(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 1 June 2006 (01.06.2006)

(51) International Patent Classification:

(21) International Application Number:

PCT/US2005/042436

(22) International Filing Date:

H04J 3/16 (2006.01)

23 November 2005 (23.11.2005)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/630,853 24 November 2004 (24.11.2004) US 60/632,825 2 December 2004 (02.12.2004) US

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

(10) International Publication Number $WO\ 2006/058067\ A3$

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, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, 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, LT, LU, LV, 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).

Declarations under Rule 4.17:

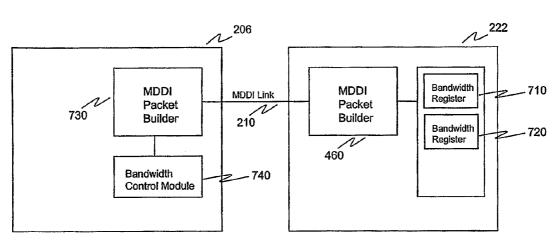
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 30 November 2006

[Continued on next page]

(54) Title: SYSTEMS AND METHODS FOR DIGITAL DATA TRANSMISSION RATE CONTROL



(57) Abstract: The present invention provides systems and methods for adaptive digital data transmission rate control. A digital data transmission system for adaptively transferring packets over a transmission link includes a client device (206) having a bandwidth control module (740) and a host device (222) coupled to the client device over the transmission link (201). The host device includes one or more bandwidth control registers (710, 720) and a packet builder (460). The bandwidth control module determines a packet speed and/or size for packets transmitted from the host device to the client device over the transmission link. The bandwidth control registers store the requested packet size and/or rate. The packet builder accesses these registers when transmitting packets to determine the requested packet size and/or rate.



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.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US05/42436

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| A. CLASSIFICATION OF SUBJECT MATTER IPC: H04J 3/16(2006.01) | | | | | |
| USPC: 370/468 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) U.S.: 370/468, 470, 471, 474, 437 | | | | | |
| 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 practicable, search terms used) EAST | | | | | |
| C. DOC | UMENTS CONSIDERED TO BE RELEVANT | | | | |
| Category * | Citation of document, with indication, where a | | | Relevant to claim No. | |
| A,P | US 2005/0248685 A1 (SEO et al.) 10 November 200 | 5, see paragraphs 0014-0 | 0015. | 1-14 | |
| A,P | US 2005/0165970 A1 (CHING et al.) 28 July 2005, see abstract. | | | 1-14 | |
| A | US 2004/0073697 A1 (SAITO et al.) 15 April 2004, see abstract. | | | 1-14 | |
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| Date of the actual completion of the international search | | Date of mailing of the international search report | | | |
| 29 August 2006 (29.08.2006) | | : | 02 | <u>UCT 2006</u> | |
| Name and mailing address of the ISA/US | | Authorized officer | 1) | | |
| Mail Stop PCT, Attn: ISA/US Commissioner of Patents | | Bob A. Phunkulh | Kugeni | a SAAA | |
| P.O. Box 1450 Alexandria, Virginia 22313-1450 | | Telephone No. 571-27 | | Jo you | |
| | (571) 273_3201 | | part . | - <i>J</i> J | |

Form PCT/ISA/210 (second sheet) (July 1998)