(19) World Intellectual Property Organization

International Bureau



(10) International Publication Number

(43) International Publication Date 12 June 2008 (12.06.2008)

(51) International Patent Classification: G06F 3/06 (2006.01) H04L 29/06 (2006.01)

(21) International Application Number:

PCT/US2007/086690

(22) International Filing Date:

6 December 2007 (06.12.2007)

(25) Filing Language:

English

(26) Publication Language:

English

ZM, ZW.

(30) Priority Data:

60/873,111 6 December 2006 (06.12.2006) US 60/974,470 22 September 2007 (22.09.2007) US

(71) Applicants and

(72) Inventors: FLYNN, David [US/US]; 8856 Shady Meadow Drive, Sandy, UT 84093 (US). LAGERSTEDT, Bert [US/US]; 1234 E. 50 N., Pleasant Grove, UT 84062 (US). STRASSER, John [US/US]; 2323 South, Syracuse, UT 84075 (US). THATCHER, Jonathan [US/US]; 2259 North 2080 West, Lehi, UT 84043 (US). ZAPPE, Michael [US/US]; 4615 Simms Street, Wheatridge, CO 80033 (US). ATKISSON, David [US/US]; 13011 South Benchview Cove, Draper, UT 84030 (US).

WO 2008/070802 A3 (74) Agents: NEEDHAM, Bruce et al.; 8 East Broadway, Suite

600, Salt Lake City, UT 84111 (US).

- (81) Designated States (unless otherwise indicated, for every kind of 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,
- (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, 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).

(57) Abstract: An apparatus and system are disclosed for

an in-server storage area network ("SAN"). A first storage controller 152a is included within a first server 112a.

The first storage controller 152a controls at least one storage device 154a. The first server 112a includes a network

interface 156a shared by the first server 112a and the first

storage controller 152a. A storage communication module 162 is included that facilitates communication between the

first storage controller 152a and at least one device external

to the first server 112a, where the communication between

the first storage controller 152a and the external device is independent from the first server 112a. An in-server SAN

module 164 is included that services a storage request us-

ing at least one of a network protocol and a bus protocol.

The in-server SAN module 164 services the storage request independent from the first server 112a, the service request

received from a client 114.

[Continued on next page]

(54) Title: APPARATUS, SYSTEM, AND METHOD FOR AN IN-SERVER STORAGE AREA NETWORK

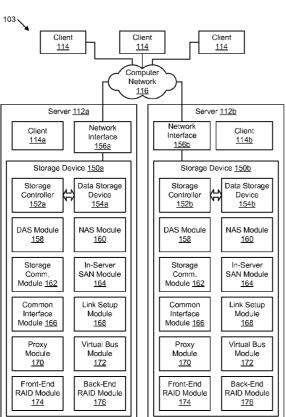
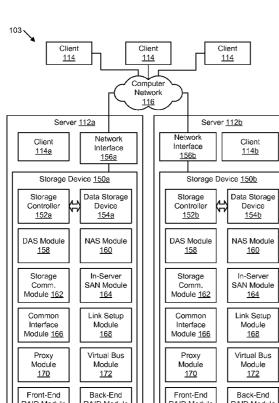


FIG. 1C







WO 2008/070802 A3



Published:

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

9 October 2008

- 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

INTERNATIONAL SEARCH REPORT

International application No PCT/US2007/086690

A. CLASSIFICATION OF SUBJECT MATTER INV. G06F3/06 H04L2 H04L29/06

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 H04L

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

DOCUMENTS CONSIDERED TO BE RELEVANT				
iry* (Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
	WO 02/067529 A (STORAGEAPPS INC [US]) 29 August 2002 (2002-08-29)	1-29		
	page 19, line 1 - page 20, line 25 figure 2			
	page 22, line 25 - page 23, line 2 figure 3B			
	page 28, line 18 – page 31, line 11 figure 4			
	 -/			
	•			
		·		
Further	er documents are listed in the continuation of Box C. X See patent family anne	ex.		

				4 4 -		
Į	Δ	Further docum	nents are	listed in the	continuation	ot Box C

- Special categories of cited documents:
- "A" document defining the general state of the art which is not considered to be of particular relevance
 - 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, exhibition or other means
- 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 mailing of the international search report

Date of the actual completion of the international search

Fax: (+31-70) 340-3016

07/08/2008

1 August 2008

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,

Authorized officer

De Ceulaer, Bart

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

3

INTERNATIONAL SEARCH REPORT

	tion). DOCUMENTS CONSIDERED TO BE RELEVANT			
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	EP 1 280 047 A (HITACHI LTD [JP]) 29 January 2003 (2003-01-29) paragraphs [0019] - [0023] figure 1 paragraphs [0024], [0025] figure 2 paragraphs [0026] - [0028] figure 3 paragraphs [0029] - [0031] figure 4 paragraphs [0083] - [0085] figure 14	1-29		
A	EP 1 100 001 A (SUN MICROSYSTEMS INC [US]) 16 May 2001 (2001-05-16) the whole document	1-29		
	· ————————————————————————————————————			
		·		
		,		
•				
	·			

3

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2007/086690

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
WO 02067529	Α	29-08-2002	EP US	1382176 A2 2002156984 A1	21-01-2004 24-10-2002
EP 1280047	Α	29-01-2003	JP US US	2003044332 A 2003023784 A1 2003023665 A1	14-02-2003 30-01-2003 30-01-2003
EP 1100001	A	16-05-2001	AT DE	247296 T 60004463 D1	15-08-2003 18-09-2003