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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,737	11/29/2000	Peter Joseph Giacomini	500-002US	9624
22897	7590	04/21/2011		
DEMONT & BREYER, LLC 100 COMMONS WAY, Ste. 250 HOLMDEL, NJ 07733			EXAMINER JAGANNATHAN, MELANIE	
			ART UNIT	PAPER NUMBER
			2468	
			NOTIFICATION DATE	DELIVERY MODE
			04/21/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@dblaw.com

Notice of Abandonment	Application No.	Applicant(s)	
	09/725,737	GIACOMINI ET AL.	
	Examiner	Art Unit	
	MELANIE JAGANNATHAN	2468	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

1. ☐ Applicant's failure to timely file a proper reply to the Office letter mailed on _____.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.
(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
 - (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
 - (d) ☐ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____. The publication fee, if required by 37 CFR 1.18(d), is \$_____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☒ The decision by the Board of Patent Appeals and Interference rendered on 07 July 2010 and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:

/Melanie Jagannathan/
Primary Examiner, Art Unit 2468

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

United States Court of Appeals for the Federal Circuit

(Serial No. 09/725,737)

IN RE PETER JOSEPH GIACOMINI,
WALTER MICHAEL PITIO, HECTOR FRANCISCO
RODRIGUEZ,
AND DONALD DAVID SCHUGARD

2009-1400

Appeal from the United States Patent and Trademark
Office, Board of Patent Appeals and Interferences.

Decided: July 7, 2010

JASON PAUL DEMONT, DeMont & Breyer, LLC, of
Holmdel, New Jersey, argued for appellants. With him on
the brief was ROBERT L. GREENBERG. Of counsel was
JOSEPHINE A. PALTIN.

THOMAS L. STOLL, Associate Solicitor, Office of the So-
licitor, United States Patent and Trademark Office, of
Arlington, Virginia, argued for the Director of the United
States Patent and Trademark Office. With him on the
brief were RAYMOND T. CHEN, Solicitor, and THOMAS W.
KRAUSE, Associate Solicitor.

Before RADER*, *Chief Judge*, GAJARSA and DYK, *Circuit Judges*.

RADER, *Chief Judge*.

Peter Joseph Giacomini, Walter Michael Pitio, Hector Francisco Rodriguez, and Donald David Shugard (collectively, "Giacomini") appeal from a decision of the Board of Patent Appeals and Interferences ("Board") rejecting certain claims of U.S. Patent Application No. 09/725,737 as anticipated under 35 U.S.C. § 102. *Ex parte Giacomini*, No. 2009-0139 (B.P.A.I. Apr. 15, 2009). Giacomini argues that the anticipatory reference, U.S. Patent No. 7,039,683 ("the Tran patent"), does not qualify as prior art because Giacomini's filing date antedates the Tran patent's filing date. Because the Tran patent has a patent-defeating effect as of the filing date of the provisional application to which it claims priority and which was filed before Giacomini's application, this court affirms.

I.

Giacomini's application—"Method and Apparatus for Economical Cache Population"—was filed on November 29, 2000. The application claims a technique for selectively storing electronic data in a readily accessible memory called a "cache." When a system retrieves requested data from a source, it stores the data in its cache so that it can retrieve the data more quickly next time. Because the cache has a limited space, the system must selectively store data. Giacomini's technique populates the cache with data only when the system receives a certain number of requests for that data. Claim 1 is representative:

A method comprising:

* Randall R. Rader assumed the position of Chief Judge on June 1, 2010.

populating a cache with a resource only when at least i requests for said resource have been received;

wherein i is an integer and is at least occasionally greater than one.

This cache does not normally include infrequently requested data because it “at least occasionally” stores data for which multiple requests have been made. Claims 1, 2, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 of Giacomini’s application are at issue on appeal.

II.

The Board rejected certain claims of Giacomini’s application as anticipated under 35 U.S.C. § 102 by the Tran patent, and, in the alternative, by U.S. Patent No. 6,463,509 (“the Teoman patent”).

The Tran patent—“Electronic Information Caching”—describes a caching technique based on an anticipated demand for data. Its “anticipating module” considers “past requests for access to the same or related electronic information by access requesters.” Tran patent col.1 ll.49-52. Such “past requests for information may be measured by the frequency or volume of access requests.” *Id.* col.3 ll.25-28. The Board found, and Giacomini does not dispute, that the Tran patent teaches all of the claimed features in Giacomini’s application.

The central issue at the Board was the eligibility of the Tran patent to serve as prior art under 35 U.S.C. § 102(e). The Tran patent’s filing date is December 29, 2000, exactly a month after Giacomini filed his application. However, the Tran patent claims priority to a provisional application (“the Tran provisional”) filed on September 25, 2000, which antedates Giacomini’s filing date. Therefore, the Board held that the Tran patent has

a patent-defeating effect as of the filing date of the Tran provisional.

Giacomini appeals the Board's decision that the Tran patent and the Teoman patent each anticipates his application. This court has jurisdiction under 28 U.S.C. § 1295(a)(4).

III.

This court reviews the Board's legal conclusions, including statutory interpretation, without deference. *In re Swanson*, 540 F.3d 1368, 1374-75 (Fed. Cir. 2008). Anticipation is a question of fact. *In re Gleave*, 560 F.3d 1331, 1334-35 (Fed. Cir. 2009). This court reviews the Board's factual determinations for substantial evidence. *Id.*

IV.

Section 102 governs the conditions of patentability. The statute, in pertinent part, states:

[A] person shall be entitled to a patent unless . . . the invention was described in . . . (2) a patent granted on an *application for patent* by another filed in the United States before the invention by the applicant for patent

35 U.S.C. § 102(e)(2) (emphasis added). An application that a patent was "granted on" is the first U.S. application to disclose the invention claimed in the patent. *In re Klesper*, 397 F.2d 882, 885-86 (CCPA 1968). Title 35 further clarifies that "[t]he provisions of this title relating to applications for patent shall apply to provisional applications for patent, except as otherwise provided, and except . . . [in] sections 115, 131, 135, and 157 of this title." 35 U.S.C. § 111(b)(8). Under this encompassing rule, "applications for patent" under section 102 includes

both provisional and non-provisional patent applications. Therefore, an applicant is not entitled to a patent if another's patent discloses the same invention, which was carried forward from an earlier U.S. provisional application or U.S. non-provisional application.

As noted, Giacomini does not dispute that the Tran patent describes the invention claimed in Giacomini's application. Also, the Tran provisional, which antedates Giacomini's filing date, was the first U.S. application to describe the invention. The Board found that "[t]he Provisional Application No. 60/234,996, from which Tran claims priority under 35 U.S.C. § 119(e), discloses that '[a]nticipating requests for electronic information . . . is generally performed based on one ore [sic] more criteria, e.g., past requests for information.'" *Ex parte Giacomini*, No. 2009-0139, at *5. Section 119(e) treats a non-provisional application as though filed on the date of its corresponding provisional application. 35 U.S.C. § 119 (Benefit of earlier filing date; right of priority) recites:

(e)(1) An *application for patent* filed under section 111(a) or section 363 of this title for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in a provisional application filed under section 111(b) of this title, by an inventor or inventors named in the provisional application, shall have the same effect, as to such invention, as though filed on the date of the provisional application filed under section 111(b) of this title, if the *application for patent* filed under section 111(a) or section 363 of this title is filed not later than 12 months after the date on which the provisional application was filed and if it contains or is amended to contain a specific reference to the provisional application

35 U.S.C. § 119(e)(1) (emphases added).

An important limitation is that the provisional application must provide written description support for the claimed invention. Because Giacomini never argued before the Board that the Tran provisional failed to provide written description support for the claimed subject matter in accordance with section 119(e), Giacomini waived the argument by failing to raise it below. *See In re Watts*, 354 F.3d 1362, 1368 (Fed. Cir. 2004) (declining to consider arguments that the applicant failed to contest before the Board); *In re Berger*, 279 F.3d 975, 984 (Fed. Cir. 2002) (same). Therefore, the Tran patent “shall have the same effect,” including a patent-defeating effect, as to the claimed invention as though it was filed on the date of the Tran provisional. Accordingly, Giacomini, who filed his application after Tran filed his provisional application, cannot receive a patent covering the same subject matter under 35 U.S.C. § 102(e).

This conclusion is consistent with “[t]he fundamental rule . . . that the patentee must be the first inventor.” *Alexander Milburn Co. v. Davis-Bournonville Co.*, 270 U.S. 390, 402 (1926). In *Milburn*, the Supreme Court held that a patent applied for before but not granted until after a second patent is sought bars the issuance of the second patent. *Id.* at 400-01. The rule stems from the principle that, subject to certain exceptions, “one really must be the first inventor in order to be entitled to a patent.” *Id.* at 400. Although *Milburn* concerned a non-provisional application, a provisional application similarly shows that someone else was the first to invent. *See id.* at 400 (“[O]bviously one is not the first inventor if . . . somebody else has made a complete and adequate description of the thing claimed before the earliest moment to which the alleged inventor can carry his invention back.”). The Tran provisional evinces that Tran, and not Giacomini,

was the first to invent the claimed subject matter. Allowing Giacomini's application would create an anomalous result where someone who was not the first to invent in the United States receives a patent.

Giacomini argues that 35 U.S.C. § 119(e) shifts a patent's priority date but not its effective reference date to the filing date of an earlier provisional application. In other words, Giacomini contends that although the Tran patent claims the benefit of priority to the Tran provisional, the Tran patent does not have a patent-defeating effect as of the Tran provisional's filing date.

Giacomini's distinction between priority date and effective reference date largely stems from *In re Hilmer*, 359 F.2d 859 (CCPA 1966). The issue in *Hilmer* was whether a U.S. patent, cited as a section 102(e) prior art reference, was effective as of its foreign filing date under section 119. *Id.* at 862. This court's predecessor rejected the Board's conclusion that "the foreign priority date of a U.S. patent is its effective date as a reference." *Id.* at 870. The court instead held that "Section 119 only deals with 'right of priority.' The section does not provide for the use of a U.S. patent as an anticipatory reference as of its foreign filing date." *Id.* at 862. Thus, *Hilmer* distinguished a patent's priority date under section 119 and effective reference date under section 102(e) in cases involving an earlier foreign application. Giacomini equates a U.S. provisional application to a foreign patent application to argue that the Tran provisional's filing date is not the Tran patent's effective date as a prior art reference.

But at the time this court's predecessor decided *Hilmer*, section 119 only governed the benefit of claiming priority to an earlier filing date in foreign countries. *Id.* at 862. Congress added section 119(e) along with the

enactment of provisional applications in 1994. *See* Uruguay Round Agreements Act, Pub. L. 103-465, 108 Stat. 4809 (1994). Therefore, broad language in *Hilmer* concerning section 119 is not applicable to provisional applications. Also, Giacomini misses an important distinction between *Hilmer* and the present case. *Hilmer* involved an earlier foreign application while the present case deals with an earlier U.S. provisional application. *See Klesper*, 397 F.2d at 885 (*Hilmer* clarified that “domestic and foreign filing dates stand on entirely different footings.”).

Section 102(e) codified the “history of treating the disclosure of a U.S. patent as prior art as of the filing date of the earliest U.S. application to which the patent is entitled, provided the disclosure was contained in substance in the said earliest application.” *Id.* (emphasis added). According to *Hilmer*, an earlier foreign application does not shift a corresponding patent’s effective reference date because section 102(e) explicitly requires the earlier application to be “filed in the United States.” *Hilmer*, 359 F.2d at 862 (quoting 35 U.S.C. § 102(e)). This court’s predecessor warned that section 119 cannot be read with section 102(e) to modify the express domestic limitation. *Id.* In contrast, an earlier provisional application is an application “filed in the United States.” 35 U.S.C. § 102(e). Treating a provisional application’s filing date as both the patent’s priority date and its effective reference date does not raise the alleged tension between sections 102(e) and 119. Given the “clear distinction between acts abroad and acts here,” *Hilmer*, 359 F.2d at 879, Giacomini’s reliance on *Hilmer* is misplaced. *Id.*

Accordingly, the Tran patent has a patent-defeating effect as of the filing date of the Tran provisional, or September 25, 2000.⁸ Giacomini did not file his application until months after Tran filed his provisional application. Giacomini is not the first to invent in the United

States and thus is not entitled to a patent. Because this court affirms the Board's finding of anticipation based on the Tran patent, this court will not review the Board's finding with respect to the Teoman patent.

