(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 April 2005 (28.04.2005)

PCT

(10) International Publication Number
WO 2005/038660 A3

(51) International Patent Classification[7]: G06F 13/16, 13/40, 13/42

(21) International Application Number: PCT/US2004/034475

(22) International Filing Date: 18 October 2004 (18.10.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/688,461 17 October 2003 (17.10.2003) US

(71) Applicant *(for all designated States except US)*: **MICRON TECHNOLOGY, INC.?** [US/US]; 8000 South Federal Way, Boise, Idaho 83716-9632 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **MEYER, James, W.?** [US/US]; 300 Longlake Court, Shoreview, Minnesota 55126 (US). **RENICK, Kirsten?** [US/US]; 1440 Grand Avenue, Apt. 1, St .Paul, Minnesota 55105 (US).

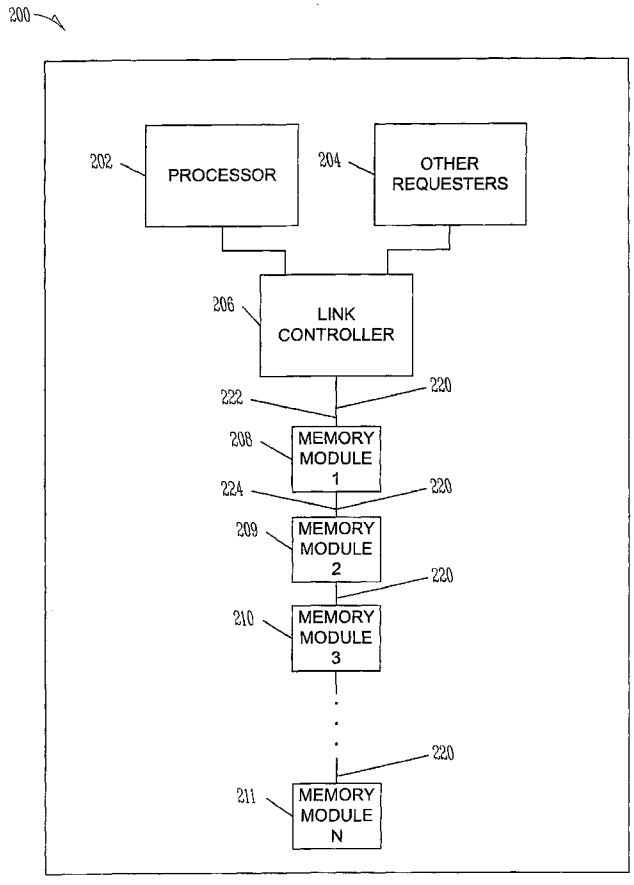
(74) Agents: **STEFFEY, Charles, E.** et al.; P.O. Box 2938, Minneapolis, MN 55402 (US).

(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,

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR SENDING DATA FROM MULTIPLE SOURCES OVER A COMMUNICATIONS BUS



(57) Abstract: In a memory system, multiple memory modules (208-211, Figure 2) communicate over a bus (220). Each memory module includes a hub (302, Figure 3) and at least one memory storage unit (304). The hub receives local data (410, Figure 4) from the memory storage units, and downstream data (420) from one or more other memory modules. The hub assembles (718, Figure 7) data to be sent over the bus within a data block structure (440), which is divided into multiple lanes (508-515, Figure 5). An indication is made (612, Figure 6) of where, within the data block structure, a breakpoint will occur in the data being placed on the bus by a first source (e.g., the local or downstream data). Based on the indication, data from a second source (e.g., the downstream or local data) is placed in the remainder of the data block, thus reducing gaps on the bus.

WO 2005/038660 A3

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, 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*

— *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:
1 September 2005

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.