



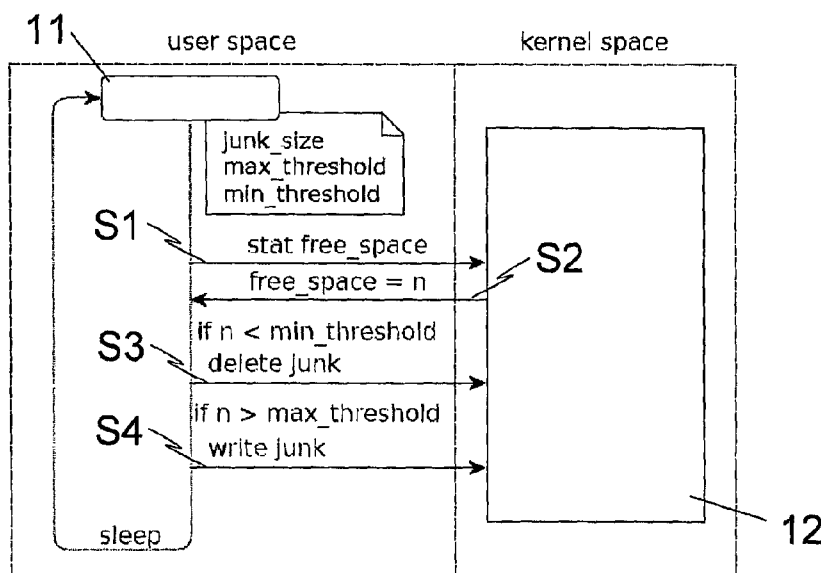
- (51) International Patent Classification:
G06F 17/30 (2006.01)
- (21) International Application Number:
PCT/CH2012/000123
- (22) International Filing Date:
5 June 2012 (05.06.2012)
- (25) Filing Language:
English
- (26) Publication Language:
English
- (30) Priority Data:
972/11 6 June 2011 (06.06.2011) CH
- (71) Applicant (for all designated States except US): **ETH Zürich** [CH/CH]; Rämistrasse 101 / ETH transfer, CH-8092 Zürich (CH).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **CAPKUN, Srdjan** [HR/CH]; Brombachstrasse 21, CH-8049 Zürich, ZH (CH). **BASIN, David** [US/CH]; Alpenstrasse 11, CH-8803 Rüschlikon, ZH (CH). **REARDON, Joel** [CA/CH]; Landenbergstrasse 26, CH-8037 Zürich, ZH (CH). **MARFORIO, Claudio** [IT/CH]; Earhartstrasse 17, CH-8151 Glattbrugg, ZH (CH).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

- Published:
 - with international search report (Art. 21(3))
 - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
- (88) Date of publication of the international search report:
28 February 2013

(54) Title: METHOD AND DEVICES FOR SECURE DELETION OF DATA IN A LOG STRUCTURED FILE SYSTEM



(57) Abstract: For ensuring secure deletion of data in a log structured file system (12), shortened is the deletion latency between deletion of the data by a user and secure deletion of the data from memory by an application (11) writing (S4) and deleting (S3) junk files to expedite reallocation of memory. For that purpose, the application (11) determines (S1, S2) periodically a number of free chunks of memory, deletes (S3) a junk file for cases where the number of free chunks is below a defined lower memory threshold, and writes (S4) a junk file for cases where the number of free chunks (131) is above a defined upper memory threshold.

Fig. 4

WO 2012/167392 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/CH2012/000123

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F17/30
ADD.
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 practicable, search terms used)
EPO-Internal, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Claudio Marforio: "Timed Data Deletion on Mobile Communication Devices", 1 January 2010 (2010-01-01), XP055048542, Zürich DOI: http://dx.doi.org/10.3929/ethz-a-006154349 Retrieved from the Internet: URL: http://e-collection.library.ethz.ch/eserv/eth:1676/eth-1676-01.pdf [retrieved on 2012-12-21]	13-15
A	abstract section 3.1 ----- -/--	1-12, 16-28

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	"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 but 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	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 21 December 2012	Date of mailing of the international search report 09/01/2013
---	--

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Wienold, Norbert
--	--

INTERNATIONAL SEARCH REPORT

International application No
PCT/CH2012/000123

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>LEE: "An efficient secure deletion scheme for flash file systems", JOURNAL OF INFORMATION SCIENCE AND ENGINEERING, vol. 26, no. 1, 1 January 2010 (2010-01-01), page 27, XP055048521, ISSN: 1016-2364 the whole document</p> <p style="text-align: center;">-----</p>	1-28
A	<p>US 2009/172265 A1 (PARK SEUNGMIN [KR] ET AL) 2 July 2009 (2009-07-02) the whole document</p> <p style="text-align: center;">-----</p>	1-28
A	<p>CHARLES MANNING (AND WOOKEY): "YAFFS (Yet Another Flash File System) - Version 0.3", INTERNET CITATION, 25 May 2005 (2005-05-25), XP002404836, Retrieved from the Internet: URL:http://www.aleph1.co.uk/node/37?PHPSESID=b553de8ee897f37cae08e536cc40f2a1 [retrieved on 2006-10-27] the whole document</p> <p style="text-align: center;">-----</p>	1-28

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/CH2012/000123

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009172265	A1	NONE	