V.

Because the Board correctly rejected Giacomini's application under 35 U.S.C. § 102(e) on the basis that the invention was described in a patent claiming priority to a U.S. provisional application filed before Giacomini's filing date, this court affirms.

AFFIRMED



UNITED STATES PATENT AND TRADEMARK OFFICE

OFFICE OF THE GENERAL COUNSEL

OFFICE OF THE SOLICITOR

June 30, 2010

Jason Paul DeMont
DeMont & Breyer, LLC
100 Commons Way, Suite 250
Holmdel, NJ 07733

Re: Change of the Litigation Address for the USPTO's Office of the Solicitor
In re Giacomini, Appeal No. 2009-1400

Dear Mr. DeMont:

This letter is to inform you that, effective June 25, 2010, the litigation mailing address for the USPTO's Office of the Solicitor changed. Pursuant to 37 C.F.R. § 1.1(a)(3)(iii), the new address is:

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P.O. Box 1450
Alexandria, VA 22313-1450

Although the litigation address was effective on June 25, 2010, both the new and former addresses may be used until July 25, 2010. However, after July 25, 2010, only the new address may be used. The Office of the Solicitor's hand-delivery address and main telephone number remain the same.

Please do not hesitate to contact our office at (571) 272-9035 if you have any questions.

Sincerely,

A handwritten signature in cursive script, reading "Kelly A. Boudreau", is positioned above the typed name.

Kelly A. Boudreau
Paralegal Specialist

Electronic Acknowledgement Receipt

EFS ID:	7955386
Application Number:	09725737
International Application Number:	
Confirmation Number:	9624
Title of Invention:	Method and apparatus for economical cache population
First Named Inventor/Applicant Name:	Peter Joseph Giacomini
Customer Number:	22897
Filer:	Jason P. DeMont/Jay Kobayashi
Filer Authorized By:	Jason P. DeMont
Attorney Docket Number:	500-002US
Receipt Date:	06-JUL-2010
Filing Date:	29-NOV-2000
Time Stamp:	13:14:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	Change_of_Litigation_Address_for_Office_of_Solicitor_500-02us_CAFc_Appeal_.pdf	52730 268581e24787aa97a00c0a113081b70d4afdc6df	no	1

Warnings:

Information:

Globus Medical, Inc.

IPR2015-00111 Exhibit 1017, p. 13

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		09725737	
	Filing Date		2000-11-29	
	First Named Inventor	Giacomini		
	Art Unit	2616		
	Examiner Name	Vu, Thong H.		
	Attorney Docket Number	500-002US		

U.S.PATENTS							Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	
	1	6425057	B1	2002-07-23	Cherkasova et al.		
	2	6434608	B1	2002-08-13	Desai, Arun Raghavendra		
	3	5822759	A	1998-10-13	Treynor, Benjamin S.		

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	1	20040107319	A1	2004-06-03	D'Orto et al.		

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Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1							☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		09725737
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	First Named Inventor	Giacomini	
	Art Unit	2616	
	Examiner Name	Vu, Thong H.	
	Attorney Docket Number	500-002US	

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	JAGANNATHAN, MELANIE, "US Application Number 12/467/000 Office Action 5/14/2010", , Publisher: USPTO, Published in: US	☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	09725737
Filing Date	2000-11-29
First Named Inventor	Giacomini
Art Unit	2616
Examiner Name	Vu, Thong H.
Attorney Docket Number	500-002US

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☒ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Jason Paul DeMont/	Date (YYYY-MM-DD)	2010-06-04
Name/Print	DeMont, Jason Paul	Registration Number	35793

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:		09725737		
Filing Date:		29-Nov-2000		
Title of Invention:		Method and apparatus for economical cache population		
First Named Inventor/Applicant Name:		Peter Joseph Giacomini		
Filer:		Jason P. DeMont/Jay Kobayashi		
Attorney Docket Number:		500-002US		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt

EFS ID:	7745193
Application Number:	09725737
International Application Number:	
Confirmation Number:	9624
Title of Invention:	Method and apparatus for economical cache population
First Named Inventor/Applicant Name:	Peter Joseph Giacomini
Customer Number:	22897
Filer:	Jason P. DeMont/Jay Kobayashi
Filer Authorized By:	Jason P. DeMont
Attorney Docket Number:	500-002US
Receipt Date:	04-JUN-2010
Filing Date:	29-NOV-2000
Time Stamp:	10:41:14
Application Type:	Utility under 35 USC 111(a)

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Payment Type	Credit Card
Payment was successfully received in RAM	\$ 180
RAM confirmation Number	9802
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
		Globus			

1	Information Disclosure Statement (IDS) Filed (SB/08)	IDS_2_500-002us_.pdf	611834	no	4
			60d4d68208c4cf9dce9b9ba0bfdaa4db39ef83e9		
Warnings:					
Information:					
2	NPL Documents	500-003us_OA_5-14-10.pdf	2036903	no	55
			92fcc4e48305fad1b4ba05c3818de0e04631bc8f		
Warnings:					
Information:					
3	Fee Worksheet (PTO-875)	fee-info.pdf	30065	no	2
			7bee9a800279c58bad90fec682b84b713cab1b13		
Warnings:					
Information:					
Total Files Size (in bytes):			2678802		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
09/725,737	11/29/2000	2419	485	500-002US	32	4

CONFIRMATION NO. 9624

REPLACEMENT FILING RECEIPT

22897
DEMONT & BREYER, LLC
100 COMMONS WAY, Ste. 250
HOLMDEL, NJ 07733



Date Mailed: 08/19/2009

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Peter Joseph Giacomini, South Plainfield, NJ;
Walter Michael Pitio, Morganville, NJ;
Hector Francisco Rodriguez, Middletown, NJ;
Donald David Shugard, Middletown, NJ;

Power of Attorney: The patent practitioners associated with Customer Number 22897

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 01/04/2001

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 09/725,737**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Method and apparatus for economical cache population

Preliminary Class

709

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

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No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

First Inventor: Peter Joseph Giacomini

Serial No.: 09/725737

Conf. No.: 9624

Filing Date: 11/29/2000

Art Unit: 2616

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and apparatus for economical cache population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

AMENDMENT

The following claims are presented for examination:

1. (Previously Presented) A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.

2-7. (Canceled)

8. (Previously Presented) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.

9-10. (Canceled)

11. (Original) The data processing system of claim 8 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

12. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

13-14.

15. (Previously Presented) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network; and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.

16-21. (Canceled).

22. (Original) The method of claim 15:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

23. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

24. (Previously Presented) A first node in a computer network, said first node comprising:

a cache;

at least one receiver for receiving at least one request for a resource; and

a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;

wherein i is an integer and is at least occasionally greater than one.

25-26. (Canceled)

27. (Original) The first node of claim 24 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

28. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

29-30. (Canceled)

31. (Original) The first node of claim 24:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

32. (Original) The first node of claim 24:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

REMARKS

Claims 2-7, 9-10, 13-14, 16-21, 25-26, 29-30 and 32 have been canceled, without prejudice and while preserving the right to introduce and prosecute some or all of them in this or another application.

The rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 is being reviewed by the United States Court of Appeals for the Federal Circuit.

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**
Jason Paul DeMont
Reg. No. 35793
732-578-0103 x211

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Holmdel, NJ 07733
United States of America

Electronic Acknowledgement Receipt

EFS ID:	5344703
Application Number:	09725737
International Application Number:	
Confirmation Number:	9624
Title of Invention:	Method and apparatus for economical cache population
First Named Inventor/Applicant Name:	Peter Joseph Giacomini
Customer Number:	22897
Filer:	Jason P. DeMont
Filer Authorized By:	
Attorney Docket Number:	500-002US
Receipt Date:	15-MAY-2009
Filing Date:	29-NOV-2000
Time Stamp:	17:03:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		amendment_5_500-002us.pdf	66064 42985c367bef39550c945c738d84a27b8bc3ac7f	yes	6

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Miscellaneous Incoming Letter	1	1
	Amendment/Req. Reconsideration-After Non-Final Reject	2	2
	Claims	3	5
	Applicant Arguments/Remarks Made in an Amendment	6	6

Warnings:

Information:

Total Files Size (in bytes):	66064

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

First Inventor: Peter Joseph Giacomini

Serial No.: 09/725737

Conf. No.: 9624

Filing Date: 11/29/2000

Art Unit: 2616

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and apparatus for economical cache population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Papers related to the above-identified patent application accompany this transmittal.

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**

Jason Paul DeMont
Reg. No. 35793
732-578-0103 x211

DeMont & Breyer, L.L.C.
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100 Commons Way
Holmdel, NJ 07733
United States of America

Serial No. 09/725737

DeMont & Breyer Docket: 500-002US

Express Mail Number: EM 203801068 US

Date of Deposit: May 15, 2009

I hereby certify that this document is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to: Office of the Solicitor, Director of the USPTO, P.O. Box 15667, Arlington, VA 22215

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

First Inventor: Peter Joseph Giacomini

EM203801068US

Serial No.: 09/725737

Conf. No.: 9624

Filing Date: 11/29/2000

Art Unit: 2616

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus for Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

NOTICE OF APPEAL UNDER 35 U.S.C. §§ 141-142 AND 37 C.F.R. § 1.301

Peter Joseph Giacomini, Walter Michael Pitio, Hector Francisco Rodriguez, and Donald David Shugard hereby appeal to the United States Court of Appeal for the Federal Circuit to review the Decision on Appeal 2009-0139 from Application 09/725,737 of the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office entered on April 15, 2009.

Three copies of this notice of appeal and the decision of the Board of Patent Appeals and Interferences has been transmitted to the United States Court of Appeals for the Federal Circuit.

The decision was received on April 17, 2009.

Serial No. 09/725737

DeMont & Breyer Docket: 500-002US

Respectfully,
Peter Joseph Giacomini et al.

By 
Jason Paul DeMont, Reg. No. 35793
Robert L. Greenberg, Reg. No. 61925
732-578-0103 x211

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CM203801085US

Express Mail Number: EM 203801085 US

Date of Deposit: May 15, 2009

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United States Court of Appeals for the Federal Circuit

Ex parte PETER JOSEPH GIACOMINI,
WALTER MICHAEL PITIO, HECTOR
FRANCISCO RODRIGUEZ, and DONALD
DAVID SHUGARD

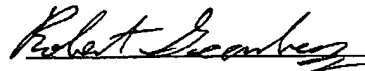
PETITION FOR REVIEW

Peter Joseph Giacomini, Walter Michael Pitio, Hector Francisco Rodriguez, and Donald David Shugard hereby appeal the court for review of the Decision on Appeal 2009-0139 from Application 09/725,737 of the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office entered on April 15, 2009.

The decision was received on April 17, 2009.



Jason Paul DeMont
Attorney for Petitioners



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,737	11/29/2000	Peter Joseph Giacomini	500-002US	9624
22897 7590 04/17/2009 DEMONT & BREYER, LLC 100 COMMONS WAY, Ste. 250 HOLMDEL, NJ 07733			EXAMINER VU, THONG H	
			ART UNIT 2419	PAPER NUMBER
			NOTIFICATION DATE 04/17/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@dblawn.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PETER JOSEPH GIACOMINI, WALTER MICHAEL PITIO,
HECTOR FRANCISCO RODRIGUEZ, and
DONALD DAVID SHUGARD

Appeal 2009-0139
Application 09/725,737¹
Technology Center 2600

Decided:² April 15, 2009

Before JOHN A. JEFFERY, MARC S. HOFF, and KARL D. EASTHOM,
Administrative Patent Judges.

HOFF, *Administrative Patent Judge.*

DECISION ON APPEAL

¹ The real party in interest is Broadspider Networks, Inc.

² The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134 from a non-final rejection of claims 1, 2, 8, 9, 11, 12, 15, 16, 22-25, 27, 28, 31, and 32.³ We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

Appellants' invention relates to a technique for efficiently populating a cache with resources (Spec. 2). Embodiments include populating a cache with a resource only when at least i requests for the resource have been received, wherein i is an integer and is at least occasionally greater than one, wherein i varies with e.g. the time of day, the day of the week, the day of the year, the month of the year, the season of the year, or the year itself (Spec. 10). In another embodiment, the value of i does not change over time or as a function of circumstance (Spec. 9).

