

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
2 June 2005 (02.06.2005)

PCT

(10) International Publication Number
WO 2005/050443 A3

(51) International Patent Classification⁷: G06F 9/445, 13/10

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(21) International Application Number: PCT/US2004/036757

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(22) International Filing Date: 3 November 2004 (03.11.2004)

(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.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 10/712,207 12 November 2003 (12.11.2003) US

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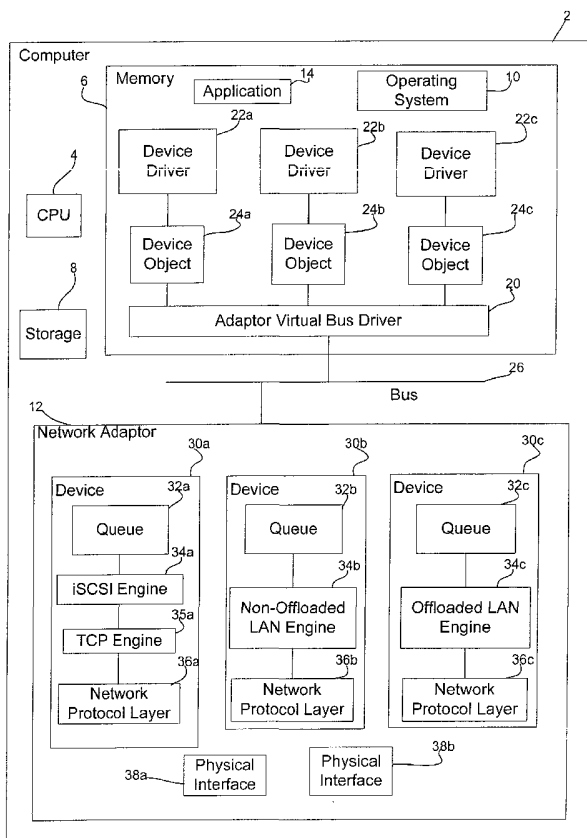
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(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: METHOD, SYSTEM, AND PROGRAM FOR INTERFACING WITH A NETWORK ADAPTOR SUPPORTING A PLURALITY OF DEVICES

(57) Abstract: Provided are a method, system, and program for interfacing with device hardware supporting a plurality of devices. A device interface driver is initialized to represent the device hardware as a virtual bus to an operating system and to represent to the operating system each device supported in the device hardware as a device attached to the virtual bus. The device hardware is initialized and accessed to determine devices supported by the device hardware. One device object is generated for each determined device supported by the device hardware, wherein each generated device object represents the determined device to the operating system. The determined devices are reported to the operating system, wherein the operating system loads a device driver for each of the reported devices supported by the device hardware.



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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, 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).

(88) Date of publication of the international search report:
22 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.

Published:

— *with international search report*

INTERNATIONAL SEARCH REPORT

PCT/US2004/036757

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WOLTHUSEN S D: "Goalkeeper: close-in interface protection" COMPUTER SECURITY APPLICATIONS CONFERENCE, 2003. PROCEEDINGS. 19TH ANNUAL 8-12 DEC. 2003, PISCATAWAY, NJ, USA, IEEE, 8 December 2003 (2003-12-08), pages 334-341, XP010675081 ISBN: 0-7695-2041-3	1,14,28
A	abstract	2-5, 9-18, 22-32, 36-40
	the whole document	
A	US 6 009 480 A (PLESO ET AL) 28 December 1999 (1999-12-28)	1-5, 9-18, 22-32, 36-40
	abstract claims 1-29; figures 1,4,6-8,10	
A	"HORIZONTALLY OFFSET CRT FOR DIRECT CURRENT-COUPLED RESONANT FLYBACK DEFLECTION CIRCUITS" IBM TECHNICAL DISCLOSURE BULLETIN, IBM CORP. NEW YORK, US, vol. 38, no. 10, 1 October 1995 (1995-10-01), pages 441-444, XP000540553 ISSN: 0018-8689 the whole document	1-5, 9-18, 22-32, 36-40
A	"HARDWARE CONTENTION SERIALIZATION ALGORITHM" IBM TECHNICAL DISCLOSURE BULLETIN, IBM CORP. NEW YORK, US, vol. 38, no. 4, 1 April 1995 (1995-04-01), pages 73-77, XP000516077 ISSN: 0018-8689 the whole document	1-5, 9-18, 22-32, 36-40
A	EP 0 506 278 A (INTERNATIONAL BUSINESS MACHINES CORPORATION) 30 September 1992 (1992-09-30) abstract figures 1-3 claims 1-13 page 2, line 38 - line 55 page 3, line 34 - line 58 page 4, line 1 - page 5, line 9 page 5, line 25 - line 56	6-8, 19-21, 33-35
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INTERNATIONAL SEARCH REPORT

