

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
16 November 2006 (16.11.2006)

PCT

(10) International Publication Number
WO 2006/121175 A3

(51) International Patent Classification:
G06F 1/32 (2006.01) *G06F 1/20* (2006.01)

(21) International Application Number:
PCT/JP2006/309616

(22) International Filing Date: 9 May 2006 (09.05.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/125,495 10 May 2005 (10.05.2005) US

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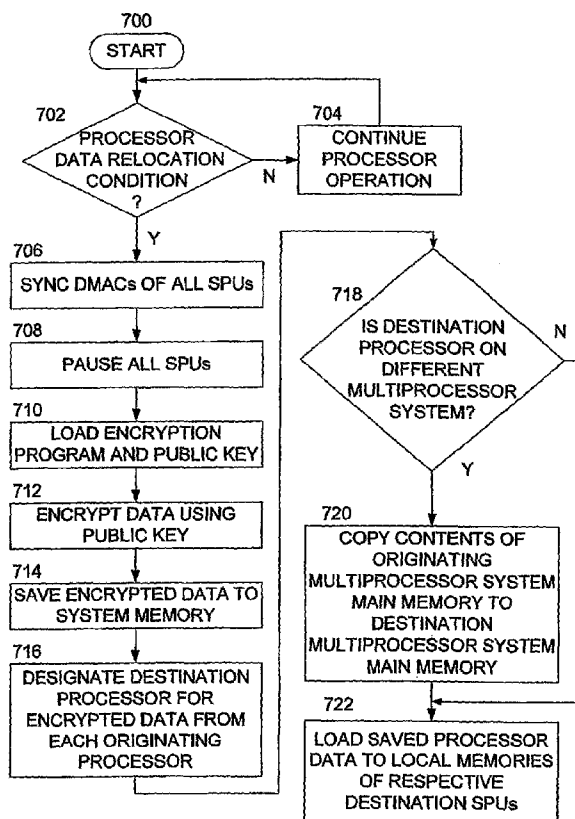
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, 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).

[Continued on next page]

(54) Title: METHODS AND APPARATUS FOR POWER MANAGEMENT IN A COMPUTING SYSTEM



(57) Abstract: One or more processors within a computing system and the processor(s)' associated local memories may be operatively connected to a main memory enabling data transfer between the main memory and the local memories, in which the computing system can carry out actions that may include: generating a pause condition for one or more processors within a computing system; pausing the one or more processors; saving data from a local memory of the one or more processors to the main memory; hibernating the one or more processors; restoring power to the one or more processors; transferring the saved data originating from the one or more processors back to one originating processor or to designated destination processors in the computing system.



Published:

— with international search report

(88) Date of publication of the international search report:

14 June 2007

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/JP2006/309616

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F1/32 G06F1/20

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)
G06F

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 6 240 521 B1 (BARBER RONALD JASON ET AL) 29 May 2001 (2001-05-29) column 2, line 65 - column 6, line 44; figures 1-8	1-8, 11-20, 23-25 9,10,21, 22
X Y	US 5 913 068 A (MATOBA ET AL) 15 June 1999 (1999-06-15) column 3, line 27 - column 6, line 2; figures 1-8 ----- -/--	1-8, 11-20, 23-25 9,10,21, 22

☒ Further documents are listed in the continuation of Box C.

☒ See patent family 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
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- *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

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- *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.
- *Z* document member of the same patent family

Date of the actual completion of the international search

29 January 2007

Date of mailing of the international search report

05/02/2007

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INTERNATIONAL SEARCH REPORT

International application No

PCT/JP2006/309616

G(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 6 247 041 B1 (KRUEGER PHILLIP ERIC [US] ET AL) 12 June 2001 (2001-06-12) column 1, line 11 - column 5, line 62 column 10, line 12 - column 11, line 12 figures 1-8	1-8, 11-20, 23-25 9,10,21, 22
X Y	US 2002/002578 A1 (YAMASHITA KOICHIRO [JP]) 3 January 2002 (2002-01-03) paragraph [0111] - paragraph [0170]; figures 12-16	1-8, 13-20,25 9,10,21, 22
X Y	US 2003/079151 A1 (BOHRER PATRICK JOSEPH [US] ET AL) 24 April 2003 (2003-04-24) paragraph [0015] - paragraph [0028]; figures 1-3	1-8, 11-20, 23-25 9,10,21, 22
X Y	US 2005/050373 A1 (ORENSTIEN DORON ET AL) 3 March 2005 (2005-03-03) paragraph [0034]; figure 4	1-8, 11-20, 23-25 9,10,21, 22
Y	JP 2005 099984 A (TOKYO SHIBAURA ELECTRIC CO) 14 April 2005 (2005-04-14) the whole document & US 2005/105738 A1 (HASHIMOTO MIKIO [JP]) 19 May 2005 (2005-05-19) paragraph [0026] - paragraph [0065]; figures 1-4	9,10,21, 22
A	US 2003/229662 A1 (LUICK DAVID ARNOLD) 11 December 2003 (2003-12-11) paragraphs [0016] - [0020] paragraphs [0096] - [0102]; figures 13-15	1-3, 13-15,25
A	US 5 745 778 A (ALFIERI ROBERT A [US]) 28 April 1998 (1998-04-28) the whole document	6-8, 18-20
A	US 5 615 263 A (TAKAHASHI RICHARD J [US]) 25 March 1997 (1997-03-25) the whole document	1-8, 11-20, 23-25

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2006/309616

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: 1-3, 13-15, 25

Multiprocessor system pausing operation upon encountering an expiration of a predetermined execution period being one of a video frame rate, 16 millisecond or less than a thermal rise time.

2. claims: 4-8, 16-20

Multiprocessor system with data relocation scheme defining destination processor and predecessor processor

3. claims: 9,10, 21, 22

Multiprocessor system encrypting data in the local memory prior to saving the data.

4. claims: 11,12,23,24

Multiprocessor system responsive to wake-up condition to leave hibernation and transfer data from main memory.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/JP2006/309616

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