Claim 1 is exemplary:

1. A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Tran

7,039,683 B1

May 2, 2006
(filed Dec. 29, 2000)

³ Claims 3-7, 10, 13, 14, 17-21, 26, 29, and 30 stand objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form (Ans. 4). Further, we note that Appellants' statement that claims 1-32 stand rejected and are appealed (Br. 6) is erroneous, as is the Examiner's indication that the status of the claims in the Brief is correct (Ans. 2).

Appeal 2009-0139
Application 09/725,737

Teoman	6,463,509 B1	Oct. 8, 2002 (filed Jan. 26, 1999)
Chamberlain	6,408,360 B1	Jun. 18, 2002 (filed Jan. 25, 1999)

Claims 2, 9, 16, and 25 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

Claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Tran.

Claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Chamberlain.

Claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Teoman.

Throughout this decision, we make reference to the Appeal Brief (“Br.,” filed May 22, 2007) and the Examiner’s Answer (“Ans.,” mailed Oct. 17, 2007) for their respective details.

ISSUES

Appellants assert that dependent claim 2, which calls for i to be invariant, is not in conflict with independent claim 1, which requires the value of i to be an integer “occasionally greater than one” (Br. 13). With respect to the prior art rejections, Appellants argue that Tran does not qualify as prior art under 35 U.S.C. § 102(e) because its filing date postdates the filing date of the instant application (Br. 15), and that Chamberlain and Teoman fail to anticipate the claimed invention because neither teaches populating a cache with a resource only when at least i requests for the resource have been received, wherein i is an integer and at least occasionally greater than one (Br. 16, 18).

Appellants' arguments present us with the following four issues:

1. Have Appellants shown that the Examiner erred in finding that one of ordinary skill in the art could not make and use the invention of claim 2, in which the value of i is invariant, without undue experimentation?
2. Have Appellants shown that the Examiner erred in finding that Tran qualifies as prior art under 35 U.S.C. § 102(e)?
3. Have Appellants shown that the Examiner erred in finding that Chamberlain teaches populating a cache with a resource only when at least i requests for that resource have been received, wherein i is an integer that is at least occasionally greater than one?
4. Have Appellants shown that the Examiner erred in finding that Teoman teaches populating a cache with a resource only when at least i requests for that resource have been received, wherein i is an integer that is at least occasionally greater than one?

FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

The Invention

1. According to Appellants, the invention concerns a technique for efficiently populating a cache with resources (Spec. 2). Embodiments include populating a cache with a resource only when at least i requests for the resource have been received, wherein i varies with e.g. the time of day, the day of the week, the day of the year, the month of the year, the season of the year, or the year itself (Spec. 10). In another embodiment, the value of i does not change (Spec. 9).

2. According to Appellants' Specification, "[i]n some cases, the value of i is one, and in other cases the value of i is an integer greater than one. In some cases, the value of i is invariant (*i.e.*, it does not change over time or as a function of circumstance)" (Spec. 9).

Tran

3. Tran teaches electronic information caching based on an anticipated demand for that information. Anticipating future requests for access to selected information may be based on, for example, past requests for access to the same or related electronic information. Requests for access may be anticipated before, after, or while an access request is made (col. 1, ll. 27-31, 49-52, and 66-67).

4. Tran includes an "anticipating module" that may be designed to determine the rate or number of requests for electronic information, and to electronically flag electronic information as being in high demand by access requesters where the cache value or frequency of requests for the electronic information is high (col. 4, ll. 32-40).

5. Provisional Application No. 60/234,996, from which Tran claims priority under 35 U.S.C. § 119(e), discloses that "[a]nticipating requests for electronic information . . . is generally performed based on one ore [sic] more criteria, e.g., past requests for information" (p. 3, ll. 20-21).

Chamberlain

6. Chamberlain teaches a caching system and method that allow for the caching of web pages that have dynamic content, using a cacheability analyzer that analyzes responses based on time, content, user identification, and macro hierarchy (Abstract).

7. Chamberlain teaches various applicability tests for determining whether a dynamic web page should be cached, including tests for appropriate browser type and version and tests for the appropriate language (col. 14, ll. 19-26).

Teoman

8. Teoman teaches an apparatus and method for caching data in a storage device of a computer system. Data is preloaded and responsively cached in the user-configurable cache memory based on user preferences (Abstract).

9. Teoman teaches that, as part of a user cache manager, “a user may specify that, after a threshold number of files within a directory have been accessed, all the files in the directory are to be preloaded” (col. 10, ll. 40-43).

PRINCIPLES OF LAW

“A rejection for anticipation under section 102 requires that each and every limitation of the claimed invention be disclosed in a single prior art reference.” *See In re Buszard*, 504 F.3d 1364, 1366 (Fed. Cir. 2007) (quoting *In re Paulsen*, 30 F.3d 1475, 1478-79 (Fed. Cir. 1994)).

Anticipation of a claim requires a finding that the claim at issue reads on a prior art reference. *Atlas Powder Co. v. IRECO Inc.*, 190 F.3d 1342, 1346 (Fed. Cir. 1999) (citing *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 781 (Fed. Cir. 1985)).

“The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled

with information known in the art without undue experimentation.” *United States v. Telectronics, Inc.*, 857 F.2d 778, 785 (Fed. Cir. 1988).

“[A] patent disclosure need not enable information within the knowledge of an ordinarily skilled artisan. Thus, a patentee preferably omits from the disclosure any routine technology that is well known at the time of application.” *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247, 1254 (Fed. Cir. 2004).

ANALYSIS

§ 112 REJECTION

Each of claims 2, 9, 16, and 25, rejected as lacking enablement, recites that “the value of i is invariant.” The Examiner stated that “claim 1 clearly recited i is variable by reciting the i is occasional [sic] greater than 1. It can’t be invariant” (Ans. 3).

We do not find the Examiner’s reasoning persuasive. Claim 1 (and all other pending independent claims) recites that “ i is an integer and is at least occasionally greater than one.” The Specification discloses that “[i]n some cases, the value of i is one, and in other cases the value of i is an integer greater than one. In some cases, the value of i is invariant (*i.e.*, it does not change over time or as a function of circumstance)” (FF 2). If i is at least occasionally greater than one (as claim 1 requires), it is therefore possible that i could be invariant (as claim 2 requires), and always be equal to two, or three, or any other integer greater than one, without doing violence to the requirement of claim 1. We find, therefore, that Appellant’s Specification discloses the invention of claim 2 such that one of ordinary skill in the art could make and use it without undue experimentation.

Because Appellants have shown error in the Examiner's rejection of claims 2, 9, 16, and 25 under 35 U.S.C. § 112, first paragraph, we will not sustain the rejection.

§ 102 REJECTION OVER TRAN

We select claim 1 as representative of this group, pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(vii).

Appellants argue that Tran does not qualify as prior art because “[t]he 102(e) filing date of Tran is 29 December 2000, which is after the filing date of the present application (29 November 2000)” (Br. 15).

The Examiner correctly points out, however, that Tran claims domestic priority under 35 U.S.C. § 119(e) from a provisional application⁴ filed 25 September 2000, which is prior to the filing date of the present application (Ans. 10). Tran therefore does qualify as prior art, based on the filing date of the provisional application. Appellants make no argument in the Brief that the provisional application does not support the subject matter relied upon to make the § 102(e) rejection in compliance with § 112, first paragraph. *See Ex parte Yamaguchi*, 88 USPQ2d 1606 (BPAI 2008) (precedential). Appellants have therefore failed to carry their burden of establishing that the Examiner erred in applying Tran against the claimed invention.

Tran teaches electronic information caching including an “anticipating module” that may be designed to determine the rate or number of requests [plural] for electronic information, and to electronically flag electronic information as being in high demand by access requesters where the cache

⁴ Provisional Application No. 60/234,996 (hereinafter “The Provisional Application”).

value or frequency of requests for the electronic information is high (FF 4). Tran thus teaches populating its cache with the “electronic information” when at least i requests for that information have been received, wherein i is an integer at least occasionally greater than one (i.e., Tran caches electronic information that has been subject to *plural* “requests”). The Provisional Application supports this subject matter, noting that “[a]nticipating requests for electronic information . . . is generally performed based on one ore [sic] more criteria, e.g., past *requests* for information” (FF 5 (emphasis added)).

Therefore, because Appellants have not established error in the Examiner’s rejection, we will sustain the Examiner’s rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 under 35 U.S.C. § 102.

§ 102 REJECTION OVER CHAMBERLAIN

The Examiner finds that Chamberlain teaches populating a cache with a resource only when at least i requests for the resource have been received, wherein i is an integer and at least occasionally greater than one (Ans. 5), as is recited in each of independent claims 1, 8, 15, and 24. The section of Chamberlain (FF 7) cited by the Examiner, however, generally describes tests that may be run against a cached response to ensure that it is applicable to the request or the requesting user (*id.*), but does not teach populating a cache with a resource after i requests for the resource, i being an integer at least occasionally greater than one. While it is possible that one of such tests *could* be whether a web page has been requested at least i times, i being an integer at least occasionally greater than one, it would be speculation to assert that exactly such a test is performed in Chamberlain’s invention. Likewise, we do not find any other disclosure in Chamberlain to the effect

that Chamberlain populates a cache with a resource in response to at least i requests for said resource, wherein i is at least occasionally greater than one. As a result, we find that Chamberlain does not teach all of the elements of claim 1.

Appellants have thus established error in the Examiner's rejection, and we will not sustain the § 102 rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 as being anticipated by Chamberlain.

§ 102 REJECTION OVER TEOMAN

We select claim 1 as representative of this group, pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(vii).

Appellants argue that the Examiner erred in rejecting claim 1 as being anticipated by Teoman because Teoman does not teach delaying the population of a cache with a resource until at least i requests for the resource have been received, wherein i is at least occasionally greater than one (Br. 18).

Teoman teaches, however, that as part of a user cache manager, "a user may specify that, after a threshold number of files within a directory have been accessed, all the files in the directory are to be preloaded" (FF 9). Teoman thus teaches populating a cache with a resource (i.e., a directory) when at least i requests for that resource (i.e., files making up that directory) have been received, wherein i is an integer at least occasionally greater than one (because Teoman teaches loading a directory in response to (plural) "requests," Teoman teaches at minimum a situation where i is always equal to 2 [or more], which is at least occasionally greater than one).

We therefore find that Appellants have failed to establish error in the Examiner's § 102 rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 as being anticipated by Chamberlain, and we will sustain the rejection.

CONCLUSIONS OF LAW

1. Appellants have shown that the Examiner erred in finding that one of ordinary skill in the art could not make and use the invention of claim 2, in which the value of i is invariant, without undue experimentation.

2. Appellants have not shown that the Examiner erred in finding that Tran qualifies as prior art under 35 U.S.C. § 102(e).

3. Appellants have shown that the Examiner erred in finding that Chamberlain teaches populating a cache with a resource only when at least i requests for that resource have been received, wherein i is an integer that is at least occasionally greater than one.

4. Appellants have not shown that the Examiner erred in finding that Teoman teaches populating a cache with a resource only when at least i requests for that resource have been received, wherein i is an integer that is at least occasionally greater than one.

ORDER

The Examiner's rejection of claims 2, 9, 16, and 25 under 35 U.S.C. § 112 is reversed. The Examiner's rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 under 35 U.S.C. § 102 as anticipated by Tran is affirmed. The Examiner's rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 under 35 U.S.C. § 102 as anticipated by Chamberlain is reversed. The

Appeal 2009-0139
Application 09/725,737

Examiner's rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 under 35 U.S.C. § 102 as anticipated by Teoman is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

babc

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,737	11/29/2000	Peter Joseph Giacomini	500-002US	9624
22897	7590	04/17/2009		
DEMONT & BREYER, LLC 100 COMMONS WAY, Ste. 250 HOLMDEL, NJ 07733			EXAMINER VU, THONG H	
			ART UNIT	PAPER NUMBER
			2419	
			NOTIFICATION DATE	DELIVERY MODE
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PETER JOSEPH GIACOMINI, WALTER MICHAEL PITIO,
HECTOR FRANCISCO RODRIGUEZ, and
DONALD DAVID SHUGARD

Appeal 2009-0139
Application 09/725,737¹
Technology Center 2600

Decided:² April 15, 2009

Before JOHN A. JEFFERY, MARC S. HOFF, and KARL D. EASTHOM,
Administrative Patent Judges.

