** of FIG. 5. Further, in some examples, the computing device may have access to the user registration information for multiple users of media playback systems. The computing device may receive a message from the second media playback system that indicates willingness to group with a particular user (i.e., a particular user having certain registered user information). The computing device may then use look-up the particular user to determine the media playback system with which the particular user is registered. After identifying the media playback system registered to the particular user (e.g., the first media playback system), the computing device may send a message to the first media playback system that indicates that the second media playback system is available to group with the first media playback system.

(89) In some cases, a social networking service (e.g., social network service **606** of FIG. 6) may

facilitate “discovery” of media playback systems that are available to group with the first media playback system. As noted above, social network services are often characterized at least in part by links between users of the service, such as “friends”, “connections”, “followers”, or “favorites,” among other examples. The second user of the second media playback system may subscribe to a social networking service in which two subscribers that have formed a link within the social networking service are known as “friends.” Through use of the social networking service, the second user of the second media playback system may form “friend” links with one or more other subscribers to the social networking service. Some social networking service provide application programming interfaces (APIs) or other means to access information that subscribers to the social networking service have opted to share with third-parties. For instance, an API may provide access to data indicating the friends of a given subscriber to a social networking service.

(90) Among the user's “friends” in the social networking service, the user of the second media playback service may designate a given friend (e.g., the first user) with whom the user of the second media playback system is willing to group media playback systems. A computing device, such as controller device **300** of FIG. **3**, or computing device **500** of FIG. **5**, may receive an indication of such user input designating the friend. The computing device may then access data that correlates subscribers to the social networking service to media playback system with which they have registered. The computing device may look-up the friend within the data to determine which media playback system, if any, that the friend is registered with. The computing device may determine that the friend is registered with the first media playback system and then send to the first media playback system a message indicating availability to group.

(91) Before forming the group, the first media playback system may display an indication of media playback systems that are available to group. For instance, a control device of the first media playback system may display on a user interface a list of media playback systems available to group. The first media playback system may then receive user input selecting one or more of the available media playback systems (e.g., the second media playback system). In response, the first media playback systems may send messages to the selected media playback systems inviting group formation.

(92) FIG. **11A** is an example user interface **1100A** of a control device, such as control device **718** of FIG. **7**, that may be configured to facilitate grouping of media playback systems. The user interface **1100A** includes an information region **1102A**, a group selection region **1104A**, a media playback system selection region **1106A**, and a control region **1108A**. The user interface **1100A** as shown is just one example of a user interface that may be provided on a control device and accessed by users to control a media playback system such as the media playback system **100**. Other user interfaces of varying formats, styles, and interactive sequences may alternatively be implemented on one or more control devices to provide comparable control access to a media playback system.

(93) The information region **1102A** may include an indication that the user interface is presently configured for group modification. Further the information region **1102A** may include an indication of a number of presently configured groups on the control device (e.g., four groups). The information region **1102A** may include other information as well.

(94) The group selection region **1104A** may include selectable (e.g., by way of touch or by using a cursor) icons to select different groups for creation or modification. The group selection region **1104A** may distinguish between groups using labels or other identifiers. For example, a given selectable icon may comprise a group label. The group selection region **1104A** may distinguish between a currently selected group and other groups configured on the control device. For instance, the label of the currently selected group may appear in bold text, among many other examples. In FIG. **11A**, Group **1** is shown as currently selected.

(95) The media playback system selection region **1106A** may include indications of media playback systems that are available to group. In FIG. **1106**, media playback systems **1**, **2**, **3**, and **4** are indicated as available to group. The media playback systems may be indicated by reference to a

user registered to the media playback system (e.g., Jacob, Mason, Ethan, or Mateo, as shown). In addition, the media playback system selection region **1106A** may indicate the media playback systems in the currently selected group. The media playback system selection region **1106A** may indicate the media playback systems currently in a group may further include selectable icons to select different media playback systems with which to form a group. In FIG. **11A**, Media Playback System **1** is shown as currently selected for inclusion in Group **1**.

(96) The control region **1108A** may include selectable icons to control the group configuration. For instance, the control region may include a “Save” icon to commit changes made in the media playback system selection region **1106A**. In some cases, user input selecting such an icon may cause the control device to send a message to the second media playback system.

(97) User interface **1100B** in FIG. **11B** is another instance of user interface **1100A**. The user interface **1100B** includes an information region **1102B**, a group selection region **1104B**, a media playback system selection region **1106B**, and a control region **1108B**. In the group selection region **1104B**, Group **2** is shown as currently selected. Further, in the media playback system selection region **1106B**, Media Playback Systems **1**, **2**, and **3** are shown as currently selected for inclusion in Group **2**.

(98) Within examples, the first media playback system may have access to data indicating a “friend” list of the first media playback system. The friend list may indicate, as “friends,” media playback systems that have indicated availability to group to the first media playback system, such as via a social networking service. In some examples, the media playback systems indicated in the friends list may have given prior authorization to group. A device, such as the control device **300** of FIG. **3** or the computing device **500** of FIG. **5**, may maintain such a “friend” list for the first media playback system. The friend list may facilitate group formation. For instance, a control device of the first media playback system may display on a user interface an indication of the friend list. The first media playback system may then receive user input selecting a “friend” (e.g., the second media playback system) and subsequently form a group with the friend. Then, the first media playback system may receive user input selecting a second “friend” (e.g., a third media playback system) and then form a group that includes the first, second, and third media playback systems. Alternatively, at some point thereafter, the first media playback system may leave the group with the second media playback system and form a group with the third media playback system. Other groups are certainly possible as well.

(99) After forming the group, the first media playback system may display an indication of the group. For instance, a control device of the first media playback system may display on a user interface the indication of the group. The indication of the group may depict the group in a variety of ways. For instance, the indication may be a group name. Alternatively, the group may be indicated by reference to one or more users that are registered with each media playback system in the group.

(100) The first message and the second message may be responsive to user input received by the first media playback system and the second media playback system, respectively. For instance, the first media playback system may receive user input that instructs the first media playback system to invite the second media playback system to form a group. After receiving the first message, the second media playback system may display an indication of the invitation from the first media playback system. The second media playback system may then receive user input indicating acceptance or rejection of the invitation to form the group, and then, in the second message, respond to the user input accordingly.

