

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
24 March 2005 (24.03.2005)

PCT

(10) International Publication Number
WO 2005/025289 A3

(51) International Patent Classification:
G06F 11/00 (2006.01)

93107 (US). **MOSER, Louise, M.** [US/US]; P.O. Box 13963, Santa Barbara, CA 93107 (US).

(21) International Application Number:
PCT/US2004/018313

(74) Agent: **O'BANION, John, P.**; O'Banion & Ritchey LLP, Suite 1550, 400 Capitol Mall, Sacramento, CA 95814 (US).

(22) International Filing Date: 8 June 2004 (08.06.2004)

(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:
10/460,761 11 June 2003 (11.06.2003) US

(71) Applicant (*for all designated States except US*): **ETERNAL SYSTEMS, INC.** [US/US]; 5290 Overpass Road, Building D, Santa Barbara, CA 93111 (US).

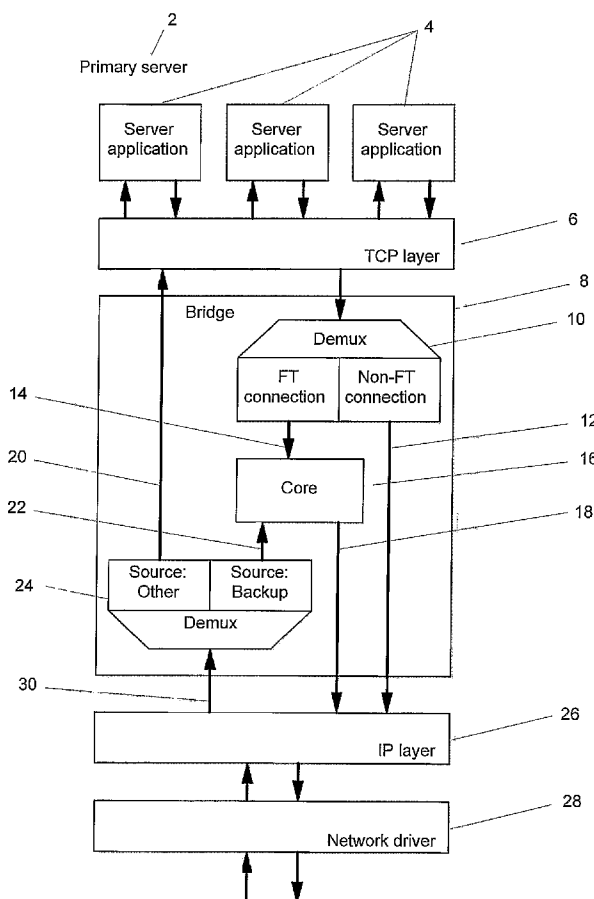
(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **KOCH, Ruppert** [DE/US]; 768 Casiano Drive #A, Santa Barbara, CA 93105 (US). **HORTIKAR, Sanjay** [IN/US]; 350 Ellwood Beach Drive #8, Goleta, CA 93117 (US). **MELLIAR-SMITH, Peter, M.** [GB/US]; P.O. Box 13963, Santa Barbara, CA

(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, IT, LU, MC, NL, PL, PT, RO, SE,

[Continued on next page]

(54) Title: TRANSPARENT TCP CONNECTION FAILOVER



(57) Abstract: Methods of transparent connection failover allowing a remote computer (i.e., a client), to continue to use a network connection to communicate with one of at least two or more other computers (i.e., the backup servers) over a network, when one of the other computers (i.e., the primary server) fails. With the mechanisms of this invention, there is no need for the client to establish a new connection to a backup server when the primary server fails. The failover is preferably executed within a bridge layer between the TCP layer and the IP layer of the server's TCP/IP stack. No modifications are required to the network infrastructure, the client's TCP/IP stack, the client application or the server application. The methods support active or semiactive replication of the server application, and do not require rollback of the application during failover. The invention also provides mechanisms for bringing up new backup servers.



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 February 2007

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*

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/US04/18313

A. CLASSIFICATION OF SUBJECT MATTER

IPC: G06F 11/00(2007.01)

USPC: 714/11,12,13

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)

U.S. : 714/4,10,11,12,13,15,18;370/216,221;709/221,223,224

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 practicable, search terms used)

EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — P	US 5513314 A (KANDASAMY et al) 30 April 1996 (30.04.1996), abstract.	1-4 10-15 27-37 63-68 73 74
P	US 6661799 B1 (MOLITOR) 9 December 2003 (09.12.2003), columns 5-7.	69-71 69-71
A	US 6061807 A (ALBERT et al) 9 May 2000 (09.05.2000), abstract.	1-96
A	US 6173312 B1 (ATARASHI et al) 9 January 2001 (09.01.2001), abstract.	1-96
A	US 6247141 B1 (HOLMBERG) 12 June 2001 (12.06.2001), abstract.	1-96
A	US 6308282 B1 (HUANG et al) 23 October 2001 (23.10.2001), abstract.	1-96

☒ 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	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"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
"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	"&" document member of the same patent family

Date of the actual completion of the international search

13 November 2006 (13.11.2006)

Date of mailing of the international search report

18 DEC 2006

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

Gabriel L. Chu

Telephone No. (571) 272-2100

Jacqueline A. Whitfield
Special Project Asst.

JW

INTERNATIONAL SEARCH REPORTInternational application No.
PCT/US04/18313**C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6618817 B1 (ARMSTRONG) 9 September 2003 (09.09.2003), abstract.	1-96
A	US 6760861 B2 (FUKUHARA et al) 6 July 2004 (06.07.2004), abstract.	1-96
A	US 7076555 B1 (ORMAN) 11 July 2006 (11.07.2006), abstract.	1-96
A	US 7111035 B2 (MCCLELLAN et al) 19 September 2006 (19.09.2006), abstract.	1-96