HOFF, *Administrative Patent Judge.*

DECISION ON APPEAL

¹ The real party in interest is Broadspider Networks, Inc.

² The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134 from a non-final rejection of claims 1, 2, 8, 9, 11, 12, 15, 16, 22-25, 27, 28, 31, and 32.³ We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

Appellants' invention relates to a technique for efficiently populating a cache with resources (Spec. 2). Embodiments include populating a cache with a resource only when at least i requests for the resource have been received, wherein i is an integer and is at least occasionally greater than one, wherein i varies with e.g. the time of day, the day of the week, the day of the year, the month of the year, the season of the year, or the year itself (Spec. 10). In another embodiment, the value of i does not change over time or as a function of circumstance (Spec. 9).

Claim 1 is exemplary:

1. A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Tran

7,039,683 B1

May 2, 2006
(filed Dec. 29, 2000)

³ Claims 3-7, 10, 13, 14, 17-21, 26, 29, and 30 stand objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form (Ans. 4). Further, we note that Appellants' statement that claims 1-32 stand rejected and are appealed (Br. 6) is erroneous, as is the Examiner's indication that the status of the claims in the Brief is correct (Ans. 2).

Teoman	6,463,509 B1	Oct. 8, 2002 (filed Jan. 26, 1999)
Chamberlain	6,408,360 B1	Jun. 18, 2002 (filed Jan. 25, 1999)

Claims 2, 9, 16, and 25 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

Claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Tran.

Claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Chamberlain.

Claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Teoman.

Throughout this decision, we make reference to the Appeal Brief (“Br.,” filed May 22, 2007) and the Examiner’s Answer (“Ans.,” mailed Oct. 17, 2007) for their respective details.

ISSUES

Appellants assert that dependent claim 2, which calls for i to be invariant, is not in conflict with independent claim 1, which requires the value of i to be an integer “occasionally greater than one” (Br. 13). With respect to the prior art rejections, Appellants argue that Tran does not qualify as prior art under 35 U.S.C. § 102(e) because its filing date postdates the filing date of the instant application (Br. 15), and that Chamberlain and Teoman fail to anticipate the claimed invention because neither teaches populating a cache with a resource only when at least i requests for the resource have been received, wherein i is an integer and at least occasionally greater than one (Br. 16, 18).

Appellants' arguments present us with the following four issues:

1. Have Appellants shown that the Examiner erred in finding that one of ordinary skill in the art could not make and use the invention of claim 2, in which the value of i is invariant, without undue experimentation?
2. Have Appellants shown that the Examiner erred in finding that Tran qualifies as prior art under 35 U.S.C. § 102(e)?
3. Have Appellants shown that the Examiner erred in finding that Chamberlain teaches populating a cache with a resource only when at least i requests for that resource have been received, wherein i is an integer that is at least occasionally greater than one?
4. Have Appellants shown that the Examiner erred in finding that Teoman teaches populating a cache with a resource only when at least i requests for that resource have been received, wherein i is an integer that is at least occasionally greater than one?

FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

The Invention

1. According to Appellants, the invention concerns a technique for efficiently populating a cache with resources (Spec. 2). Embodiments include populating a cache with a resource only when at least i requests for the resource have been received, wherein i varies with e.g. the time of day, the day of the week, the day of the year, the month of the year, the season of the year, or the year itself (Spec. 10). In another embodiment, the value of i does not change (Spec. 9).

2. According to Appellants' Specification, "[i]n some cases, the value of i is one, and in other cases the value of i is an integer greater than one. In some cases, the value of i is invariant (*i.e.*, it does not change over time or as a function of circumstance)" (Spec. 9).

Tran

3. Tran teaches electronic information caching based on an anticipated demand for that information. Anticipating future requests for access to selected information may be based on, for example, past requests for access to the same or related electronic information. Requests for access may be anticipated before, after, or while an access request is made (col. 1, ll. 27-31, 49-52, and 66-67).

4. Tran includes an "anticipating module" that may be designed to determine the rate or number of requests for electronic information, and to electronically flag electronic information as being in high demand by access requesters where the cache value or frequency of requests for the electronic information is high (col. 4, ll. 32-40).

5. Provisional Application No. 60/234,996, from which Tran claims priority under 35 U.S.C. § 119(e), discloses that "[a]nticipating requests for electronic information . . . is generally performed based on one ore [sic] more criteria, e.g., past requests for information" (p. 3, ll. 20-21).

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6. Chamberlain teaches a caching system and method that allow for the caching of web pages that have dynamic content, using a cacheability analyzer that analyzes responses based on time, content, user identification, and macro hierarchy (Abstract).

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8. Teoman teaches an apparatus and method for caching data in a storage device of a computer system. Data is preloaded and responsively cached in the user-configurable cache memory based on user preferences (Abstract).

9. Teoman teaches that, as part of a user cache manager, “a user may specify that, after a threshold number of files within a directory have been accessed, all the files in the directory are to be preloaded” (col. 10, ll. 40-43).

PRINCIPLES OF LAW

“A rejection for anticipation under section 102 requires that each and every limitation of the claimed invention be disclosed in a single prior art reference.” *See In re Buszard*, 504 F.3d 1364, 1366 (Fed. Cir. 2007) (quoting *In re Paulsen*, 30 F.3d 1475, 1478-79 (Fed. Cir. 1994)).

Anticipation of a claim requires a finding that the claim at issue reads on a prior art reference. *Atlas Powder Co. v. IRECO Inc.*, 190 F.3d 1342, 1346 (Fed. Cir. 1999) (citing *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 781 (Fed. Cir. 1985)).

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“[A] patent disclosure need not enable information within the knowledge of an ordinarily skilled artisan. Thus, a patentee preferably omits from the disclosure any routine technology that is well known at the time of application.” *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247, 1254 (Fed. Cir. 2004).

ANALYSIS

§ 112 REJECTION

Each of claims 2, 9, 16, and 25, rejected as lacking enablement, recites that “the value of *i* is invariant.” The Examiner stated that “claim 1 clearly recited *i* is variable by reciting the *i* is occasional [sic] greater than 1. It can’t be invariant” (Ans. 3).

We do not find the Examiner’s reasoning persuasive. Claim 1 (and all other pending independent claims) recites that “*i* is an integer and is at least occasionally greater than one.” The Specification discloses that “[i]n some cases, the value of *i* is one, and in other cases the value of *i* is an integer greater than one. In some cases, the value of *i* is invariant (*i.e.*, it does not change over time or as a function of circumstance)” (FF 2). If *i* is at least occasionally greater than one (as claim 1 requires), it is therefore possible that *i* could be invariant (as claim 2 requires), and always be equal to two, or three, or any other integer greater than one, without doing violence to the requirement of claim 1. We find, therefore, that Appellant’s Specification discloses the invention of claim 2 such that one of ordinary skill in the art could make and use it without undue experimentation.

Because Appellants have shown error in the Examiner's rejection of claims 2, 9, 16, and 25 under 35 U.S.C. § 112, first paragraph, we will not sustain the rejection.

§ 102 REJECTION OVER TRAN

We select claim 1 as representative of this group, pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(vii).

Appellants argue that Tran does not qualify as prior art because “[t]he 102(e) filing date of Tran is 29 December 2000, which is after the filing date of the present application (29 November 2000)” (Br. 15).

The Examiner correctly points out, however, that Tran claims domestic priority under 35 U.S.C. § 119(e) from a provisional application⁴ filed 25 September 2000, which is prior to the filing date of the present application (Ans. 10). Tran therefore does qualify as prior art, based on the filing date of the provisional application. Appellants make no argument in the Brief that the provisional application does not support the subject matter relied upon to make the § 102(e) rejection in compliance with § 112, first paragraph. *See Ex parte Yamaguchi*, 88 USPQ2d 1606 (BPAI 2008) (precedential). Appellants have therefore failed to carry their burden of establishing that the Examiner erred in applying Tran against the claimed invention.

Tran teaches electronic information caching including an “anticipating module” that may be designed to determine the rate or number of requests [plural] for electronic information, and to electronically flag electronic information as being in high demand by access requesters where the cache

⁴ Provisional Application No. 60/234,996 (hereinafter “The Provisional Application”).

value or frequency of requests for the electronic information is high (FF 4). Tran thus teaches populating its cache with the “electronic information” when at least *i* requests for that information have been received, wherein *i* is an integer at least occasionally greater than one (i.e., Tran caches electronic information that has been subject to *plural* “requests”). The Provisional Application supports this subject matter, noting that “[a]nticipating requests for electronic information . . . is generally performed based on one ore [sic] more criteria, e.g., past *requests* for information” (FF 5 (emphasis added)).

Therefore, because Appellants have not established error in the Examiner’s rejection, we will sustain the Examiner’s rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 under 35 U.S.C. § 102.

§ 102 REJECTION OVER CHAMBERLAIN

The Examiner finds that Chamberlain teaches populating a cache with a resource only when at least *i* requests for the resource have been received, wherein *i* is an integer and at least occasionally greater than one (Ans. 5), as is recited in each of independent claims 1, 8, 15, and 24. The section of Chamberlain (FF 7) cited by the Examiner, however, generally describes tests that may be run against a cached response to ensure that it is applicable to the request or the requesting user (*id.*), but does not teach populating a cache with a resource after *i* requests for the resource, *i* being an integer at least occasionally greater than one. While it is possible that one of such tests *could* be whether a web page has been requested at least *i* times, *i* being an integer at least occasionally greater than one, it would be speculation to assert that exactly such a test is performed in Chamberlain’s invention. Likewise, we do not find any other disclosure in Chamberlain to the effect

that Chamberlain populates a cache with a resource in response to at least i requests for said resource, wherein i is at least occasionally greater than one. As a result, we find that Chamberlain does not teach all of the elements of claim 1.

Appellants have thus established error in the Examiner's rejection, and we will not sustain the § 102 rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 as being anticipated by Chamberlain.

§ 102 REJECTION OVER TEOMAN

We select claim 1 as representative of this group, pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(vii).

Appellants argue that the Examiner erred in rejecting claim 1 as being anticipated by Teoman because Teoman does not teach delaying the population of a cache with a resource until at least i requests for the resource have been received, wherein i is at least occasionally greater than one (Br. 18).

Teoman teaches, however, that as part of a user cache manager, "a user may specify that, after a threshold number of files within a directory have been accessed, all the files in the directory are to be preloaded" (FF 9). Teoman thus teaches populating a cache with a resource (i.e., a directory) when at least i requests for that resource (i.e., files making up that directory) have been received, wherein i is an integer at least occasionally greater than one (because Teoman teaches loading a directory in response to (plural) "requests," Teoman teaches at minimum a situation where i is always equal to 2 [or more], which is at least occasionally greater than one).

We therefore find that Appellants have failed to establish error in the Examiner's § 102 rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 as being anticipated by Chamberlain, and we will sustain the rejection.

CONCLUSIONS OF LAW

1. Appellants have shown that the Examiner erred in finding that one of ordinary skill in the art could not make and use the invention of claim 2, in which the value of i is invariant, without undue experimentation.

2. Appellants have not shown that the Examiner erred in finding that Tran qualifies as prior art under 35 U.S.C. § 102(e).

3. Appellants have shown that the Examiner erred in finding that Chamberlain teaches populating a cache with a resource only when at least i requests for that resource have been received, wherein i is an integer that is at least occasionally greater than one.

4. Appellants have not shown that the Examiner erred in finding that Teoman teaches populating a cache with a resource only when at least i requests for that resource have been received, wherein i is an integer that is at least occasionally greater than one.

ORDER

The Examiner's rejection of claims 2, 9, 16, and 25 under 35 U.S.C. § 112 is reversed. The Examiner's rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 under 35 U.S.C. § 102 as anticipated by Tran is affirmed. The Examiner's rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 under 35 U.S.C. § 102 as anticipated by Chamberlain is reversed. The

Appeal 2009-0139
Application 09/725,737

Examiner's rejection of claims 1, 8, 11, 12, 15, 22-24, 27, 28, 31, and 32 under 35 U.S.C. § 102 as anticipated by Teoman is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.

09/725,737

11/29/2000

Peter Joseph Giacomini

500-002US

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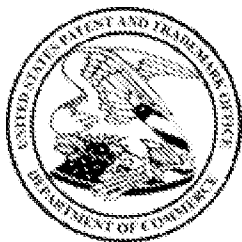
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Appeal No: 2009-0139
Application: 09/725,737
Appellant: Peter Joseph Giacomini et al.