(101) As noted above, media playback systems in a group may adhere to certain group rules. The group rules may facilitate compatibility with certain features. For instance, an example group rule may suggest that all media playback systems within the group have access to a particular audio source, such as a particular streaming audio service. This rule may support features that may necessitate the media playback systems in the group having access to media items provided by the

streaming audio service. For instance, all of the members of a group may attempt to play back an audio track from the streaming audio service.

(102) In some cases, during group formation, a determination may be made whether the media playback systems in the group adhere to the group rules. In one embodiment, the first media playback system may make such a determination. For instance, in a first message that invites a second media playback system to form a group, the first media playback may ask for a response from the second media playback system that indicates adherence by the second media playback system with one or more group rules. The second media playback system may then include such a response in a second message (which may also indicate acceptance of the invitation to form the group). After receiving the second message, the first media playback system may determine whether the second media playback system adheres to the group rules based on the response in the second message.

(103) Alternatively, the second media playback system may make available configuration data to media playback systems with which it has indicated availability to form a group. The configuration data may indicate parameters on which group rules may be based. For example, the configuration data may indicate that the second media playback system has access to a particular streaming audio service. Then, based on such configuration data, the first media playback system may determine whether the second media playback system adheres to the group rules.

(104) In other cases, a computing system, such as the computing system **500** of FIG. 5, may determine whether the second media playback system adheres to the group rules. As noted above, in some cases, the first media playback system and the second media playback system may exchange messages involved in group formation via a computing device. This computing device (or a similar computing device connected to that computing device via a network) may maintain or have access to the configuration data of the second media playback system noted above. Based on this configuration data, the computing device may determine whether the second media playback system adheres to the group rules. After determining that the second media playback system adheres to the group rules, the computing system may send a message to the first media playback system that indicates that the first media playback system adheres to the group rules. After receiving such a message, the first media playback system may then form a group with the second media playback system.

b. Example Method for Generating a Social Queue

(105) As noted above, two or more media playback systems in a group may share access to a social queue. Media playback systems within the group may interact with the social queue in various ways. For instance, a given media playback system within the group may create a social queue, modify the social queue, or playback media items within the social queue.

(106) Method **800** shown in FIG. 8 presents an embodiment of a method that can be implemented within an operating environment involving, for example, the media playback system **100** of FIG. 1, one or more of the playback device **200** of FIG. 2, and one or more of the control device **300** of FIG. 3. Method **800** may include one or more operations, functions, or actions as illustrated by one or more of blocks **802-806**. Although the blocks are illustrated in sequential order, these blocks may also be performed in parallel, and/or in a different order than those described herein. Also, the various blocks may be combined into fewer blocks, divided into additional blocks, and/or removed based upon the desired implementation.

(107) i. Receiving (1) a First Message Indicating a First Set of Media Items, and (2) A Second Message Indicating a Second Set of Media Items.

(108) At block **802**, the method involves receiving a first message indicating a first set of media items and a second message indicating a second set of media items. For instance, computing device **500** may receive the first message and the second message via network interface **506**. Computing device **500** may provide a cloud service that facilitates carrying out the present method to generate a social queue. For instance, first-party service **602** of cloud **600** may include a computing device

500 that receives the first message and the second message. Alternatively, a component of media playback system may receive the first message and the second message via a network interface, such as network interface **214** of playback device **200** or network interface **306** of control device **300**.

(109) Computing device **500** may receive the first message from a first media playback system and the second message from a second media playback system. Within examples, computing device **500** may receive the first message from a controller device or a playback device. For instance, network interface **506** may connect over a network (e.g., the Internet) with respective network interfaces of devices of the first media playback system and the second media playback system. In one example, referring back to FIG. 7, computing device **500** may receive the first message and the second message from the first media playback system in office **710** and the second media playback system in office **730**, respectively.

(110) Alternatively, computing device **500** may receive the first message from a computing device associated with the first media playback system. For instance, the computing device **500** may receive the first message from the first user's smartphone or personal computer. The association may be a particular link between the computing device and the first media playback system that establishes that messages from the computing device may specify a first set of media items on behalf of the first media playback system. For instance, the computing device may have a memory with instructions stored thereon such that the computing device may be a control device of the first media playback system. While the computing device need not necessarily control the first media playback system at all times, the computing device, by reason of linking with the first media playback system as a control device of the first media playback system, may specify the first set of media items.

(111) In some cases, before sending the first message and the second message, the first media playback system and the second media playback system may form a group or indicate availability to form a group with one another. For example, before receiving the first message and the second message, the computing device **500** may receive a third message indicating that the first media playback system and the second media playback system shall form a group of media playback systems. After receiving the third message, the computing device **500** may cause the first media playback system and the second media playback system to form the group of media playback systems. Within examples, the first media playback system, the second media playback system, and or a third party service (e.g., social networking service **606** of FIG. 6) may send the third message. For instance, the first media playback system may send a message inviting the second media playback system to group. Alternatively, the third party service may send a message indicating two media playback systems to group.

(112) The first set of media items may take a variety of different forms. The media items may include, for example, any of the example audio content noted above. The first set of media items may be media items that are currently queued for playback on the first media playback system. As noted above, playback queue region **440** of controller interface **400** shown in FIG. 4 may include graphical representations of audio items in a queue of a media playback system. In other cases, the first set of media items may be media items in a queue that has been saved for later playback on the first media playback system. Yet, in other cases, the first set of items may be a playlist. In still other cases, the first set of media playback items may include any media items designated for inclusion in the social queue. For instance, the first media playback system may receive user input via a controller interface, such as controller interface **400** of FIG. 4. The user input may designate certain media items for inclusion in the social queue. The second set of media items may, for example, represent any of the above examples with respect to the second media playback system. Other examples are certainly possible as well.

(113) As noted above, the first user (of the first media playback system) and the second user (of the second media playback system) may share certain music interests, such as hip-hop. The first user

and the second user may desire to enjoy their mutual interest in hip-hop by sharing media items via a social queue. In one example, the first user may designate on a controller interface of control device **718** a playlist some of her favorite hip-hop tracks. The first media playback system may then send an indication of these designated hip-hop tracks as a first set of media items in a first message to computing device **500**. The second user may then designate on a controller interface of control device **736** tracks from a new hip-hop album. The first media playback system may then send an indication of these designated tracks from the new hip-hop album as a second set of media items in a second message to computing device **500**.

