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(54) Title: METHOD AND APPARATUS FOR A FAULT RESILIENT COLLABORATIVE MEDIA SERVING ARRAY

(57) Abstract: Embodiments of the present invention provide methods, systems, and apparatuses for a fault resilient collaborative media serving array comprising a plurality of nodes. In one embodiment, the present invention provides a method for creating a fault resilient collaborative media serving array where the array nodes do not share memory, the serving of a content file is accomplished by the collaborative efforts of many nodes in the array, and where there is no fixed allocation of sessions to nodes.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/21834

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - G06F 15/173 (2008.01) USPC - 709/238 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) USPC: 709/238		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 709/203, 205, 213, 217, 238; 715/738, 740, 748, 751		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Electronic Databases Searched: Pub WEST (USPT, PGPB, EPAB, JPAB); Google Scholar Search Terms Used: DSDD, multi-media, video-on-demand, movie-on-demand, distribution, network, stream, nodes, partition, reassemble, fast-forward, rewind, trick, token, metadata, time, date, seed, broker, client etc.		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Tusch, Roland, "Design and Implementation of an Adaptive Distributed Multimedia Streaming Server," Dissertation, Universitat Klagenfurt, April 2004 [retrieved 11 March 2008 (11.03.2008)]	1-3, 7-14, 23-37, 39-40
Y	Retrieved from the Internet. < http://elearning.itc.hu/elearning/hu/kutatas/docs/thesis.pdf?PHPSESSID=e38dcc2366ee35b54ad1077ec36aabf7 > entire document, especially pg 13, para 2; pg 25, para 1; pg 48, para 2, 4; pg 78, para 1, 3; pg 79, para 1; pg 83, para 5; pg 94, para 1 to pg 95, para 1-2; pg 96, para 1; pg 97, para 5; pg 99, para 1; pg 107, para 2; pg 109, para 2; pg 117, para 1; pg 119, para 2; pg 132, para 3 to pg 133, para 4; pg 142, para 4; pg 155, para 5; pg 160, para 2; 3-5; Fig. 5.2	4-6 and 38
Y	US 2004/0255323 A1 (VARADARAJAN et al.) 16 December 2004 (16.12.2004) entire document, especially para [0010], [0039], [0050] and Fig. 10	4-6 and 38
A	US 6,088,330 A (BRUCK et al.) 11 July 2000 (11.07.2000)	1-14 and 23-40
A	US 6,813,777 B1 (WEINBERGER et al.) 02 November 2004 (02.11.2004)	1-14 and 23-40
A	US 2006/0064716 A1 (SULL et al.) 23 March 2006 (23.03.2006)	1-14 and 23-40
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* 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 application or patent 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 11 March 2008 (11.03.2008)		Date of mailing of the international search report 06 MAY 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/21834

Box No. 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 No. 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 Extra 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 additional fees, this Authority did not invite payment of additional fees.
- 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.:
1-14 and 23-40

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/21834

Continuation of:

Box No. III -- Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group 1, claims 1-14 and 23-40, drawn to a system/method for delivering partitioned content file to a user/client device over a network.

Group 2, claims 15-22, drawn to a node for delivering content to a user comprising a stream pump for sending ordered content parts to the user over a downstream network.

Group 3, claims 41-61, drawn to a method for sending content to the user by allocating partitioned content parts to a plurality of sending nodes.

Group 4, claims 62-78, drawn to a method for recovering from fault in a content serving array comprising a plurality of nodes.

The inventions listed as Groups 1-4 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The special technical feature of the Group 1 invention is delivering partitioned content file to a user/client device over a network. The special technical feature of the Group 2 invention is a stream pump for sending ordered content parts to the user over a downstream network. The special technical feature of the Group 3 invention is sending content to the user by allocating partitioned content parts to a plurality of sending nodes. The special technical feature of the Group 4 invention is recovering from fault in a content serving array comprising a plurality of nodes. Therefore, unity of invention is lacking.