

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

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 July 2006 (06.07.2006)

PCT

(10) International Publication Number
WO 2006/072101 A3

(51) International Patent Classification:
G06F 12/10 (2006.01)

(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.

(21) International Application Number:
PCT/US2005/047683

(22) International Filing Date:
29 December 2005 (29.12.2005)

(25) Filing Language:
English

(26) Publication Language:
English

(30) Priority Data:
11/025,126 29 December 2004 (29.12.2004) US

(71) Applicant (for all designated States except US): **INTEL CORPORATION** [US/US]; 2200 Mission College Boulevard, Santa Clara, California 95052 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **GOLDSMITH, Michael** [US/US]; 4011 West Bay Road, Lake Oswego, Oregon 97035 (US). **PANESAR, Kiran** [IN/US]; 6386 Sw Lois Street, Hillsboro, Oregon 97123 (US).

(74) Agents: **BUCKLEY, Patrick** et al.; **BUCKLEY, MASCHOFF & TALWALKAR, LLC**, Five Elm Street, New Canaan, Connecticut 06840 (US).

(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).

Published:

— with international search report

(88) Date of publication of the international search report:
23 November 2006

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: ONE STEP ADDRESS TRANSLATION OF GRAPHICS ADDRESSES IN VIRTUALIZATION

700

RECEIVE A REQUEST FOR MEMORY FOR
A GRAPHICS DEVICE (Pa) ASSIGNED TO A
VIRTUAL MACHINE IN A SYSTEM THAT
SUPPORTS VIRTUALIZATION

705

ASSOCIATE, IN A GRAPHICS MEMORY
TRANSLATION TABLE, THE GUEST
GRAPHICS ADDRESS (Pa) WITH A HOST
PHYSICAL ADDRESS (Ph)

710

(57) Abstract: A system and method including, in some embodiments, receiving a request for a graphics memory address for an input/output (I/O) device assigned to a virtual machine in a system that supports virtualization, and installing, in a graphics memory translation table, a physical guest graphics memory address to host physical memory address translation.

WO 2006/072101 A3

INTERNATIONAL SEARCH REPORT

International application No PCT/US2005/047683

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F12/10

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, PAJ, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 456 954 A (BULLIONS, III ET AL) 26 June 1984 (1984-06-26) figures 1,3-5,13,14 column 2, line 21 - line 40 column 5, line 22 - line 29 column 7, line 15 - column 8, line 48 column 11, line 28 - column 12, line 36	1-28
A	US 2002/082824 A1 (NEIGER GILBERT ET AL) 27 June 2002 (2002-06-27) figures 4,5 paragraphs [0022], [0023], [0041] - [0047]	1-28
A	US 2001/028355 A1 (PORTERFIELD A. KENT) 11 October 2001 (2001-10-11) abstract figures 6a,7,8 paragraphs [0016] - [0020]	1-28

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
- "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, etc. (bution 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

Date of mailing of the International search report

2 June 2006

12/06/2006

Name and mailing address of the ISA/

European Patent Office, P.O. 5818 Floraan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 e-mail,
Fax: (+31-70) 340-3016

Authorized officer

Jardon, S

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2005/047683	
---	--

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 4456954	A 25-06-1984	AU	547403 B2	17-10-1985
		AU	8341582 A	23-12-1982
		CA	1176377 A1	16-10-1984
		DE	3275771 D1	23-04-1987
		EP	0067344 A2	22-12-1982
		ES	8304331 A1	16-05-1983
		JP	1355798 C	24-12-1986
		JP	57212680 A	27-12-1982
		JP	61022825 B	03-06-1986
<hr/>				
US 2002082824	A1 27-06-2002	US	2005240751 A1	27-10-2005
<hr/>				
US 2001028355	A1 11-10-2001	US	6249853 B1	19-06-2001
<hr/>				