(114) ii. Generating a Playback Queue

(115) At block **804**, the method involves generating a playback queue comprising the first set of media items indicated in the first message and the second set of media items indicated in the second message. In particular, the generated playback queue may be a “social queue” that includes media items received from both the first media playback system and the second media playback system.

(116) The computing device may generate the playback queue with the first set of media items and the second set of media items in different orders. For instance, the generated playback queue may list media items in the order that they are received by the computing device **500**. Alternatively, the generated playback queue may list media items in random order.

(117) In some cases, the first media playback system may have access to different audio content sources than the first media playback system. For instance, the first media playback system may have access to a first streaming audio service which provides 20 million streaming audio tracks. The second media playback system may have access to a second streaming audio service which provides access to 15 million streaming audio tracks. Typically, access is gained to a streaming audio service by registering with the audio service (i.e., providing user information to the audio service to create a user profile). Some audio services may also require payment of a subscription fee before accessing the streaming audio service. The first streaming audio service may provide many of the same audio tracks as the second streaming audio service, but, in some cases, the first streaming audio service may provide some audio tracks that are not available with the second streaming audio service. Similarly, the second streaming audio service may provide some audio tracks that are not available with the first streaming audio service.

(118) In one instance, the first set of media items may include one or more audio tracks from the first audio service. For instance, a given media item in the first set of media items may have a particular media item identifier to access the one or more audio tracks using the first streaming service. The first message may specify the media item identifier for each media item in the first set. A media item identifier may be a string or a number that distinguishes the audio track. In some cases, the media item identifier may a URI or URL.

(119) Since, as noted above, the second media playback system has access to the first streaming media service and not the second streaming media service, the second media playback system may be unable to playback the one or more audio tracks using the first audio service. However, the second media playback system may have access to the one or more audio tracks via the second streaming audio service. Therefore, the computing device **500** may cross-link the media item identifier of the first streaming service to a media item identifier of the second streaming audio service. For a given media item, cross-linking may involve searching the second media service provider for the media item and then determining the media item identifier of the media item in the second streaming audio service. To find the media item, the computing device may search the second audio service by title, artist, album, or by any suitable identifying information. To facilitate searching, each media item may have metadata embedded in the media item or associated with the media file. The metadata may specify various information about the file, such as the title, the artist, or the album, among other information. After cross-linking the media item between the first streaming audio service and the second streaming audio service, the social queue may include, for a

given media item, a media item identifier of the first streaming audio service and a media item identifier of the second streaming audio service.

(120) In other cases, before adding a given media playback item to the generated playback queue, the computing device **500** may determine whether the media playback systems in the group have access to the media playback item. For instance, the computing device **500** may determine that the first media playback system has access to the given media item using a given service (e.g., the first streaming media service or the second streaming media service). And the computing device **500** may determine that the second media playback system has access to the given media item using the given service. Then, based at least in part on the determinations, the computing device may add the given media item to the playback queue.

(121) iii. Transmitting the Generated Playback Queue

(122) At block **806**, the method involves transmitting, to at least one of the first media playback system and the second media playback system, the generated playback queue. For instance, computing device **500** may transmit the generated playback queue to the first playback device in office **710** and the second playback device in office **730**. In some cases, the computing device **500** may transmit the generated playback queue after receive a request for the generated playback queue (e.g., a request to play back media items in the generated playback queue).

(123) In some cases, before transmitting the generated playback queue, computing device **500** may determine that at least one of the first media playback system and the second media playback system is in the group of media playback systems. The computing device **500** may then transmit the generated playback queue to each media playback system in the group of media playback systems.

(124) The social queue (i.e., the generated playback queue) may cause playback of the media items in the social queue in a variety of different ways. In one example, the social queue may cause the first media playback system to playback the media items in the social queue as a radio-type channel in which the first media playback system can playback the media items, but is not necessarily able to control the order of playback. In other examples, the social queue may cause playback of the media items in round-robin order or in random order (i.e., shuffled), such as accordingly to a shuffling algorithm. In yet other examples, the first media playback system may receive user input that selects one or more particular media items from the social queue to playback. Further examples are possible as well.

(125) Media playback systems may modify the generated playback queue (i.e., the social queue). For instance, after generating the playback queue, the computing device **500** may, receive, from the first media playback system, a command to modify the playback queue. The received command may indicate one or more media items. The command may instruct the computing device **500** to add the one or more media items indicated by the received command to the generated playback queue. Or the command may instruct the computing device **500** to remove the one or more media items indicated by the received command from the generated playback queue. Alternatively, the command may instruct the computing device **500** order or re-order the one or more media items indicated by the received command within the generated playback queue. After modifying the social queue, the computing device **500** may transmit, to the first media playback system and/or the second media playback system, the modified playback queue. This transmission may update the social queue to reflect the modification.

(126) In some cases, the computing device **500** may carry out the received command to modify the playback queue, but, in other cases, the computing device **500** may decline to carry out the received command. Before carrying out the received command, the computing device **500** may determine that the received command obeys one or more group rules or queue rules. Group rules may apply to any social queue created by the group while queue rules may apply to a particular queue. Such group rules or queue rules may facilitate social aspects of the social queue. For instance, one rule may suggest that a command may not add or remove more than ten media items from the social

queue per hour. This rule may facilitate more equal control of the social queue (e.g., adding and removing media items) by the first user and the second user. Another rule may suggest that the computing device send a message indicating the modification to the social queue to the first media playback system and the second media playback system.

(127) A given group of media playback systems may have multiple social queues. Media playback systems within the group may select among the social queues. For instance, one social queue may be labeled “Opera.” Users of media playback systems may tend to designate tracks in the opera genre in the “Opera” social queue. In some cases, the “Opera” social queue may have a queue rule that requires media items in the “Opera” queue to be audio tracks in the opera genre. For instance, before adding an item to the generated queue, the computing system may determine that the media item is in the opera genre. In some case, the computing system may base such a determination upon the media item's metadata, which may specify the genre of the media item, among other information. Other social queues may be labeled for other genres. Other social queues may be based on artist, album, date, or any other conceivable rationale for grouping. In some cases, the media items may have no apparent relationship to one another.

