

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
17 July 2008 (17.07.2008)

PCT

(10) International Publication Number
WO 2008/084488 A3

(51) International Patent Classification:
G06F 9/445 (2006.01) **G06F 11/14** (2006.01)

(21) International Application Number:
PCT/IL2008/000054

(22) International Filing Date: 13 January 2008 (13.01.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/652,147 11 January 2007 (11.01.2007) US
PCT/IL2007/000048
11 January 2007 (11.01.2007) IL

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(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, 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, FR, GB, GR, **HR**, HU, IE, **IS**, **IT**, LT, LU, LV, MC, MT, NL, NO, PL, PT, **RO**, SE, **SI**, SK, TR), OAPI (BF, **BJ**, CF, CG, CI, CM, GA, GN, GQ, GW, ML, **MR**, NE, SN, TD, TG).

Declaration under Rule 4.17:

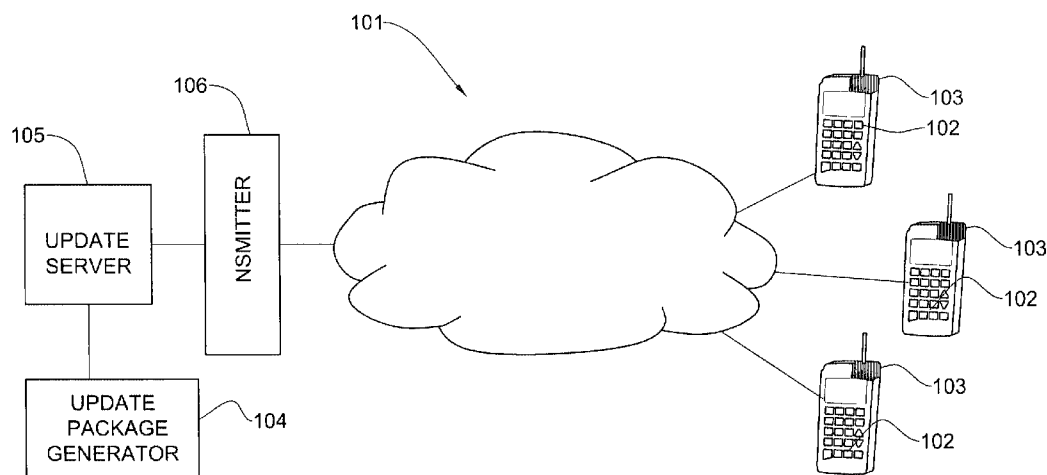
— of inventorship (Rule 4.17(iv))

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
— the filing date of the international application is within two months from the date of expiration of the priority period

(88) Date of publication of the international search report:
12 September 2008

(54) Title: METHOD AND SYSTEM FOR IN-PLACE UPDATING CONTENT STORED IN A STORAGE DEVICE



(57) Abstract: Methods and systems for in-place updating original content stored in a non-volatile storage device and for yielding updated content. Some of the described embodiments illustrate the possibilities for reduction in storage operations, storage blocks, and/or update package size. Some of the described embodiments include the writing of error recovery result(s) such as XOR result(s) which enable the recovery of data in case of an interruption of the update process. In some of the described embodiments, there is re-usage of a protection buffer containing content which is required in the update process.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/IL2008/000054

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F9/445 G06F11/14

According to International Patent Classification (IPC) or to both national classification and IPG

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 practical, search terms used)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document with indication where appropriate of the relevant passages	Relevant to claim No
X	US 6 018 747 A (BURNS RANDAL CHILTON [US] ET AL) 25 January 2000 (2000-01-25) column 4, line 48 - column 8, line 28 -----	1-14, 16, 51, 52, 55, 56
X	WO 2005/003963 A (RED BEND LTD [IL]; MELLER EVYATAR [IL]; PELEG SHARON [IL]) 13 January 2005 (2005-01-13) page 7, line 10 - page 14, line 6 page 17, line 26 - page 31, line 24 page 38, line 19 - page 40, line 22 -----	1-14, 16, 51, 52, 55, 56
A	WO 01/95640 A (TRANSACT IN MEMORY INC [KR]) 13 December 2001 (2001-12-13) page 6, line 3 - page 11, line 22 -----	1-14, 16, 51, 52, 55, 56

D Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents

"A¹" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L¹" 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

"P¹" 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 the actual completion of the international search

6 May 2008

Date of mailing of the international search report

23/07/2008

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2008/000054

Box No. 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 No. 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 allsearchable claims

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not Invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers 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.:

1-14, 16,51 ,52,55,56

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-14,16,51,52,55,56

A method, an apparatus and a computer program for a reliable in-place updating of original content stored in a non-volatile storage.

2. claims: 15,50,53,54

A method and a computer program for generating an update package that is configured for a reliable in-place updating of original content stored in a non-volatile storage.

3. claims: 17-22,26-49,57,58,61,62

A method, an apparatus and a computer program for protecting data used for reliably in-place updating original content stored in a non-volatile storage device.

4. claims: 23-25,59-60

A method, an apparatus and a computer program for recovering non-reliable content that is a result of an interrupted in-place update of content stored in a non-volatile storage.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IL2008/000054

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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