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Application 09/725,737 was received from the Technology Center at the Board on July 14, 2008 and has been assigned Appeal No: 2009-0139.

A review of the file indicates that the following documents have been filed by appellant:

Appeal Brief filed on: May 22, 2007
Reply Brief filed on: NONE
Request for Hearing filed on: NONE

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/725,737
Filing Date: November 29, 2000
Appellant(s): GIACOMINI ET AL.

Jason Paul DeMont # 35,793
For Appellant

EXAMINER'S ANSWER

MAILED
OCT 17 2007
GROUP 2600

This is in response to the appeal brief filed 6/26/07 appealing from the Office action mailed 4/27/07.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

7,039,683 B1	Tran et al	5-2006
6,408,360 B1	Chamberlain et al	6-2002
6,463,509 B1	Teoman et al	10-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

1. Claims 2,9,16,25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

i.e.: i is an integer and greater than one (= two or more, or variable, claims 1,8,15,24) versus i is invariant (claims 2,9,16,25). The specification teaches these as alternative embodiments since claim 1 clearly recited i is variable by reciting the i is occasional greater than 1. It can't be invariant.

Allowable Subject Matter

2. Claims 3-7,10,13,14,17-21,26,29 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

Claims 1,8,11,12,15,22-24,27-28 and 31-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Tran et al [Tran, 7,039,683 B1] or admitted prior art.

3. As per claim 8, Tran discloses a data processing system comprising:
a cache for storing a resource [Tran, cache value, col 4 lines 25-42] ; and a processor for populating said cache with said resource only when at least i requests for said resource have been received [Tran, network with access requestor and resources, Fig 4; before, after or while an access request is made, col 1 lines 66]; wherein i is an integer and is at least occasionally greater than one [Tran, the software may calculate a cache value based on number of requests, col 4 lines 25-42].

4. Claims 1,15,24 contain the similar limitations set forth of apparatus claim 8. Therefore, claims 1,15,24 are rejected for the similar rationale set forth in claim 8.

5. As per claims 11,27 Tran discloses said cache is populated with said resource only when at least i request for said resource have been received within an elapsed time interval, At , as inherent feature of the number of requests via network.

6. As per claims 12 and 28 Tran discloses the duration of said elapsed time interval, At , is based on the value of i as inherent feature of the number of requests via network.

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7. As per claims 22,23,31,32 Tran discloses said computer network is a hierarchical computer network and said first node has m filial nodes [Tran, a network with access requestor and resources, Fig 4; before, after or while an access request is made, col 1 lines 66]; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Tran, the software may calculate a cache value based on the number (more than one) of requests, col 4 lines 25-42].

Claims 1,8,11,12,15,22-24,27-28 and 31-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Chamberlain et al [6,408,360 B1]

8. As per claim 15 Chamberlain discloses, in Fig 6, A method comprising: receiving at a first node in a computer network at least one request for a resource; retrieving said resource from a second node in said computer network [Chamberlain, the request and subsequent request, col 2 lines 34-60]; and populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Chamberlain, last modified, latest modification, col 2 lines 34-60]; wherein i is an integer and is at least occasionally greater than one [Chamberlain, other request could be tested, col 14 lines 19-26].

9. As per claim 24 Chamberlain discloses A first node in a computer network, said first node comprising:

a cache [Chamberlain, Fig 4, cache 304];

at least one receiver for receiving at least one request for a resource [Chamberlain, the request and subsequent request, col 2 lines 34-60]; and

a processor for retrieving said resource from a second node in said computer network [Chamberlain, Fig 4, HTTPserver 206], and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Chamberlain, last modified, latest modification, col 2 lines 34-60];

wherein i is an integer and is at least occasionally greater than one [Chamberlain, other request could be tested, col 14 lines 19-26].

10. As per claim 8, Chamberlain discloses a data processing system comprising:

a cache for storing a resource [Chamberlain, Fig 4, cache 304]; and a processor for populating said cache with said resource only when at least i requests for said resource have been received [Chamberlain, Fig 4, HTTPserver 206]; wherein i is an integer and is at least occasionally greater than one [Chamberlain, other request could be tested, col 14 lines 19-26].

11. Claim 1, contains the similar limitations set forth of apparatus claim 8. Therefore, claim 1 is rejected for the similar rationale set forth in claim 8.

12. As per claims 11,27 Chamberlain discloses said cache is populated with said resource only when at least i request for said resource have been received within an elapsed time interval, A_t , as inherent feature of the number of requests via network.

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13. As per claims 12 and 28 Chamberlain discloses the duration of said elapsed time interval, At , is based on the value of i as inherent feature of the number of requests via network.

14. As per claims 22,23,31,32 Chamberlain discloses said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Chamberlain, LAN, WAN, Internet, col 6 lines 5-10].

Claims 1,8,11,12,15,22-24,27-28 and 31-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Teoman et al [6,463,509 B1].

15. As per claim 15, Teoman discloses A method comprising:

receiving at a first node in a computer network at least one request for a resource [Teoman, compares the request against a directory of the content of user cache, col 2 line 63];

retrieving said resource from a second node in said computer network [Teoman, data is retrieved from mass storage, col 9 line 23]; and

populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Teoman, preload and responsive caching, col 9 lines 15-38; preloading all file have been accessed, col 15

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lines 24-50]; wherein i is an integer and is at least occasionally greater than one

[Teoman, a threshold number of I/O requests, col 13 lines 6-12].

16. As per claim 24 Teoman discloses A first node in a computer network, said first node comprising:

a cache [Teoman, cache 25, Fig 1];

at least one receiver for receiving at least one request for a resource [Teoman, server 29, Fig 1]; and

a processor for retrieving said resource from a second node in said computer network [Teoman, processor, col 4 lines 1-8], and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Teoman, preload and responsive caching, col 9 lines 15-38; preloading all file have been accessed, col 15 lines 24-50];

wherein i is an integer and is at least occasionally greater than one [Teoman, a threshold number of I/O requests, col 13 lines 6-12].

17. As per claim 8, Teoman discloses a data processing system comprising:

a cache for storing a resource [Teoman, cache 25, Fig 1]; and a processor for populating said cache with said resource only when at least i requests for said resource have been received [Teoman, preload and responsive caching, col 9 lines 15-38; preloading all file have been accessed, col 15 lines 24-50]; wherein i is an integer and is at least occasionally greater than one [Teoman, a threshold number of I/O requests, col 13 lines 6-12].

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18. Claim 1, contains the similar limitations set forth of apparatus claim 8. Therefore, claim 1 is rejected for the similar rationale set forth in claim 8.

19. As per claims 11,27 Teoman discloses said cache is populated with said resource only when at least i request for said resource have been received within an elapsed time interval, At , as inherent feature of the number of requests via network.

20. As per claims 12 and 28 Teoman discloses the duration of said elapsed time interval, At , is based on the value of i as inherent feature of the number of requests via network.

21. As per claims 22,23,31,32 Chamberlain discloses said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Teoman, LAN,WAN, Internet, col 4 line 45-50].

(10) Response to Argument

Rejection of claims 2,9,16, and 25 under 112 Rejection (First Paragraph):

Appellant argues the Examiner confused and incorrectly interpreting the claim language “wherein i is an integer and is at least occasionally greater than one” to mean “that i varies and there must be an occasion when i is not greater than one”.

Examiner points out the Appellant argues that claim 1 is being incorrectly interpreted to mean “that i varies and there must be an occasion when i is not greater than one”. The claim clearly indicates that i is an integer that varies between $-\infty$ and 1 most of the time wherein i at sometime must be greater than 1 and hence i must be a variable which varies. Appellant states “The language “is at least occasionally greater than once” means “there is at least one occasion when i is greater than one and there **might be, but there is not necessarily, one or more occasions when i is not greater than one**”. Since the variable i varies, claim 2 which recites that i is not enabling disclosed since i can not be both variant and invariant.

Rejection claim 1,8,11,12,15,22-24,27-28, and 31-32 under 102 Rejections:

(Tran reference)

A. Appellant argues that Tran et al is not prior art since it is alleged that the 102 (e) filing data of Tran et al is 29 December 2000. However this ignores Tran et al's priority claim under 35 U.S.C. § 119(e) which is 25 September 2000 which “*is its earliest effective U.S. filing date, taking into consideration any proper benefit claims to prior U.S. applications under 35 U.S.C. 119 (e) or 120 if the prior application(s) properly supports the subject matter used to make the rejection in compliance with 35 U.S.C. 112, first paragraph*” (MPEP 706.02 (f)). Hence Tran et al qualifies as prior art. Therefore the rejection under 35 U.S.C. § 102(e) should be sustained.

Appellant argues that the claims are directed to “delayed post filing” of a cache. Delayed post filing occurs where i is 2 or greater. Based upon appellant's argument that “there is at least once occasion when i is greater than one and there **might be, but**

there is not necessarily, one or more occasions when i is not greater than one", it is clear that there may never be an occasion where i is 2 or greater. Hence, pre-filing and post filing ($i = 0$ and 1, respectively) meet the claimed limitation which is shown in the prior art relied upon.

B. Claims 1 and 8:

1. Appellant argues Tran does not teach or suggest "populating a cache with a resource only when at least i request for said resource have been received".

Examiner points out the Prior art taught "requests for access may be anticipated before, after or while an access request is made" [Tran, col 1 lines 66]. It's clear that the cache populating with a resource when the request for said resource have been received.

2. Appellant argues the i request is greater than one.

Examiner point outs the Claims 1,8 recite an integer value which may be zero, one and occasionally greater than 1. Hence, if $i = 0$ the admitted prior art and recited art disclosed preloading the cache and therefore anticipate the rejected claims. When $i = 1$, the admitted prior art disclosed the resource is loaded as taught by the application in Fig 3, step 305-309.

C. Claims 15 and 24:

1.Appellant argues Tran does not teach or suggest "populating a cache with a resource only when at least i request for said resource have been received".

Examiner points out the Prior art taught "requests for access may be anticipated before, after or while an access request is made" [Tran, col 1 lines 66]. It's clear that the

cache populating with a resource when the request for said resource have been received.

2. Appellant argues the i request is greater than one. Examiner point outs Claims 15,24 recite an integer value which may be zero, one and occasionally greater than 1. Hence, if $i=0$ the prior art preloading discloses the admitted and art cited anticipated these. When $i=1$, the admitted prior art disclosed the resource is loaded as taught by the application in Fig 3, step 305-309.

102 Rections: (Chamberlain reference)

Claims 1,8,15 and 24:

1. Appellant argues Chamberlain does not teach or suggest “populating a cache with a resource only when at least i request for said resource have been received”.

Examiner points out the Prior art taught “a cache [Chamberlain, Fig 4, cache 304]; at least one receiver for receiving at least one request for a resource [Chamberlain, the request and subsequent request, col 2 lines 34-60]; and a processor for retrieving said resource from a second node in said computer network [Chamberlain, Fig 4, HTTPserver 206], and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Chamberlain, last modified, latest modification, col 2 lines 34-60]; wherein i is an integer and is at least occasionally greater than one [Chamberlain, other request could be tested, col 14 lines 19-26].

2. Appellant argues the i request is greater than one.

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Examiner point outs the prior art taught "a web site which receives requests from web pages, based upon those requests, serves web page responses that were previously cached". It's clearly the requests is more than one.

102 Rections: (Teoman reference)

A. Claims 1,8,15 and 24:

Appellant argues Teoman does not teach or suggest "populating a cache with a resource only when at least i request for said resource have been received; wherein i is an integer and is at least occasionally greater than one".