(128) FIG. 12A is an example user interface **1200A** of a control device, such as control device **718** of FIG. 7, that may be configured to facilitate various interactions with a social queue, such as playback or modification. The user interface **1200A** includes an information region **1202A**, a queue selection region **1204A**, a social queue region **1206A**, and a control region **1208A**. The user interface **1200A** as shown is just one example of a user interface that may be provided on a control device accessed by users to control a media playback system such as the media playback system **100**. Other user interfaces of varying formats, styles, and interactive sequences may alternatively be implemented on one or more control devices to provide comparable control access to a media playback system.

(129) The information region **1202A** may include an indication of a currently selected group. In FIG. 12A, Group **1** is shown as currently selected. Further the information region **1202A** may include an indication of a number of presently configured social queues (e.g., three social queues). The information region **1202A** may include other information as well.

(130) The queue selection region **1204A** may include selectable (e.g., by way of touch or by using a cursor) icons to select different queues for playback, creation, or modification. The queue selection region **1204A** may distinguish between groups using labels or other identifiers. For example, a given selectable icon may comprise a queue label. The queue selection region **1204A** may distinguish between a currently selected queue and other queues configured on the control device. For instance, the label of the currently selected queue may appear in bold text, among many other examples. In FIG. 12A, Queue **1** is shown as currently selected.

(131) The social queue region **1206A** may include indications (e.g., graphical representations) of media items that are in the currently selected social queue. The graphical representations of media items in the social queue region **1206A** may include track titles, artist names, track lengths, and other relevant information associated with the media items in the social queue. In one example, graphical representations of media items may be selectable to bring up additional selectable icons to manage and/or manipulate the social queue and/or media items represented in the social queue. For instance, a represented media item may be removed from the playback queue, moved to a different position within the playback queue, or selected to be played immediately, or after any currently playing audio content, among other possibilities.

(132) The control region **1208A** may include selectable icons to control the social queue configuration. For instance, the control region may include a “Save” icon to commit changes made in the social queue region **1206A**. In some cases, user input selecting such an icon may cause the control device to send a message to a media playback system.

(133) User interface **1200B** in FIG. 12B is another instance of user interface **1200A**. The user interface **1200B** includes an information region **1202B**, a queue selection region **1204B**, a social

queue region **1206B**, and a control region **1208B**. In the queue selection region **1104B**, Queue 2 is shown as currently selected.

(134) A media playback system may join multiple groups each having multiple social queues. In aggregate, from the perspective of the user, each queue may represent different “buckets” of media items. One bucket may be the “Opera” social queue noted above. Another bucket may represent a social queue belonging to a group that includes media playback systems registered to the user's friends in a particular social network. A third bucket may represent another social queue belonging to a group that includes media playback systems registered to a subset of a user's friends in another social network (e.g., friends from college). Many combinations are possible.

(135) In some cases, a generated queue may include a set of media items from a source that is not the first media playback system or the second media playback system. For instance, computing device **500** may receive an additional set of media items from a third media playback system. In some cases, the third media playback system may add the additional set of media items to the generated playback queue. In other cases, the third media playback system may generate a second playback queue that comprises at least the additional set of media items. Then, the third media playback system may update the social queue and/or provide the second queue to the group. For example, the third media playback system may transmit the generated second playback queue to the first media playback system and/or the second media playback system.

(136) Alternatively, computing device **500** may receive an additional set of media items from a computing device, such as another instance of computing device **500**. The second instance of computing device **500** may provide a cloud service, such as a file hosting service or a social networking service, among other examples. For example, as part of a social networking service, the second instance of computing device **500** may provide various features. As one example, the social network service may provide an interface for displaying the social queue. The media playback system may have previously registered with the social networking service, such that the media playback system and the social networking service share certain information. For instance, registration may involve registering a user account associated with a media playback system with a user profile of the social networking service. The social networking service may then recognize the user profile as being associated with a certain media playback system. Further, the social networking system may recognize “friend” connections of the user profile. The social networking system may also recognize groups formed by the certain media playback system with media playback systems registered to other user profiles of the social networking service. Further, the social networking service may provide an interface that indicates such user profiles, media playback systems, and the groups to which the user profiles belong. As noted above, such an interface may be provided via a web browser or via a specialized application for the cloud service, among other examples.

(137) The interface may also display an indication of the social queue, or the media items in the social queue. The indication of the social queue may indicate the media items in the social queue in various ways. For example, the interface may display an indication of which media items in the social queue were selected via the social networking service. The interface may display an indication of which user of the social networking service added particular media items to the social queue. Many examples are possible.

(138) The interface may also display controls for selecting the additional set of media items from audio content sources available to media playback system registered to the user. In some cases the interface may display controls for selecting media tracks to include in a social queue for use by a group. An indication of selected media items may appear on the interface provided by the social network. Further, the social networking service may update its interface to indicate the selected media items in the social queue. Also, many social networking services also have messaging systems. An example social networking service may send, via a message system, messages that indicate that a particular social queue has been updated with an additional set of media items.

Recipients of such a message may include users who have grouped their media playback systems together to use the particular social queue.

(139) Those having skill in the art will appreciate that numerous other arrangements are possible in addition to the examples provided above. For example, a device of a media playback system, such a control device, or a playback device, may carry out one or more of the functions described above alone or in combination with another device.

(140) c. Example Method to Facilitate a Social Queue of a Group of Media Playback Systems

(141) In one example, a control device of a media playback system may facilitate grouping media playback systems into a group having a social queue. However, one having skill in the art will appreciate that any suitable computing device may facilitate such features.

(142) Method **900** shown in FIG. **9** presents an embodiment of a method that can be implemented within an operating environment involving, for example, the media playback system **100** of FIG. **1**, one or more of the playback device **200** of FIG. **2**, one or more of the control device **300** of FIG. **3**, and one or more of computing device **500** of FIG. **5**. Method **900** may include one or more operations, functions, or actions as illustrated by one or more of blocks **902-906**. Although the blocks are illustrated in sequential order, these blocks may also be performed in parallel, and/or in a different order than those described herein. Also, the various blocks may be combined into fewer blocks, divided into additional blocks, and/or removed based upon the desired implementation.

(143) i. Receiving a Command to Form a Group of Media Playback Systems.

