(19) World Intellectual Property Organization International Bureau

PCT

- (43) International Publication Date 3 July 2008 (03.07.2008)
- (51) International Patent Classification: *G06F 11/07* (2006.01) *G06F 9/44* (2006.01)
- (21) International Application Number: PCT/US2007/087754
- (22) International Filing Date: 17 December 2007 (17.12.2007)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 11/643,422 21 December 2006 (21.12.2006) US
- (71) **Applicant: UNISYS CORPORATION** [US/US]; Unisys Way, MS/E8-114, Blue Bell, PA 19424-0001 (US).
- (72) Inventors: JENNINGS, Andrew, T.; 1117 Marquette Ave., Apt. 1105, Minneapolis, MN 55403 (US). KAO, Feng-Jung; 2505 Como Ave. SE, Minneapolis, MN 55414 (US). LANGSFORD, Kerry, M.; 2859 North Griggs, Roseville, MN 551 13 (US). RIESCHL, Michael, J.; 6810 Cattail Court South, Cottage Grove, MN 55016

(10) International Publication Number WO 2008/079769 A3

(US). SCHROTH, David, W.; 2456 Harriet Ave. S., Minneapolis, MN 55405 (US).

- (74) Agent: GREGSON, Richard, J.; Unisys Corporation, Unisys Way, MS/E8-1 14, Blue Bell, PA 19424-0001 (US).
- (81) Designated States (unless otherwise indicated, for every kind *f* national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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,

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR SYNCHRONIZING MEMORY MANAGEMENT FUNCTIONS OF TWO DISPARATE OPERATING SYSTEMS

208 MAIN MEMORY STATE SAVE QUEUE MEMORY BUFFER AP(s) 210 226 LEGACY OS ACQUIRE DISCARD MEMORY IANAGEMENT PACKET 220 IP EMULATOR 203 112 SYSTEM CONTROL SERVICES SYSTEM CONTRO AP(s) 206 110 COMMODITY OS MEMORY BUFFER 100 102 201 SHARED CACHE IP(s) IOP(s) IOP(s) 108 234 MASS STORAGE DEVICES MASS STORAGE DEVICES FOR LEGACY OS ANALYSIS System COMMODIT OS STATE SAVE FILES STATE SAVE 23 230 Figure 2

(57) Abstract: A memory management interface is provided to synchronize the operation of two disparate operating systems (OSes) that are executing on the same data processing platform. In one embodiment, the first operating system is a legacy OS of the type that is generally associated with an enterprise-level data processing system such as a mainframe. In contrast, the second OS is of a type designed to execute on commodity hardware such as personal computers. The first OS communicates with the second OS via a control logic interface to establish its execution environment, and to perform memory management functions, This interface supports a twophase boot process that ensures that all memory allocated to the first OS can be released if an error occurs that affects operations of the first OS. This prevents the development of memory leaks.



FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, 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: 27 November 2008

INTERNATIONAL SEARCH REPORT

International application No PCT/US2007/087754

		101/08200		
	FICATION OF SUBJECT MATTER G06F11/07 G06F9/44			
	·	<i></i>		
	p International Patent Classification (IPC) or to both national clas	sification and IPC		
	cumentation searched (classification system followed by classif	ication symbols)	· · · · · · · · · · · · · · · · · · ·	
G06F	· · · · · · · · · · · · · · · · · · ·	,		
<u> </u>		· · · · · · · · · · · · · · · · · · ·	· · ·	
Documentation	on searched other than minimum documentation to the extent the	nat such documents are included in the fields s	earched ,	
Electronic da	ata base consulted during the international search (name of dat	a base and, where practical, search terms used	i)	
EPO-Int	ternal, WPI Data, INSPEC			
	· · · · ·			
Category*	ENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of th	o relevant passages	Relevant to claim No.	
Calegory			,	
X	US 6 961 806 Bl (AGESEN OLE [U 1 November 2005 (2005-11-01)	S] ET AL)	1-27	
	' abstract; figures 1,2 column 2, line 20 - line 63 column 3, line 14 - line 37			
	column 10, line 45 $\frac{1}{7}$ column 12	, line 45	,	
A	US 5 805 790 A (NOTA TADASHI [8 September 1998 (1998-09-08) abstract; figures 1-3,5-8	1-27		
	column 2, line 9 - line 59			
	column 7, line 4 - column 8, l			
	column 9, line 29 - line 67 column 10, line 1 - column 11,			
		_/		
		,		
	· · · · ·			
			J <u></u>	
X Furth	ner documents are listed in the continuation of Box C.	X See patent family annex.		
* Special c	categories of cited documents :	'T ¹ later document published after the int	ernational filing date	
	ent defining the general state of the art which Is not ered to be of particular relevance	or priority date and not in conflict with cited to understand the principle or th invention	the application but	
¹ E" earlier o filing d	document but published on or after the international late	¹ X" document of particular relevance; the cannot be considered novel or canno	claimed invention t be considered to	
which	nt which may throw doubts on priority claim(s) or is cited to establish the publication dale of another n or other special reason (as specified)	Involve an Inventive step when the de ¹ Y" document of particular relevance; the cannot be considered to involve an in	claimed invention	
other r	ent referring to an oral disclosure, use, exhibilion or means ent published prior to the international filing date but	document is combined with one or m ments, such combination being obvic In the art.		
later th	nan the priority date claimed	&" document member of the same patent		
Date of the	actual completion of the international search	Date of mailing of the international sea	arch report	
2	2 August 2008	15/09/2008		
Name and r	mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2	Authorized officer		
	NL - 2280 HV RijSWiJk Tel. (+31-70) 340-2040, Tx. 31,651 epo nl, Fax: (+31-70) 340-3016	Rousset, Antoine		

Form PCT/ISA/210 (second sheet) (April 2005)

7

INTERNATIONAL SEARCH REPORT

ş

International application No

PCT/US2007/087754

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2006/123216 Al (KRAUSS KIRK J [US] ET AL) 8 June 2006 (2006-06-08) abstract; figures 1,3,4 paragraph [0017] - paragraph [0024] paragraph [0028] - paragraph [0029] paragraph [0040] - paragraph [0043]	11
A	US 2005/278574 Al (KITAMORN ALONGKORN [US] ET AL KITAMORN ALONGKORN [US] ET AL) 15 December 2005 (2005-12-15) abstract; figure 4 * paragraph [0043] paragraph [0046] - paragraph [0053]	1-27
A	JONGMOO CHOI; SEUNSOAE BAEK; SHIN S Y: "Design and implementation of a kernel resource protector for robustness of Linux module programming" APPLIED COMPUTING 2006. 21ST ANNUAL ACM SYMPOSIUM ON APPLIED COMPUTING, 27 April 2006 (2006-04-27), pages 1477-1481, XP002492363 New York, NY, USA abstract figures 1-3 page 1478, paragraph 2 - page 1479, paragraph 4	1-27

Form POT/ISA/210 (continuation ot second sheet) (April 2005)

7

INTERNATIONAL SEARCH REPORT

Information on patent family members					PCT/US2007/087754		
	itent document in search report		Publication date		Patent family member(s)		Publication date
US	6961806	Bl	01-11-2005	US	7149843	Bl	12-12-2006
us	5805790	A	08-09-1998	JP OP	3196004 8263454		06-08-2001 11-10-1996
us	2006123216	Al	08-06-2006	NONE			,
us	2005278574	Al	15-12-2005	CN JP US	1702625 2005339561 2008140985		30-11-2005 08-12-2005 12-06-2008

,