Examiner points out the Prior art taught the user cache with a threshold number of I/O requests [Teoman, a threshold number of I/O requests, col 13 lines 1-22]. It's clearly the number of requests is greater than one.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Thong Vu
Primary Examiner

THONG VU
PRIMARY PATENT EXAMINER

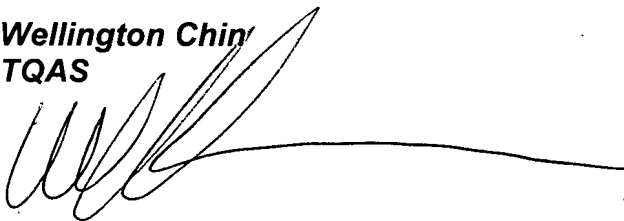


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09/725,737	11/29/2000	Peter Joseph Giacomini	500-002US	9624
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Jason Paul DeMont # 35,793
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(7) Claims Appendix

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(8) Evidence Relied Upon

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6,408,360 B1	Chamberlain et al	6-2002
6,463,509 B1	Teoman et al	10-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

1. Claims 2,9,16,25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

i.e.: i is an integer and greater than one (= two or more, or variable, claims 1,8,15,24) versus i is invariant (claims 2,9,16,25). The specification teaches these as alternative embodiments since claim 1 clearly recited i is variable by reciting the i is occasional greater than 1. It can't be invariant.

Allowable Subject Matter

2. Claims 3-7,10,13,14,17-21,26,29 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

Claims 1,8,11,12,15,22-24,27-28 and 31-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Tran et al [Tran, 7,039,683 B1] or admitted prior art.

3. As per claim 8, Tran discloses a data processing system comprising:
a cache for storing a resource [Tran, cache value, col 4 lines 25-42] ; and a processor for populating said cache with said resource only when at least i requests for said resource have been received [Tran, network with access requestor and resources, Fig 4; before, after or while an access request is made, col 1 lines 66]; wherein i is an integer and is at least occasionally greater than one [Tran, the software may calculate a cache value based on number of requests, col 4 lines 25-42].

4. Claims 1,15,24 contain the similar limitations set forth of apparatus claim 8. Therefore, claims 1,15,24 are rejected for the similar rationale set forth in claim 8.

5. As per claims 11,27 Tran discloses said cache is populated with said resource only when at least i request for said resource have been received within an elapsed time interval, At , as inherent feature of the number of requests via network.

6. As per claims 12 and 28 Tran discloses the duration of said elapsed time interval, At , is based on the value of i as inherent feature of the number of requests via network.

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7. As per claims 22,23,31,32 Tran discloses said computer network is a hierarchical computer network and said first node has m filial nodes [Tran, a network with access requestor and resources, Fig 4; before, after or while an access request is made, col 1 lines 66]; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Tran, the software may calculate a cache value based on the number (more than one) of requests, col 4 lines 25-42].

Claims 1,8,11,12,15,22-24,27-28 and 31-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Chamberlain et al [6,408,360 B1]

8. As per claim 15 Chamberlain discloses, in Fig 6, A method comprising: receiving at a first node in a computer network at least one request for a resource; retrieving said resource from a second node in said computer network [Chamberlain, the request and subsequent request, col 2 lines 34-60]; and populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Chamberlain, last modified, latest modification, col 2 lines 34-60]; wherein i is an integer and is at least occasionally greater than one [Chamberlain, other request could be tested, col 14 lines 19-26].

9. As per claim 24 Chamberlain discloses A first node in a computer network, said first node comprising:
- a cache [Chamberlain, Fig 4, cache 304];
 - at least one receiver for receiving at least one request for a resource [Chamberlain, the request and subsequent request, col 2 lines 34-60]; and
 - a processor for retrieving said resource from a second node in said computer network [Chamberlain, Fig 4, HTTPserver 206], and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Chamberlain, last modified, latest modification, col 2 lines 34-60];
- wherein i is an integer and is at least occasionally greater than one [Chamberlain, other request could be tested, col 14 lines 19-26].
10. As per claim 8, Chamberlain discloses a data processing system comprising:
- a cache for storing a resource [Chamberlain, Fig 4, cache 304]; and a processor
- for populating said cache with said resource only when at least i requests for said resource have been received [Chamberlain, Fig 4, HTTPserver 206]; wherein i is an integer and is at least occasionally greater than one [Chamberlain, other request could be tested, col 14 lines 19-26].
11. Claim 1, contains the similar limitations set forth of apparatus claim 8. Therefore, claim 1 is rejected for the similar rationale set forth in claim 8.
12. As per claims 11,27 Chamberlain discloses said cache is populated with said resource only when at least i request for said resource have been received within an elapsed time interval, A_t , as inherent feature of the number of requests via network.

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13. As per claims 12 and 28 Chamberlain discloses the duration of said elapsed time interval, At , is based on the value of i as inherent feature of the number of requests via network.

14. As per claims 22,23,31,32 Chamberlain discloses said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Chamberlain, LAN, WAN, Internet, col 6 lines 5-10].

Claims 1,8,11,12,15,22-24,27-28 and 31-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Teoman et al [6,463,509 B1].

15. As per claim 15, Teoman discloses A method comprising:
receiving at a first node in a computer network at least one request for a resource [Teoman, compares the request against a directory of the content of user cache, col 2 line 63];

retrieving said resource from a second node in said computer network [Teoman, data is retrieved from mass storage, col 9 line 23]; and

populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Teoman, preload and responsive caching, col 9 lines 15-38; preloading all file have been accessed, col 15

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lines 24-50]; wherein i is an integer and is at least occasionally greater than one [Teoman, a threshold number of I/O requests, col 13 lines 6-12].

16. As per claim 24 Teoman discloses A first node in a computer network, said first node comprising:

a cache [Teoman, cache 25, Fig 1];

at least one receiver for receiving at least one request for a resource [Teoman, server 29, Fig 1]; and

a processor for retrieving said resource from a second node in said computer network [Teoman, processor, col 4 lines 1-8], and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Teoman, preload and responsive caching, col 9 lines 15-38; preloading all file have been accessed, col 15 lines 24-50];

wherein i is an integer and is at least occasionally greater than one [Teoman, a threshold number of I/O requests, col 13 lines 6-12].

17. As per claim 8, Teoman discloses a data processing system comprising:

a cache for storing a resource [Teoman, cache 25, Fig 1]; and a processor for populating said cache with said resource only when at least i requests for said resource have been received [Teoman, preload and responsive caching, col 9 lines 15-38; preloading all file have been accessed, col 15 lines 24-50]; wherein i is an integer and is at least occasionally greater than one [Teoman, a threshold number of I/O requests, col 13 lines 6-12].

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18. Claim 1, contains the similar limitations set forth of apparatus claim 8. Therefore, claim 1 is rejected for the similar rationale set forth in claim 8.

19. As per claims 11,27 Teoman discloses said cache is populated with said resource only when at least i request for said resource have been received within an elapsed time interval, A_t , as inherent feature of the number of requests via network.

20. As per claims 12 and 28 Teoman discloses the duration of said elapsed time interval, A_t , is based on the value of i as inherent feature of the number of requests via network.

21. As per claims 22,23,31,32 Chamberlain discloses said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Teoman, LAN, WAN, Internet, col 4 line 45-50].

(10) Response to Argument

Rejection of claims 2,9,16, and 25 under 112 Rejection (First Paragraph):

Appellant argues the Examiner confused and incorrectly interpreting the claim language "wherein i is an integer and is at least occasionally greater than one" to mean "that i varies and there must be an occasion when i is not greater than one".

Examiner points out the Appellant argues that claim 1 is being incorrectly interpreted to mean “that i varies and there must be an occasion when i is not greater than one”. The claim clearly indicates that i is an integer that varies between $-\infty$ and 1 most of the time wherein i at sometime must be greater than 1 and hence i must be a variable which varies. Appellant states “The language “is at least occasionally greater than once” means “there is at least one occasion when i is greater than one and there **might be, but there is not necessarily, one or more occasions when i is not greater than one**”. Since the variable i varies, claim 2 which recites that i is not enabling disclosed since i can not be both variant and invariant.

Rejection claim 1,8,11,12,15,22-24,27-28, and 31-32 under 102 Rejections:

(Tran reference)

A. Appellant argues that Tran et al is not prior art since it is alleged that the 102 (e) filing data of Tran et al is 29 December 2000. However this ignores Tran et al's priority claim under 35 U.S.C. § 119(e) which is 25 September 2000 which “*is its earliest effective U.S. filing date, taking into consideration any proper benefit claims to prior U.S. applications under 35 U.S.C. 119 (e) or 120 if the prior application(s) properly supports the subject matter used to make the rejection in compliance with 35 U.S.C. 112, first paragraph*” (MPEP 706.02 (f)). Hence Tran et al qualifies as prior art. Therefore the rejection under 35 U.S.C. § 102(e) should be sustained.

Appellant argues that the claims are directed to “delayed post filing” of a cache. Delayed post filing occurs where i is 2 or greater. Based upon appellant's argument that “there is at least once occasion when i is greater than one and there **might be, but**

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there is not necessarily, one or more occasions when i is not greater than one", it is clear that there may never be an occasion where i is 2 or greater. Hence, pre-filing and post filing ($i=0$ and 1, respectively) meet the claimed limitation which is shown in the prior art relied upon.

B. Claims 1 and 8:

1. Appellant argues Tran does not teach or suggest "populating a cache with a resource only when at least i request for said resource have been received".

Examiner points out the Prior art taught "requests for access may be anticipated before, after or while an access request is made" [Tran, col 1 lines 66]. It's clear that the cache populating with a resource when the request for said resource have been received.

2. Appellant argues the i request is greater than one.

Examiner point outs the Claims 1,8 recite an integer value which may be zero, one and occasionally greater than 1. Hence, if $i=0$ the admitted prior art and recited art disclosed preloading the cache and therefore anticipate the rejected claims. When $i=1$, the admitted prior art disclosed the resource is loaded as taught by the application in Fig 3, step 305-309.

C. Claims 15 and 24:

1.Appellant argues Tran does not teach or suggest "populating a cache with a resource only when at least i request for said resource have been received".

Examiner points out the Prior art taught "requests for access may be anticipated before, after or while an access request is made" [Tran, col 1 lines 66]. It's clear that the

cache populating with a resource when the request for said resource have been received.

2. Appellant argues the i request is greater than one. Examiner point outs Claims 15, 24 recite an integer value which may be zero, one and occasionally greater than 1. Hence, if $i = 0$ the prior art preloading discloses the admitted and art cited anticipated these. When $i = 1$, the admitted prior art disclosed the resource is loaded as taught by the application in Fig 3, step 305-309.

102 Rections: (Chamberlain reference)

Claims 1, 8, 15 and 24:

1. Appellant argues Chamberlain does not teach or suggest "populating a cache with a resource only when at least i request for said resource have been received".

Examiner points out the Prior art taught "a cache [Chamberlain, Fig 4, cache 304]; at least one receiver for receiving at least one request for a resource [Chamberlain, the request and subsequent request, col 2 lines 34-60]; and a processor for retrieving said resource from a second node in said computer network [Chamberlain, Fig 4, HTTPserver 206], and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Chamberlain, last modified, latest modification, col 2 lines 34-60]; wherein i is an integer and is at least occasionally greater than one [Chamberlain, other request could be tested, col 14 lines 19-26].

2. Appellant argues the i request is greater than one.

Examiner point outs the prior art taught "a web site which receives requests from web pages, based upon those requests, serves web page responses that were previously cached". It's clearly the requests is more than one.

102 Rejections: (Teoman reference)

A. Claims 1,8,15 and 24:

Appellant argues Teoman does not teach or suggest "populating a cache with a resource only when at least i request for said resource have been received; wherein i is an integer and is at least occasionally greater than one".

Examiner points out the Prior art taught the user cache with a threshold number of I/O requests [Teoman, a threshold number of I/O requests, col 13 lines 1-22]. It's clearly the number of requests is greater than one.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

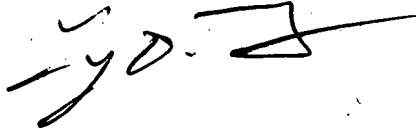
Thong Vu
Primary Examiner

THONG VU
PRIMARY PATENT EXAMINER

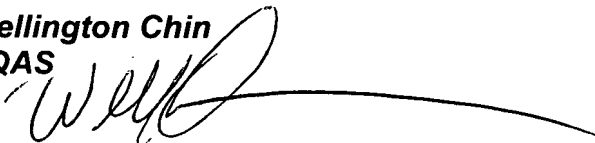


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**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Conf. No.: 9624

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

- Transmittal Letter
- Appeal Brief

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**

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**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

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Examiner: Thong H Vu

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Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

APPEAL BRIEF UNDER 37 CFR 41.67

Pursuant to 37 CFR 41.67, this brief is filed in support of the appeal in this application.