(144) At block **902**, the method involves receiving, at a computing device associated with a first media playback system, a command to form a group of media playback systems that comprises the first media playback system and at least one other media playback system. The computing device associated with a first media playback device may be a control device, such as control device **300**. Alternatively, the computing device may be any computing device having a processor, memory, and a network interface.

(145) As noted above, in FIG. **7**, a first media playback system in office **710** includes control devices **716** and **718** (as well as playback devices **712** and **714**). Also, control devices **716** and **718** may be instances of control device **300** of FIG. **3**. In one example, control device **716** may receive via a controller interface (e.g., controller interface **1100A** or **1100B**) user input that indicates a command to form a group of media playback systems. The command may indicate the second media system in office **730**, which includes playback devices **732** and **734**, and also control device **736**. The command may also indicate one or more media playback systems in addition to the second media playback system.

(146) In some cases, before receiving the command to form the group of media playback systems, control device **716** may display a list of media playback systems available for grouping. Control device may display such a list on a user interface, such as user interface **1100A** or **1100B**. As noted above, to aid in forming the group of media playback systems, the first media playback system may maintain or have access to data indicating media playbacks systems that are available to group with the first media playback system. Control device **716** may access such data from a memory, such as memory **304**, or request and then receive such data over a network interface, such as network interface **306**. After displaying the list of available media playback systems, control device **716** may receive user input indicating a selection of one or more of the media playback systems displayed in the list of media playback systems available for grouping. In one example, control device **716** may receive user input representing a selection of the second media playback system in office **730**.

(147) ii. Receiving an Identification of at Least One Source of Audio for Playback by the Group of Media Playback Systems.

(148) At block **904**, the method involves receiving, at the computing device, an identification of at least one source of audio for playback by the group of media playback systems. For instance, control device **300** may receive an identification of at least one source of audio for playback by the

group of media playback systems.

(149) Referring back to FIG. 7, in one example, control device **716** may receive via a controller interface user input that indicates an identification of at least one source of audio for playback by the group of media playback systems. Before receiving the identification, control device **716** may display available sources of audio. For example, control device **716** may display available sources of audio in an audio content sources region **450** of a controller interface **400**. Control device **716** may then receive user input indicating a selection of at least one source of audio.

(150) Available sources of audio may include, without limitation, a queue of the first media playback system, an auxiliary input (i.e., line-in) input, an internet radio channel, a playlist of locally available media items, or a playlist of media items available from a streaming media service. The queue of the first media playback system may be a queue of media items currently queued for playback, or it may be a saved queue of media playback items. Other examples of audio sources are possible as well.

(151) In some cases, the at least one source of audio for playback may include at least a first audio source and a second audio source. In such an instance, the control device **716** may send an instruction to the second media playback system to select the second audio source. The control device may then receive user input that indicates a selection of the first audio source. And the control device **716** may receive a message from the second media playback system that indicates a second audio source.

(152) iii. Sending a Message Comprising (i) an Indication of the Received Command to Form the Group of Media Playback Systems and (ii) an Indication of the at Least One Source of Audio for Playback by the Group of Media Playback Systems.

(153) At block **906**, the method involves sending, by the computing device to the at least one other media playback system, a message comprising (i) an indication of the received command to form the group of media playback systems and (ii) an indication of the at least one source of audio for playback by the group of media playback systems.

(154) The message comprising the indication of the received command to form the group of media playback systems may cause the media playback system(s) receiving the message to form a group with the first media playback system. In one example, control device **716** may send message(s) inviting the at least one other media playback system to group. Control device **300** may then receive message(s) from the at least one other media playback system that acknowledges the indication of the command to form the group of media playback systems. Such acknowledgement may indicate to the control device **300** willingness to form the group. In some cases, control device **716** may cause the first media playback to form the group in response to the indication of the command to form the group. In other case, control device **716** may form the group in response to receiving the acknowledgement. The first media playback system and the second media playback system may then form a group.

(155) The indication of the at least one source of audio for playback by the group of media playback systems may be a social queue, or it may list media items to include in a social queue, among other examples. After receiving the indication, a media playback system may play back the at least one source of audio, or otherwise interact with it.

(156) In some cases, the first media playback system and the second media playback system may have access to the same media items via different audio sources. For example, the first media playback system may have access to a first media service provider and the second media player may have access to a second media service provider. In such a circumstance, the control device may cross-link the media items between the two different audio sources. The indication of the at least one source of audio for playback may include a media item identifier for each audio source. Then, the first media playback system and the second media playback system may play back the same media items from a first audio source and a second audio source, respectively.

(157) In one example, the first audio source and the second audio source may be a playback queue

of the first media playback system and a playback queue of the second media playback system respectively. The playback queue of the first media playback system may indicate a first set of media items. A given media item of the playback queue of the first media playback system may be associated with a respective media item identifier of the first media service provider (e.g., a first streaming audio service). At the same time, the playback queue of second first media playback system may indicate a second set of media items. A given media item of the playback queue of the second media playback system may be associated with a respective media item identifier of the second media service provider (e.g., a second streaming audio service).

(158) Given these two audio sources, control device **716** may associate the respective media item identifier of the first media service provider with a respective media item identifier of the second media service provider. Control device **716** may then send to the second media playback system an indication of the playback queue of the first media playback system. The indication may include at least the respective media item identifier of the second media service provider. After receiving the indication, the second media playback system may play back the media items in the playback queue of the first media playback system by accessing the media items at the second media service provider using the respective media item identifiers of the media items at the second media service provider.

d. Second Example Method to Facilitate a Social Queue of a Group of Media Playback Systems

(159) In another example, a computing device providing a cloud service, such as a social networking service, may facilitate grouping media playback systems into a group having a social queue. However, one having skill in the art will appreciate that any suitable computing device may facilitate such features.

(160) Method **1000** shown in FIG. **10** presents an embodiment of a method that can be implemented within an operating environment involving, for example, the media playback system **100** of FIG. **1**, one or more of the playback device **200** of FIG. **2**, one or more of the control device **300** of FIG. **3**, and one or more of computing device **500** of FIG. **5**. Method **900** may include one or more operations, functions, or actions as illustrated by one or more of blocks **902-906**. Although the blocks are illustrated in sequential order, these blocks may also be performed in parallel, and/or in a different order than those described herein. Also, the various blocks may be combined into fewer blocks, divided into additional blocks, and/or removed based upon the desired implementation.