PCT/US2004/036757

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 5 987 554 A (LIU ET AL) 16 November 1999 (1999-11-16)</p> <p>abstract figures 4a,b,5a,b,6a,b7a-c claims 1-4 column 13, line 14 - column 14, line 58 -----</p>	<p>6-8, 19-21, 33-35</p>

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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: 1-5, 9-18, 22-32, 36-40

Independent claim 1 refers to a method for interfacing a computer system with device hardware, dealing with the steps of hardware, software and driver initialisation, hardware access, collecting device information.

Dependent claims 2-5 and 9-13 define implementation details of the method of claim 1 relating to interfacing.

Claims 14-18, 22-32 and 36-40 correspond to claims 1-5 and 9-13 in different categories (system and article of manufacture)

2. claims: 6-8, 19-21 and 33-35

Dependent claims 6-8 extend the method of claim 1 with additional steps related to data communication as sending and receiving packages, queuing packages, transmitting processing notifications and invoking calls.

Claims 19-21 and 33-35 correspond to claims 6-8 in different categories (system and article of manufacture)

INTERNATIONAL SEARCH REPORT

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5655148	A	05-08-1997	US 5787246 A	28-07-1998
			US 6336152 B1	01-01-2002
			US 6003097 A	14-12-1999
			US 5748980 A	05-05-1998
			US 5793979 A	11-08-1998
			US 5819107 A	06-10-1998
			US 5809329 A	15-09-1998
			US 2003041088 A1	27-02-2003
			US 2004205258 A1	14-10-2004

US 6009480	A	28-12-1999	NONE	

EP 0506278	A	30-09-1992	US 5265252 A	23-11-1993
			AR 246809 A1	30-09-1994
			BR 9201031 A	24-11-1992
			CN 1065346 A ,C	14-10-1992
			DE 69227939 D1	04-02-1999
			DE 69227939 T2	29-07-1999
			EP 0506278 A2	30-09-1992
			JP 2106076 C	06-11-1996
			JP 6089253 A	29-03-1994
			JP 7122863 B	25-12-1995
			KR 9603413 B1	13-03-1996

US 5987554	A	16-11-1999	US 6341322 B1	22-01-2002
			US 6163825 A	19-12-2000
			US 2001052042 A1	13-12-2001
			US 6148355 A	14-11-2000
			US 6219734 B1	17-04-2001
			US 6208616 B1	27-03-2001
			US 6247080 B1	12-06-2001
			US 6499073 B1	24-12-2002
			US 6192434 B1	20-02-2001
			US 6249828 B1	19-06-2001
			US 6182180 B1	30-01-2001
			US 6243773 B1	05-06-2001
			US 6304929 B1	16-10-2001
			US 6173346 B1	09-01-2001
			US 6170028 B1	02-01-2001
			US 6269417 B1	31-07-2001
			US 6202111 B1	13-03-2001
			US 5892928 A	06-04-1999
			US 6179486 B1	30-01-2001
			US 2004153786 A1	05-08-2004
			US 6332202 B1	18-12-2001
			US 6598173 B1	22-07-2003
			US 6697963 B1	24-02-2004
			US 2001020251 A1	06-09-2001
			US 2002042896 A1	11-04-2002
			US 6247898 B1	19-06-2001
			US 6526333 B1	25-02-2003
			US 6073255 A	06-06-2000
			US 6138250 A	24-10-2000
			US 6266721 B1	24-07-2001
			US 6282673 B1	28-08-2001
			US 6243838 B1	05-06-2001
US 6189109 B1	13-02-2001			
US 6122758 A	19-09-2000			

INTERNATIONAL SEARCH REPORT

PCT/US2004/036757

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5987554	A	US 6134668 A	17-10-2000
		US 6145098 A	07-11-2000
		US 6269412 B1	31-07-2001
		US 6170067 B1	02-01-2001
		US 6338150 B1	08-01-2002
		US 6330690 B1	11-12-2001
		US 6202160 B1	13-03-2001
		US 6249885 B1	19-06-2001
		US 6122746 A	19-09-2000
		US 6163849 A	19-12-2000
		US 2003009613 A1	09-01-2003
		US 2004210701 A1	21-10-2004
		US 5962933 A	05-10-1999
		US 6195717 B1	27-02-2001
		US 6249834 B1	19-06-2001
