

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
9 June 2005 (09.06.2005)

PCT

(10) International Publication Number
WO 2005/053216 A3

(51) International Patent Classification⁷: **H04L 1/18**, 1/16

(21) International Application Number:
PCT/US2004/039733

(22) International Filing Date:
24 November 2004 (24.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/525,127 25 November 2003 (25.11.2003) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

(88) Date of publication of the international search report:
8 December 2005

(15) Information about Correction:
Previous Correction:
see PCT Gazette No. 42/2005 of 20 October 2005, Section II

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHODS AND SYSTEMS FOR RELIABLE DISTRIBUTION OF MEDIA OVER A NETWORK

(57) Abstract: Embodiments of the invention are directed to methods and systems for providing efficient, scalable and reliable transport of large media files to multiple receivers over digital video broadcast (DVB) standards-based broadcast networks. Transport Reliability is achieved using Forward Error Correction (FEC) and a selective, Negative Acknowledgement (NACK) mechanism over an IP-based unicast feedback path. Out-of-band command and control messages over DVB network are used for initiation and coordination between sender and receivers.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/039733

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H04L1/18 H04L1/16		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 H04L		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	LINDER H ET AL: "SATELLITE INTERNET SERVICES USING DVB/MPEG-2 AND MULTICAST WEB CACHING" IEEE COMMUNICATIONS MAGAZINE, IEEE SERVICE CENTER, PISCATAWAY, N.J, US, vol. 38, no. 6, June 2000 (2000-06), pages 156-161, XP000932659 ISSN: 0163-6804	1-4, 9, 14-17
Y	figure 2 page 159, right-hand column, paragraph 2 ----- -/--	5, 6, 10-13, 18-22
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents :		
A document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family		
Date of the actual completion of the international search 22 July 2005		Date of mailing of the international search report 17. 08. 2005
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Stolte, N

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/039733

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>MCCANNE STEVEN: "Scalable Multimedia Communication with Internet Multicast, Light-weight Sessions, and the Mbone" "Online! August 1998 (1998-08), pages 1-29, XP002326493 Retrieved from the Internet: URL:http://citeseer.ist.psu.edu/mccanne98scalable.html> 'retrieved on 2005-04-27! page 23, left-hand column, paragraph 3 - right-hand column, paragraph 1 page 24, right-hand column, last paragraph</p>	5,6
X	<p>PENG GE ET AL INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS: "Comparisons of error control techniques for wireless video multicasting" CONFERENCE PROCEEDINGS OF THE 2002 IEEE INTERNATIONAL PERFORMANCE, COMPUTING, AND COMMUNICATIONS CONFERENCE. (IPCCC). PHOENIX, AZ, APRIL 3 - 5, 2002, IEEE INTERNATIONAL PERFORMANCE, COMPUTING AND COMMUNICATIONS CONFERENCE, NEW YORK, NY : IEEE, US, vol. CONF. 21, 3 April 2002 (2002-04-03), pages 93-102, XP010588360 ISBN: 0-7803-7371-5 Section 3.2</p>	7,8
A	<p>TOMMASI F, MOLENDINI S, VILEI A: "The Satellite Multicast Distribution Protocol (SMDP)" PROCEEDINGS OF INTERNATIONAL CONFERENCE ON SOFTWARE, TELECOMMUNICATIONS AND COMPUTER NETWORKS IEEE SOFTCOM2002, 'Online! 8 October 2002 (2002-10-08), pages 288-292, XP002326494 Retrieved from the Internet: URL:http://netlab.unile.it/{smo1/> 'retrieved on 2005-04-27! Section 5</p>	1-9, 14-17
Y	<p>NONNENMACHER J ET AL: "Optimal multicast feedback" INFOCOM '98. SEVENTEENTH ANNUAL JOINT CONFERENCE OF THE IEEE COMPUTER AND COMMUNICATIONS SOCIETIES. PROCEEDINGS. IEEE SAN FRANCISCO, CA, USA 29 MARCH-2 APRIL 1998, NEW YORK, NY, USA, IEEE, US, vol. 3, 29 March 1998 (1998-03-29), pages 964-971, XP010270382 ISBN: 0-7803-4383-2 page 965, left-hand column, paragraphs 3,4 Section 2.2</p>	10-13, 18-22

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/039733

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	NONNENMACHER J ET AL: "SCALABLE FEEDBACK FOR LARGE GROUPS" IEEE / ACM TRANSACTIONS ON NETWORKING, IEEE INC. NEW YORK, US, vol. 7, no. 3, June 1999 (1999-06), pages 375-386, XP000834489 ISSN: 1063-6692 Sections II-C, V and VI -----	10-13, 18-22
A	EP 0 969 623 A (MICROSOFT CORPORATION) 5 January 2000 (2000-01-05) paragraph '0086! - paragraph '0091! -----	18-22

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2004/039733

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9, 14-17

These claims are directed in particular to the details according to which criterion the repair process is initiated.

2. claims: 10, 18-22

These claims are directed in particular to the details of a backoff timeout, after which a NACK is send and to the details how the backoff timeout is determined.

3. claims: 11-13

These claims are directed in particular to the details of transmission of control information to coordinate the receivers.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US2004/039733

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0969623	A	05-01-2000	US	6381215 B1	30-04-2002
			EP	0969623 A2	05-01-2000