(161) i. Receiving an Instruction that Causes at Least a First Media Playback System and a Second Media Playback System to Form a Group of Media Playback Systems.

(162) At block **1002**, the method involves receiving an instruction that causes at least a first media playback system and a second media playback system to form a group of media playback systems. A computing device, such as computing device **500** of FIG. **5** may receive the instruction over a network interface, such as network interface **506**.

(163) In some cases, a first computing device may receive the instruction that causes group formation from a second computing device involved in providing a cloud service. For instance, the second computing device may host a webpage that provides a user interface for selecting media playback systems to group. Alternatively, the second computing device may provide a “back-end” to a “front-end” that provides a user interface for selecting media playback systems to group. The “front-end” may be an application on a mobile device or a web site, among other examples. The “back-end” may receive indications of user input on the front-end that selects media playback systems to group. The “back-end” may then send the instruction that causes group formation to a first computing device.

(164) In other cases, the first computing device may receive the instruction that causes group formation from a control device of a media playback system (e.g., the first media playback system). The control device may receive user input selecting one or more media playback systems to group (including, for example, the second media playback system). The control device may then sent the

instruction to group to the first computing device.

(165) ii. Receiving a First Message Indicating a First Set of Media Items and a Second Message Indicating a Second Set of Media Items.

(166) At block **1004**, the method involves receiving, from a third-party service provider, a first message indicating a first set of media items and a second message indicating a second set of media items. For instance, computing device **500** may receive the first message and the second message via network interface **506**.

(167) Computing device **500** may receive the first message from a first media playback system and the second message from a second media playback system. Within examples, computing device **500** may receive the first message from a controller device or a playback device. For instance, network interface **506** may connect over a network (e.g., the Internet) with respective network interfaces of devices of the first media playback system and the second media playback system. In one example, referring back to FIG. 7, computing device **500** may receive the first message and the second message from the first media playback system in office **710** and the second media playback system in office **730**, respectively.

(168) Alternatively, computing device **500** may receive the first message from a computing device associated with the first media playback system. For instance, the computing device **500** may receive the first message from the first user's smartphone or personal computer. The association may be a particular link between the computing device and the first media playback system that establishes that messages from the computing device may specify a first set of media items on behalf of the first media playback system. For instance, the computing device may have a memory with instructions stored thereon such that the computing device may be a control device of the first media playback system.

(169) The first set of media items may take a variety of different forms. The media items may include, for example, any of the example audio content noted above. The first set of media items may be media items that are currently queued for playback on the first media playback system. As noted above, playback queue region **440** of controller interface **400** shown in FIG. 4 may include graphical representations of audio items in a queue of a media playback system. In other cases, the first set of media items may be media items in a queue that has been saved for later playback on the first media playback system. Yet, in other cases, the first set of items may be a playlist. In still other cases, the first set of media playback items may include any media items designated for inclusion in the social queue. For instance, the first media playback system may receive user input via a controller interface, such as controller interface **400** of FIG. 4. The user input may designate certain media items for inclusion in the social queue. The second set of media items may, for example, represent any of the above examples with respect to the second media playback system. Other examples are certainly possible as well.

(170) iii. Generating A Playback Queue.

(171) At block **1006**, the method involves generating a playback queue comprising the first set of media items indicated in the received first message and the second set of media items indicated in the received second message. In particular, the generated playback queue may be a “social queue” that includes media items received from both the first media playback system and the second media playback system.

(172) iv. Transmitting the Generated Playback Queue.

(173) At block **1008**, the method involves transmitting, to each media playback system in the group of media playback system, the generated playback queue. For instance, computing device **500** may transmit the generated playback queue to the first playback device in office **710** and the second playback device in office **730**. In some cases, the computing device **500** may transmit the generated playback queue after receive a request for the generated playback queue (e.g., a request to playback media items in the generated playback queue).

(174) In some cases, before transmitting the generated playback queue, computing device **500** may

determine that at least one of the first media playback system and the second media playback system is in the group of media playback systems. The computing device **500** may then transmit the generated playback queue to each media playback system in the group of media playback systems.

(175) In addition, for the methods **800**, **900**, and **1000** and other processes and methods disclosed herein, the flowcharts shows functionality and operation of one possible implementation of present embodiments. In this regard, each block may represent a module, a segment, or a portion of program code, which includes one or more instructions executable by a processor for implementing specific logical functions or steps in the process. The program code may be stored on any type of computer readable medium, for example, such as a storage device including a disk or hard drive. The computer readable medium may include non-transitory computer readable medium, for example, such as computer-readable media that stores data for short periods of time like register memory, processor cache and Random Access Memory (RAM). The computer readable medium may also include non-transitory media, such as secondary or persistent long term storage, like read only memory (ROM), optical or magnetic disks, compact-disc read only memory (CD-ROM), for example. The computer readable media may also be any other volatile or non-volatile storage systems. The computer readable medium may be considered a computer readable storage medium, for example, or a tangible storage device. In addition, for the method **500** and other processes and methods disclosed herein, each block in FIG. 5 may represent circuitry that is wired to perform the specific logical functions in the process.

IV. Conclusion

(176) The description above discloses, among other things, various example systems, methods, apparatus, and articles of manufacture including, among other components, firmware and/or software executed on hardware. It is understood that such examples are merely illustrative and should not be considered as limiting. For example, it is contemplated that any or all of the firmware, hardware, and/or software aspects or components can be embodied exclusively in hardware, exclusively in software, exclusively in firmware, or in any combination of hardware, software, and/or firmware. Accordingly, the examples provided are not the only way(s) to implement such systems, methods, apparatus, and/or articles of manufacture.

(177) As indicated above, the present application involves a social queue for a group of media playback systems. In one aspect, a method is provided. The method involves receiving, from a first media playback system, a first message indicating a first set of media items and receiving, from a second media playback system, a second message indicating a second set of media items. The method also involves generating a playback queue comprising the first set of media items indicated in the first message and the second set of media items indicated in the second message. The method further involves transmitting, to at least one of the first media playback system and the second media playback system, the generated playback queue.

