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11/761,805 12 June 2007 (12.06.2007) US(71) Applicant (for all designated States except US): **INTERNATIONAL BUSINESS MACHINES CORPORATION** [US/US]; New Orchard Road, Armonk, New York 10504 (US).

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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.

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(54) Title: MANAGING COMPUTER RESOURCES IN A DISTRIBUTED COMPUTING SYSTEM

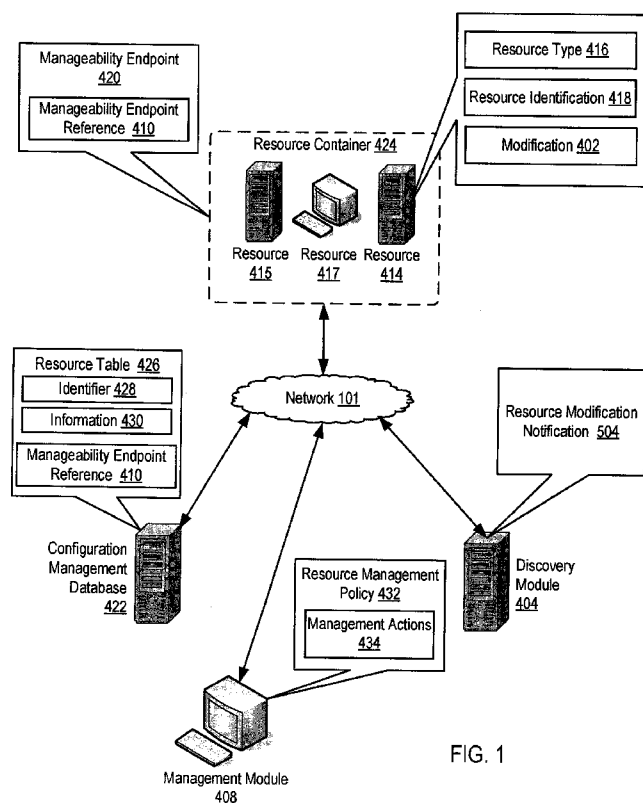


FIG. 1

(57) Abstract: Methods, apparatus, and products for managing computer resources in a distributed computing system are disclosed that include registering, in a configuration management database (422) by a discovery module (404) in response to a modification of a resource in a resource container (424), the resource in association with a configuration management database identifier, the resource characterized by a resource type and a resource identification, the resource container including a manageability endpoint characterized by a manageability endpoint reference (410); and managing the resource by a management module (408) in dependence upon a resource management policy (432) and the manageability endpoint reference, the resource management policy including management actions (434) for the resource.



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).

— *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))*

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

INV. G06F9/50

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 practical, search terms used)

EPO-Internal, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CZAJKOWSKI K ET AL: "Grid information services for distributed resource sharing" PROCEEDINGS 10TH IEEE INTERNATIONAL SYMPOSIUM ON HIGH PERFORMANCE DISTRIBUTED COMPUTING IEEE COMPUT. SOC LOS ALAMITOS, CA, USA, 2001, pages 181-194, XP002499593 ISBN: 0-7695-1296-8 Section 1. Introduction: page 181, left-hand column - page 182, line 7 Section 3. Architecture Overview: page 184, right-hand column - page 185, left-hand column, line 20; figures 2,3 page 187, right-hand column, line 27 - line 30; figure 4 Section 5.1. GRIP and GRRP for Aggregate Directories: page 188; figure 5 Bullet-point "The information provider(s) -/--	1-4, 7-10, 13-18