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REAL PARTY IN INTEREST

The real party of interest in this application is the assignee of this application: Broadspider Networks, Inc. The applicant's attorneys, Jason Paul DeMont and Wayne S. Breyer, are shareholders of Broadspider Networks, Inc.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1 through 32 stand rejected and are being appealed.

STATUS OF AMENDMENTS

All amendments have been entered. There have been no amendments made subsequent to the final rejection.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention relates to data processing systems and computer networks in general, and, more particularly, to techniques for storing resources in a cache.

In the context of the Internet, when a user of the World Wide Web requests a Web page, the user must wait until the page is available on his or her data processing system (*e.g.*, computer, *etc.*) for viewing. In general, this wait occurs because the request for the Web page must traverse the Internet from the user's data processing system to the data processing system that is the source of the page, the request must be fulfilled, and the requested page must travel back to the user's system. If the Internet is congested or the data processing system that is the source of the page is overwhelmed, the wait can be considerably long. **[Specification Page 1, Lines 10-16]**

To shorten this wait, special data processing systems are deployed throughout the Internet to expedite the delivery of some Web pages. Some of these data processing systems expedite the delivery of Web pages by functioning as cache memories, which are also known as "caches." For example, a cache stores commonly requested Web pages and thereafter intercepts and fulfills requests for those pages, which eliminates the need for the request having to travel to, and be serviced by, the principal memory. **[Specification Page 1, Lines 17-22]**

A cache expedites the delivery of the Web page in two ways. First, a cache eliminates the need for the request to travel all of the way to the system that is the ultimate source of the page, and, therefore, eliminates some of the wait associated with the transit. Second, a cache also reduces the number of Web page requests that must be fulfilled by the system that is the ultimate source of the page, and, therefore, the wait associated with contention for the system is eliminated. **[Specification Page 1, Lines 18-27]**

Caches are also used to expedite processing in data processing systems and their operation in data processing systems is roughly analogous to, with notable exceptions, their operation in computer networks. At this time, the applicants do not believe that the differences between the use of cache in computer networks and in data processing systems are germane to the present appeal and the scope of the pending claims encompass the use of the present invention in both computer networks and data processing systems.

When a cache is full and an additional resource is to be stored in the cache, the cache must have an algorithm for deciding which resource gets purged to make room for the additional resource. There is a lot of prior art in this area.

In contrast, there is not a lot of prior art addressing the issue of when to store the resource in the cache in the first place. Typically, a resource is stored in a cache either (1) the first time that it is requested, or (2) it is pre-fetched before the first time that it is requested. The present invention addresses the issue of when to store a resource in a cache that is particularly efficient in many cases.

For example, a cache in accordance with the present invention is populated with a resource only when at least i requests for the resource have been received, wherein i is an integer and is, at least occasionally, greater than one. For example, a cache in accordance with the illustrative embodiment might not be populated with a resource unless two requests for the resource have been received within 10 minutes. In general, embodiments of the present invention are advantageous because *they prevent the cache from being populated with infrequently requested resources.* **[Specification Page 3, Lines 21-31]**

Here's a way to keep all of these ideas straight in one mind. There are only three ways that a cache can be populated:

- **Pre-Filling** (AKA Pre-Fetching & Pre-Loading) — Populating a cache with a resource before a request for the resource has arrived.
- **Post-Filling** (AKA Responsive Loading & Responsive Caching) — Populating a cache with a resource after one request for the resource has arrived.
- **Delayed Post-Filling** — Populating a cache with a resource after more than one request for the resource has arrived.

Pre-filling and post-filling are old and well-known in the art. The present invention can be thought of as delayed post-filling and the combination of post-filling and delayed post-filling.

The present application comprises four (4) independent claims. Each shall be presented, summarized, and mapped to the specification by page and line number and to the drawings, if any.

Independent claim 1 recites:

1. (Previously Presented) A method comprising: populating a cache with a resource only when at least i requests for said resource have been received; wherein i is an integer and is at least occasionally greater than one.

Claim recites a method of delayed post-filling, and is described in the specification at **Page 9, lines 19-20; Page 13, lines 1-4; and drawings at Figure 6, boxes 608 and 609.**

Independent claim 8 recites:

8. (Previously Presented) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.

Claim 8 recites a data processing system that performs delayed post-filling, and is described in the specification at **Page 7, line 11; Page 9, lines 19-20; Page 13, lines 14-18 and drawings at Figure 5, boxes 502 and 503.**

Independent claim 15 recites:

15. (Previously Presented) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.

Claim 15 recites a method of delayed post-filling, and is described in the specification at **Page 4, lines 21-23; Page 9, lines 19-20; Page 14, lines 1-6; and drawings at Figure 4, boxes 411 and 423; and Figure 6, boxes 608 and 609.**

Independent claim 24 recites:

24. (Previously Presented) A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and
a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.

Claim 24 recites a node in a computer network that comprises hardware for populating a cache in accordance with delayed post-filling, and is described in the specification at **Page 7, line 11; Page 9, lines 19-20; Page 15, lines 1-7, and drawings at Figure 5, boxes 502 and 503.**

GROUND OF OBJECTION AND REJECTION TO BE REVIEWED ON APPEAL**Ground 1: 35 U.S.C. 112 Rejection of Claims 2, 9, 16, and 25**

Claims 2, 9, 16, and 25 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

Ground 2: 35 U.S.C. 102 Rejection of Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32

Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32 have been rejected under 35 U.S.C. 102(e) as being anticipated by V. Tran et al., U.S. Patent 7,039,683 B1 (hereinafter "Tran").

Ground 3: 35 U.S.C. 102 Rejection of Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32

Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32 have been rejected under 35 U.S.C. 102(e) as being anticipated by J.T. Chamberlain et al., U.S. Patent 6,408,360 B1 (hereinafter "Chamberlain").

Ground 3: 35 U.S.C. 102 Rejection of Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32

Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32 have been rejected under 35 U.S.C. 102(e) as being anticipated by D. Teoman et al., U.S. Patent 6,564,509 B1 (hereinafter "Teoman").

ARGUMENTS

Ground 1: 35 U.S.C. 112 Rejection of Claims 2, 9, 16, and 25

Claims 1, 8, 15, and 24 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The applicants respectfully traverse the rejection.

The Office action states:

i.e., *i* is an integer and greater than one (=two or more, or variable, claims 1, 8, 15, 24) versus *i* is invariant (claims 2, 9, 16, 25). The specification teaches these as alternative embodiments since claim 1 clearly recited is variable by reciting the *i* is occasionally [sic] greater than 1. It can't be invariant.

Office action of 4/27/07, page 4, first paragraph

The applicants respectfully submit that the Office is confused.

Claim 1 recites:

1. A method comprising:
 populating a cache with a resource only when at least *i* requests for said resource have been received;
 wherein *i* is an integer and ***is at least occasionally greater than one.***
(emphasis supplied)

The Office is incorrectly interpreting the language "is ***at least*** occasionally greater than one" to mean "that *i* ***varies*** and there ***must*** be an occasion when *i* is ***not*** greater than one." Clearly this is incorrect.

The language "is ***at least*** occasionally greater than one" means "there is at least one occasion when *i* is greater than one and there ***might*** be, but there is ***not*** necessarily, one or more occasions when *i* is ***not*** greater than one." For example, when *i* = 2 and is fixed, *i* is at least occasionally greater than one.

Claim 2 recites:

2. The method of claim 1 wherein the value of *i* is ***invariant.***
(emphasis supplied)

Because the Office interpreted the language in claim 1 to mean that *i* varies, and the language in claim 2 clearly states that it does not vary, the Office has rejected claim 2 as incongruous with claim 1. But because the Office's interpretation of claim 1 is incorrect,

and because claim 1 does not require that *i* vary, the applicants respectfully submit that the rejection of claim 2 is traversed.

The logic underlying the Office's rejection of claims 9, 16, and 25 is identical, and the applicants respect that the rejected of them is also traversed for the same reasons.

Ground 2: 35 U.S.C. 102 Rejection of Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32

Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32 have been rejected under 35 U.S.C. 102(e) as being anticipated by V. Tran et al., U.S. Patent 7,039,683 B1 (hereinafter "**Tran**"). The applicants respectfully traverse.

The 102(e) filing date of Tran is 29 December 2000, which is **after** the filing date of the present application (29 November 2000), and, therefore, it is a invalid prior art reference.

For this reason, the applicants respectfully submit that the rejection is traversed.

Ground 3: 35 U.S.C. 102 Rejection of Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32

Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32 have been rejected under 35 U.S.C. 102(e) as being anticipated by J.T. Chamberlain et al., U.S. Patent 6,408,360 B1 (hereinafter "Chamberlain"). The applicants respectfully traverse.

Claim 1 recites:

1. (Previously Presented) A method comprising:
populating a cache with a resource only when at least *i* requests for said resource have been received;
wherein *i* is an integer and is at least occasionally greater than one.
(emphasis supplied)

Nowhere does Chamberlain teach or suggest, alone or in combination with the other references, what claim 1 recites — namely, delaying the population of a cache with a resource until at least *i* requests for the resource have been received, ***wherein *i* is at least occasionally greater than one.*** In other words, claim 1 recites a form of delayed post filling.

To support the rejection, the Office cites Column 14, lines 19-26, which states:

The applicability analysis portion of the cached-response analysis only examined, as an example, one strategy flag (OnlyAnonymous). However, there are other request-specific characteristics that could as easily be tested. Tests for appropriate browser type and version, and tests for the appropriate language are examples of other user-specific tests that may be run against a cached response to ensure that it is applicable to the request or the requesting user.

Chamberlain Col. 14, lines 19-26

The applicants respectfully submit that there is nothing — absolutely nothing — that is relevant to the issue at hand — namely the conditions under which a cache is populated with a resource. For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claim 8 depends on claim 1, the applicants respectfully submit that the rejection of it is also traversed.

Independent claims 8, 15, and 24 all also recite the limitation "**wherein i is an integer and is at least occasionally greater than one,**" and the Office reads the same portion of Chamberlain onto this limitation. For this reason, the applicants respectfully submit that the rejection of them is also traversed.

Because claims 12, 22-23, 27-28, and 31-32 depend on one of these independent claims, the applicants respectfully submit that the rejection of them is also traversed.

Ground 4: 35 U.S.C. 102 Rejection of Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32

Claims 1, 8, 11, 12, 15, 22-24, 27-28, and 31-32 have been rejected under 35 U.S.C. 102(e) as being anticipated by D. Teoman et al., U.S. Patent 6,463,509 B1. The applicants respectfully traverse.

Claim 1 recites:

1. (Previously Presented) A method comprising:
 populating a cache with a resource only when at least *i* requests for said resource have been received;
wherein *i* is an integer and is at least occasionally greater than one.
(emphasis supplied)

Nowhere does Teoman teach or suggest, alone or in combination with the other references, what claim 1 recites — namely, delaying the population of a cache with a resource until at least *i* requests for the resource have been received, ***wherein *i* is at least occasionally greater than one.***

To support the rejection, the Office cites Column 9, lines 15-38, which states:

In various embodiments discussed below, the user cache manager 90 generates a user interface on a display of the host computer system to allow a user to configure the operation of the user cache 25. In general, **there are two types of storage operations that take place in the user cache: preloading and responsive caching. Responsive caching refers to the storage of data in the user cache in response to I/O requests from application processes. In a preload operation, by contrast, data is retrieved from mass storage and stored in the user cache before being requested for use in an application process.** In one type of preloading, called commanded preloading, data is preloaded according to user-provided criteria. For example, the user may command, via a user interface presented by the user cache manager 90, that specific files, specific file types or files from a specific source such as a disk drive or subdirectory be loaded into the cache, even before the files are requested by application processes. This is shown in FIG. 5 by the user preferences supplied to the user cache manager. In another type of preloading, called triggered

preloading, data is preloaded when the access statistics 94 gathered by the observer 95 indicate that a user-specified threshold is exceeded. As discussed below, numerous user supplied parameters may be used to control commanded and dynamic preloading operations.

Teoman Col. 9, lines 15-38 (*emphasis supplied*)

A careful reading of this portion of Teoman teaches exactly what the applicants have contended is the prior art before the present invention — that there were two types of cache population: pre-loading (AKA pre-filling and pre-fetching) and responsive caching (AKA post-filling). Teoman goes on to explain both types of cache population, but nowhere teaches or suggests delayed post-filling as recited in the claim.