(178) In another aspect, a device is provided. The device includes a processor, a network interface, a non-transitory computer-readable storage medium, and program logic stored on the non-transitory computer-readable medium and executable by the processor to perform functions. The functions include receiving, from a first media playback system, a first message indicating a first set of media items and receiving, from a second media playback system, a second message indicating a second set of media items. The functions also include generating a playback queue comprising the first set of media items indicated in the first message and the second set of media items indicated in the second message. The functions further include transmitting, to at least one of the first media playback system and the second media playback system, the generated playback queue.

(179) In yet another aspect, a non-transitory computer readable memory is provided. The non-transitory computer readable memory has stored thereon instructions executable by a computing device to cause the computing device to perform functions. The functions include receiving, from a first media playback system, a first message indicating a first set of media items and receiving,

from a second media playback system, a second message indicating a second set of media items. The functions also include generating a playback queue comprising the first set of media items indicated in the first message and the second set of media items indicated in the second message. The functions further include transmitting, to at least one of the first media playback system and the second media playback system, the generated playback queue.

(180) In another aspect, a method is provided. The method involves receiving, at a computing device associated with a first media playback system, a command to form a group of media playback systems that comprises the first media playback system and at least one other media playback system. The method also involves receiving, at the computing device, an identification of at least one source of audio for playback by the group of media playback systems. The method further involve sending, by the computing device to the at least one other media playback system, a message comprising (i) an indication of the received command to form the group of media playback systems and (ii) an indication of the at least one source of audio for playback by the group of media playback systems.

(181) In yet another aspect, a device is provided. The device includes a processor, a network interface, a non-transitory computer-readable storage medium, and program logic stored on the non-transitory computer-readable medium and executable by the processor to perform functions. The functions include receiving, at a computing device associated with a first media playback system, a command to form a group of media playback systems that comprises the first media playback system and at least one other media playback system. The function also include receiving, at the computing device, an identification of at least one source of audio for playback by the group of media playback systems. The functions further include sending, by the computing device to the at least one other media playback system, a message comprising (i) an indication of the received command to form the group of media playback systems and (ii) an indication of the at least one source of audio for playback by the group of media playback systems.

(182) In another aspect, a non-transitory computer readable memory is provided. The non-transitory computer readable memory has stored thereon instructions executable by a computing device to cause the computing device to perform functions. The functions include receiving, at a computing device associated with a first media playback system, a command to form a group of media playback systems that comprises the first media playback system and at least one other media playback system. The function also include receiving, at the computing device, an identification of at least one source of audio for playback by the group of media playback systems. The functions further include sending, by the computing device to the at least one other media playback system, a message comprising (i) an indication of the received command to form the group of media playback systems and (ii) an indication of the at least one source of audio for playback by the group of media playback systems.

(183) In yet one aspect, a method is provided. The method involves receiving an instruction that causes at least a first media playback system and a second media playback system to form a group of media playback systems. The method also involves receiving, from a third-party service provider, a first message indicating a first set of media items and a second message indicating a second set of media items. The method further involves generating a playback queue comprising the first set of media items indicated in the received first message and the second set of media items indicated in the received second message. The method also involves transmitting, to each media playback system in the group of media playback system, the generated playback queue.

(184) In another aspect, a device is provided. The device includes a processor, a network interface, a non-transitory computer-readable storage medium, and program logic stored on the non-transitory computer-readable medium and executable by the processor to perform functions. The functions include receiving an instruction that causes at least a first media playback system and a second media playback system to form a group of media playback systems. The functions also include receiving, from a third-party service provider, a first message indicating a first set of media items

and a second message indicating a second set of media items. The functions further include generating a playback queue comprising the first set of media items indicated in the received first message and the second set of media items indicated in the received second message. The functions also include transmitting, to each media playback system in the group of media playback system, the generated playback queue.

(185) In yet another aspect, a non-transitory computer readable memory is provided. The non-transitory computer readable memory has stored thereon instructions executable by a computing device to cause the computing device to perform functions. The functions include receiving an instruction that causes at least a first media playback system and a second media playback system to form a group of media playback systems. The functions also include receiving, from a third-party service provider, a first message indicating a first set of media items and a second message indicating a second set of media items. The functions further include generating a playback queue comprising the first set of media items indicated in the received first message and the second set of media items indicated in the received second message. The functions also include transmitting, to each media playback system in the group of media playback system, the generated playback queue.

(186) Additionally, references herein to “embodiment” means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one example embodiment of an invention. The appearances of this phrase in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. As such, the embodiments described herein, explicitly and implicitly understood by one skilled in the art, can be combined with other embodiments.

(187) The specification is presented largely in terms of illustrative environments, systems, procedures, steps, logic blocks, processing, and other symbolic representations that directly or indirectly resemble the operations of data processing devices coupled to networks. These process descriptions and representations are typically used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art. Numerous specific details are set forth to provide a thorough understanding of the present disclosure. However, it is understood to those skilled in the art that certain embodiments of the present disclosure can be practiced without certain, specific details. In other instances, well known methods, procedures, components, and circuitry have not been described in detail to avoid unnecessarily obscuring aspects of the embodiments. Accordingly, the scope of the present disclosure is defined by the appended claims rather than the forgoing description of embodiments.

(188) When any of the appended claims are read to cover a purely software and/or firmware implementation, at least one of the elements in at least one example is hereby expressly defined to include a tangible, non-transitory medium such as a memory, DVD, CD, Blu-ray, and so on, storing the software and/or firmware.

Claims

1. A first computing system comprising: at least one processor; and at least one non-transitory computer-readable medium comprising program instructions that are executable by the at least one processor such that the first computing system is configured to: receive, from a second computing system, a selection of a first media playback device and a second media playback device to be associated with a social group, wherein the first media playback device has access to a first streaming service and does not have access to a second streaming service, wherein the second media playback device has access to the second streaming service and does not have access to the first streaming service; generate a social playback queue for a plurality of media items, wherein each media item in the plurality of media items is available for streaming from both the first streaming service and the second streaming service, and wherein the social playback queue

comprises, for each of the plurality of media items, a first streaming service media identifier for the respective media item and a second streaming service media identifier for the respective media item; and transmit the social playback queue to the first media playback device and the second media playback device, wherein each of the first streaming service media identifiers is useable by the first media playback device to stream the respective media item from the first streaming service, wherein each of the second streaming service media identifiers is useable by the second media playback device to stream the respective media item from the second streaming service.