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

"E" 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

"P" 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

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	limits.." : page 189, right-hand column, last paragraph Section 10.3 Information Providers (GRIS): page 191, paragraph 1 - paragraph 2 page 191, right-hand column, line 50 - page 192, left-hand column, line 45	5,6,11, 12,19,20
A	----- KHANLI ET AL: "An approach to grid resource selection and fault management based on ECA rules" FUTURE GENERATIONS COMPUTER SYSTEMS, ELSEVIER SCIENCE PUBLISHERS. AMSTERDAM, NL, vol. 24, no. 4, 18 May 2007 (2007-05-18), pages 296-316, XP022343678 ISSN: 0167-739X abstract Section 2. Related Works: page 297 - page 298 Section 3. The architecture of Grid-JQA: page 298, right-hand column - page 299, right-hand column, line 3; figures 2,3 figure 6 Regarding "Resource_Advertise" and "Resource rule": figure 7; tables 1,2 -----	1-4, 7-10, 13-18
A	SHIOW-YANG WU ET AL: "Event engine for adaptive mobile computing" MOBILE DATA MANAGEMENT. SECOND INTERNATIONAL CONFERENCE, MDM 2001. PROCEEDINGS (LECTURE NOTES IN COMPUTER SCIENCE VOL.1987) SPRINGER-VERLAG BERLIN, GERMANY, 2001, pages 27-38, XP002499594 ISBN: 3-540-41454-1 abstract Section 1 Introduction: page 27, paragraph 2; figure 1 Section 3 The Event Language: page 29 - page 30 Section 4 The Event Engine: page 32; figure 4 ----- -/--	1-4, 7-10, 13-18

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2008/056469

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	STEVENS W WEISS LUCENT TECHNOLOGIES H MAHON HEWLETT PACKARD B MOORE IBM J STRASSNER CISCO SYSTEMS G WATERS NORTEL NETWORKS A WESTE: "Policy Framework Monday, September 13, 1999, 4:20 PM; draft-ietf-policy-framework-00.txt" IETF STANDARD-WORKING-DRAFT, INTERNET ENGINEERING TASK FORCE, IETF, CH, vol. policy, 1 September 1999 (1999-09-01), XP015025438 ISSN: 0000-0004 page 5, line 6 - line 23 Section 3.1 The Conceptual Model, from "The three levels of abstraction...." page 8 - page 9 Section 3.5 Options for Packaging: page 11, paragraph 1; figures 1,2 Section 4.3.1. Changing Policy page 17 Section 4.4.1. Assessment of the Feasibility of Policy Rules: page 21 Section 4.7. Interfacing with Components Outside the Policy Infrastructure: page 25	5,6,11, 12,19,20
A	----- CHANGZHOU WANG ET AL: "A Policy-Based Approach for QoS Specification and Enforcement in Distributed Service-Oriented Architecture" SERVICES COMPUTING, 2005 IEEE INTERNATIONAL CONFERENCE ON ORLANDO, FL, USA 11-15 JULY 2005, PISCATAWAY, NJ, USA, IEEE, vol. 1, 11 July 2005 (2005-07-11), pages 307-310, XP010852268 ISBN: 978-0-7695-2408-5 Paragraph 3 of Section "Introduction": page 1 page 2, right-hand column, line 19 - last line	5,6,11, 12,19,20
A	----- STEVENS M L ET AL: "POLICY-BASED MANAGEMENT FOR IP NETWORKS" BELL LABS TECHNICAL JOURNAL, WILEY, CA, US, vol. 4, no. 4, 1 October 1999 (1999-10-01), pages 75-94, XP000902472 ISSN: 1089-7089 Policy Operands and CIM: page 80, left-hand column - page 82, left-hand column figures 3,4 figure 6 ----- -/--	5,6,11, 12,19,20

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2008/056469

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	S. BOROS: "POLICY-BASED NETWORK MANAGEMENT WITH SNMP" EUNICE2000, 2000, pages 1-8, XP002536037 University of Twente abstract page 2, left-hand column, line 21 - right-hand column, line 13; figure 1 -----	5,6,11, 12,19,20

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2008/056469

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 all searchable 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 report covers 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.:

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.

FURTHER INFORMATION CONTINUED FROM PCT/SA/ 210

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

1. claims: 1-4, 7-10, 13-18 (group 1)

These claims are concerned with notifying a change of a resource in a distributed computer system. A decision is made, depending on a resource registration policy, whether to register the change in a configuration management database.

2. claims: 5-6, 11-12, 19-20 (group 2)

The subject-matter of these claims regard the management of a modified resource in a distributed computer system. Upon discovery of a resource that has changed, a policy engine is notified, and appropriate action is taken according to a resource management policy.