2. The first computing system of claim 1, further comprising program instructions that are executable by the at least one processor such that the first computing system is configured to transmit a list of one or more media playback devices to the second computing system via a network interface of the first computing system, wherein the list indicates one or more media playback devices available to be added to the social group with an indication next to each of the one or more media playback devices in the list to indicate whether that media playback device belongs to the social group, and wherein the second computing system is configured to display the list via a user interface of the second computing system.

3. The first computing system of claim 1, wherein the first computing system is implemented by a social networking service operating on a cloud computing platform.

4. The first computing system of claim 1, wherein the first media playback device has access to the first streaming service as a result of a registration with the first streaming service, wherein the second media playback device has access to the second streaming service as a result of a registration with the second streaming service.

5. The first computing system of claim 1, further comprising program instructions that are executable by the at least one processor such that the first computing system is configured to transmit the social playback queue to the second computing system for display via a user interface of the second computing system.

6. The first computing system of claim 1, wherein the program instructions that are executable by the at least one processor such that the first computing system is configured to generate the social playback queue for the plurality of media items that are available for streaming on both the first streaming service and the second streaming service, comprise program instructions that are executable by the at least one processor such that first computing system is configured to: receive a first message from the first media playback device, wherein the first message specifies a first set of one or more media items; receive a second message from the second media playback device, wherein the second message specifies a second set of one or more media items; for each of the first set of one or more media items and the second set of one or more media items: determine that a respective media item is available for streaming on both the first streaming service and the second streaming service; following the determination that the respective media item is available for streaming on both the first streaming service and the second streaming service, add the respective media item to the social playback queue.

7. The first computing system of claim 1, wherein each of the plurality of media items comprises audio content.

8. Tangible, non-transitory, computer-readable media storing instructions executable by one or more processors to cause a first computing system to perform operations comprising: receiving, from a second computing system, a selection of a first media playback device and a second media playback device to be associated with a social group, wherein the first media playback device has access to a first streaming service and does not have access to a second streaming service, wherein the second media playback device has access to the second streaming service and does not have access to the first streaming service; generating a social playback queue for a plurality of media items, wherein each media item in the plurality of media items is available for streaming from both the first streaming service and the second streaming service, and wherein the social playback queue comprises, for each of the plurality of media items, a first streaming service media identifier for the

respective media item and a second streaming service media identifier for the respective media item; and transmitting the social playback queue to the first media playback device and the second media playback device, wherein each of the first streaming service media identifiers is useable by the first media playback device to stream the respective media item from the first streaming service, wherein each of the second streaming service media identifiers is useable by the second media playback device to stream the respective media item from the second streaming service.

9. The tangible, non-transitory, computer-readable media of claim 8, the operations further comprising transmitting a list of one or more media playback devices to the second computing system via a network interface of the first computing system, wherein the list indicates one or more media playback devices available to be added to the social group with an indication next to each of the one or more media playback devices in the list to indicate whether that media playback device belongs to the social group, and wherein the second computing system is configured to display the list via a user interface of the second computing system.

10. The tangible, non-transitory, computer-readable media of claim 8, wherein the first computing system is implemented by a social networking service operating on a cloud computing platform.

11. The tangible, non-transitory, computer-readable media of claim 8, wherein the first media playback device has access to the first streaming service as a result of a registration with the first streaming service, wherein the second media playback device has access to the second streaming service as a result of a registration with the second streaming service.

12. The tangible, non-transitory, computer-readable media of claim 8, the operations further comprising transmitting the social playback queue to the second computing system for display via a user interface of the second computing system.

13. The tangible, non-transitory, computer-readable media of claim 8, wherein generating the social playback queue for the plurality of media items that are available for streaming on both the first streaming service and the second streaming service, comprises: receiving a first message from the first media playback device, wherein the first message specifies a first set of one or more media items; receiving a second message from the second media playback device, wherein the second message specifies a second set of one or more media items; for each of the first set of one or more media items and the second set of one or more media items: determining that a respective media item is available for streaming on both the first streaming service and the second streaming service; following the determination that the respective media item is available for streaming on both the first streaming service and the second streaming service, adding the respective media item to the social playback queue.

14. The tangible, non-transitory, computer-readable media of claim 8, wherein each of the plurality of media items comprises audio content.

15. A method performed by a first computing system, comprising: receiving, from a second computing system, a selection of a first media playback device and a second media playback device to be associated with a social group, wherein the first media playback device has access to a first streaming service and does not have access to a second streaming service, wherein the second media playback device has access to the second streaming service and does not have access to the first streaming service; generating a social playback queue for a plurality of media items, wherein each media item in the plurality of media items is available for streaming on both the first streaming service and the second streaming service, and wherein the social playback queue comprises, for each of the plurality of media items, a first streaming service media identifier for the respective media item and a second streaming service media identifier for the respective media item; and transmitting the social playback queue to the first media playback device and the second media playback device, wherein each of the first streaming service media identifiers is useable by the first media playback device to stream the respective media item from the first streaming service, wherein each of the second streaming service media identifiers is useable by the second media playback device to stream the respective media item from the second streaming service.

16. The method of claim 15, further comprising transmitting a list of one or more media playback devices to the second computing system via a network interface of the first computing system, wherein the list indicates one or more media playback devices available to be added to the social group with an indication next to each of the one or more media playback devices in the list to indicate whether that media playback device belongs to the social group, and wherein the second computing system is configured to display the list via a user interface of the second computing system.

17. The method of claim 15, wherein the first computing system is implemented by a social networking service operating on a cloud computing platform.

18. The method of claim 15, wherein the first media playback device has access to the first streaming service as a result of a registration with the first streaming service, wherein the second media playback device has access to the second streaming service as a result of a registration with the second streaming service.

19. The method of claim 15, further comprising transmitting the social playback queue to the second computing system for display via a user interface of the second computing system.

20. The method of claim 15, wherein generating the social playback queue for the plurality of media items that are available for streaming on both the first streaming service and the second streaming service, comprises: receiving a first message from the first media playback device, wherein the first message specifies a first set of one or more media items; receiving a second message from the second media playback device, wherein the second message specifies a second set of one or more media items; for each of the first set of one or more media items and the second set of one or more media items: determining that a respective media item is available for streaming on both the first streaming service and the second streaming service; following the determination that the respective media item is available for streaming on both the first streaming service and the second streaming service, adding the respective media item to the social playback queue.