A second portion of Teoman relied on by the Office is at Column 15, lines 24-50, which states:

Examples of preloading policies include, but are not limited to, preloading complete files in response to file segment access, preloading all files within the directory or folder of a launched application, **preloading all files in a directory or folder if a threshold number of files from the directory or folder have already been accessed**, preloading files in the system directory or folder, preloading files having a particular file type identifier if a threshold number of files having the file type identifier have been accessed, and so forth. The file type identifier may be a filename extension such as ".doc" or ".psd", as used in many operating systems, or the file type identifier may be a file attribute that does not appear in the file name. Also, as indicated in FIG. 10, the threshold number of files that have a particular file type identifier and the threshold number of files that are from a directory or folder are specified by the user. In many cases, the preloading policies translate directly into criteria for triggered preloading. For example, a policy to preload all files in a directory or folder if a threshold number of the files have been accessed sets up a preload trigger. The user cache manager periodically inspects the access table maintained by the observer to determine if the trigger criteria is met (e.g., whether the threshold number of files from the indicated directory have been accessed). Other preload policies give rise to commanded preload operations. For example, a policy to preload the system

directory causes the user cache manager to begin
commanded preloads of the directory contents.

Teoman Col. 15, lines 24-50 (*emphasis supplied*)

Here, Teoman is teaching a variety of tests for pre-loading a resource into a cache **before the resource is requested**. Designing a good test for pre-loading is difficult, and Teoman teaches several good tests. But these are all tests for **pre-loading** a resource into a cache **before the resource is requested**. Nowhere does Teoman teach or suggest delayed-post filing. For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claim 8 depends on claim 1, the applicants respectfully submit that the rejection of it is also traversed.

Independent claims 8, 15, and 24 all also recite the limitation "**wherein i is an integer and is at least occasionally greater than one,**" and the Office reads the same portion of Teoman onto this limitation. For this reason, the applicants respectfully submit that the rejection of them is also traversed.

Because claims 12, 22-23, 27-28, and 31-32 depend on one of these independent claims, the applicants respectfully submit that the rejection of them is also traversed.

CONCLUSION

The applicants have demonstrated that the logic underlying the Office's rejection is untenable, and, therefore, that the rejection is not sustainable. For this reason, the applicants respectfully request the Board of Appeals to reverse the decision of the Examiner as provided for in 37 C.F.R. 41.50(a).

Respectfully,
Peter Joseph Giacomini et al.

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CLAIMS APPENDIX

- 1.** (Previously Presented) A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
 - 2.** (Original) The method of claim 1 wherein the value of i is invariant.
 - 3.** (Original) The method of claim 1 wherein the value of i is based on calendrical time.
 - 4.** (Original) The method of claim 1 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .
 - 5.** (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on the value of i .
 - 6.** (Original) The method of claim 4 wherein the value of i is based on calendrical time.
 - 7.** (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.
-
- 8.** (Previously Presented) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
 - 9.** (Original) The data processing system of claim 8 wherein the value of i is invariant.
 - 10.** (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

11. (Original) The data processing system of claim 8 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

12. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

13. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

14. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

15. (Previously Presented) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network; and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.

16. (Original) The method of claim 15 wherein the value of i is invariant.

17. (Original) The method of claim 15 wherein the value of i is based on calendrical time.

18. (Original) The method of claim 15 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

19. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

20. (Original) The method of claim 18 wherein the value of i is based on calendrical time.

21. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

22. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

23. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

24. (Previously Presented) A first node in a computer network, said first node comprising:

a cache;

at least one receiver for receiving at least one request for a resource; and

a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;

wherein i is an integer and is at least occasionally greater than one.

25. (Original) The first node of claim 24 wherein the value of i is invariant.

26. (Original) The first node of claim 24 wherein the value of i is based on calendrical time.

27. (Original) The first node of claim 24 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

28. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

29. (Original) The first node of claim 27 wherein the value of i is based on calendrical time.

30. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

31. (Original) The first node of claim 24:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;
wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

32. (Original) The first node of claim 24:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;
wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

EVIDENCE APPENDIX

There is no evidence submitted pursuant to 37 CFR §§ 1.130, 1.131, or 1.132.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.

Electronic Acknowledgement Receipt

EFS ID:	1798072
Application Number:	09725737
International Application Number:	
Confirmation Number:	9624
Title of Invention:	Method and apparatus for economical cache population
First Named Inventor/Applicant Name:	Peter Joseph Giacomini
Customer Number:	22897
Filer:	Jason P. DeMont
Filer Authorized By:	
Attorney Docket Number:	500-002US
Receipt Date:	22-MAY-2007
Filing Date:	29-NOV-2000
Time Stamp:	18:42:37
Application Type:	Utility

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1	Appeal Brief Filed	appeal_brief_3_500-002us_.pdf	209942	no	27

Warnings:

Information:	
Total Files Size (in bytes):	209942
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.	



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,737	11/29/2000	Peter Joseph Giacomini	500-002US	9624

22897 7590 05/21/2007
DEMONT & BREYER, LLC
100 COMMONS WAY
HOLMDEL, NJ 07733

EXAMINER

VU, THONG H

ART UNIT	PAPER NUMBER

2616

MAIL DATE	DELIVERY MODE

05/21/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Interview Summary

Application No.

09/725,737

Applicant(s)

GIACOMINI ET AL.

Examiner

Thong H. Vu

Art Unit

2616

All participants (applicant, applicant's representative, PTO personnel):

(1) Thong H. Vu. (3) _____

(2) Jason Paul DeMont. (4) _____

Date of Interview: 14 May 2007.

Type: a) ☐ Telephonic b) ☐ Video Conference
c) ☒ Personal [copy given to: 1) ☒ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☐ No.

If Yes, brief description: _____

Claim(s) discussed: 1-32.

Identification of prior art discussed: Tran, Chamberlain.

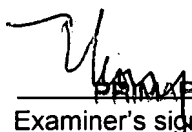
Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Applicant discusses the invention in view of the prior art. Examiner indicates claims 4 and 7 contain the limitation if incorporate into the main claims could move the case forward. Applicant would take to consider and response in due time.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.


THONG VU
PRIMARY PATENT EXAMINER
Examiner's signature, if required

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Conf. No.: 9624

Filing Date: 11/29/2000

Art Unit: 2616

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

- Transmittal Letter
- Interview Summary

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**

Jason Paul DeMont

Reg. No. 35793

Attorney for Applicants

732-578-0103 x11

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Conf. No.: 9624

Filing Date: 11/29/2000

Art Unit: 2616

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTERVIEW SUMMARY

Pursuant to 37 CFR §1.133(b), the applicants submit this statement as a complete and proper recordation of the substance of the interview that took place at the USPTO on 05/14/2007 with Examiner Thong H Vu.

The applicants discussed the inappropriateness of maintaining the 102 rejection based on Tran, and the illogic of the 112, first paragraph rejection. The applicants notified Examiner Vu that the appeal would be reinstated. No other substantive information was discussed.

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**

Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Conf. No.: 9624

Filing Date: 11/29/2000

Art Unit: 2616

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

- Transmittal Letter
- Notice of Appeal and Request for Reinstatement of Appeal

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**

Jason Paul DeMont

Reg. No. 35793

Attorney for Applicants

732-578-0103 x11

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Conf. No.: 9624

Filing Date: 11/29/2000

Art Unit: 2616

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

**NOTICE OF APPEAL FROM THE EXAMINER TO THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

AND

REQUEST FOR REINSTATEMENT OF APPEAL

The applicant hereby appeals to the Board of Patent Appeals and Interferences from the last decision of the Examiner.

In response to the Office action of 04/27/2007 and pursuant to MPEP 1208.02, the applicants respectfully request reinstatement of the appeal.

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

Electronic Acknowledgement Receipt

EFS ID:	1777451
Application Number:	09725737
International Application Number:	
Confirmation Number:	9624
Title of Invention:	Method and apparatus for economical cache population
First Named Inventor/Applicant Name:	Peter Joseph Giacomini
Customer Number:	22897
Filer:	Jason P. DeMont
Filer Authorized By:	
Attorney Docket Number:	500-002US
Receipt Date:	15-MAY-2007
Filing Date:	29-NOV-2000
Time Stamp:	16:15:07
Application Type:	Utility

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1		amendment_4_500-002us_.pdf	54941	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Miscellaneous Incoming Letter	1	1
	Applicant summary of interview with examiner	2	2

Warnings:

Information:

2		notice_of_appeal_4_500-002 us_.pdf	46548	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Miscellaneous Incoming Letter	1	1
	Notice of Appeal Filed	2	3

Warnings:

Information:

Total Files Size (in bytes):		101489

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

en

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,737	11/29/2000	Peter Joseph Giacomini	500-002US	9624

22897 7590 04/27/2007
DEMONT & BREYER, LLC
100 COMMONS WAY
HOLMDEL, NJ 07733

EXAMINER

VU, THONG H

ART UNIT	PAPER NUMBER

2616

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/725,737

Applicant(s)

GIACOMINI ET AL.

Examiner

Thong H. Vu

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,8,9,11,12,15,16,22-25,27,28,31 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,8,9,11,12,15,16,22-25,27,28,31 and 32 is/are rejected.
- 7) ☒ Claim(s) 3-7,10,13,14,17-21,26, 29 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

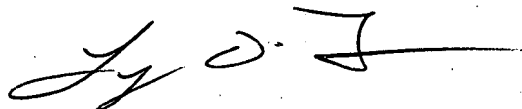
- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

1. Claims 1-32 are pending.
2. In view of the Appeal Brief filed on 1/08/2007, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37CFR 1.113 (if this Office action is final); or,
- (2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:



Response to Arguments

LYNN FEILD
SUPERVISORY PATENT EXAMINER

A. Claims 1 and 8:

Applicant argues Tran does not teach or suggest "populating a cache with a resource only when at least i request for said resource have been received".

Examiner points out the Prior art taught "requests for access may be anticipated before, after or while an access request is made" [Tran, col 1 lines 66]. It's clear that the cache populating with a resource when the request for said resource have been received.

Applicant argues the i request is greater than one. Examiner point outs Claims recite an integer value which may be zero, one and occasionally greater than 1. Hence, if $i=0$ the admitted prior art and recited art disclosed preloading the cache and therefore

anticipate the rejected claims. When $i=1$, the admitted prior art disclosed the resource is loaded as taught in Fig 3, step 305-309.

B. Claim 15 and 24:

Applicant argues Tran does not teach or suggest “populating a cache with a resource only when at least i request for said resource have been received”.

Examiner points out the Prior art taught “requests for access may be anticipated before, after or while an access request is made” [Tran, col 1 lines 66]. It’s clear that the cache populating with a resource when the request for said resource have been received.

Applicant argues the i request is greater than one. Examiner point outs Claims recite an integer value which may be zero, one and occasionally greater than 1. Hence, if $i=0$ the prior art preloading discloses the admitted and art cited anticipated these. When $i=1$, the admitted prior art disclosed the resource is loaded as taught in Fig 3, step 305-309.

Thus, the rejection sustained.

Claim Rejections - 35 USC § 112

3. Claims 2,9,16,25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

i.e.: i is an integer and greater than one (= two or more, or variable, claims 1,8,15,24) versus i is invariant (claims 2,9,16,25). The specification teaches these as alternative embodiments since claim 1 clearly recited i is variable by reciting the i is occasional greater than 1. It can't be invariant.

Allowable Subject Matter

4. Claims 3-7,10,13,14,17-21,26,29 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,8,11,12,15,22-24,27-28 and 31-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Tran et al [Tran, 7,039,683 B1] or admitted prior art.

5. As per claim 8, Tran discloses a data processing system comprising:
a cache for storing a resource [Tran, cache value, col 4 lines 25-42] ; and a processor for populating said cache with said resource only when at least i requests for

said resource have been received [Tran, network with access requestor and resources, Fig 4; before, after or while an access request is made, col 1 lines 66]; wherein i is an integer and is at least occasionally greater than one [Tran, the software may calculate a cache value based on number of requests, col 4 lines 25-42].

6. Claims 1,15,24 contain the similar limitations set forth of apparatus claim 8.

Therefore, claims 1,15,24 are rejected for the similar rationale set forth in claim 8.

7. As per claims 11,27 Tran discloses said cache is populated with said resource only when at least i request for said resource have been received within an elapsed time interval, At , as inherent feature of the number of requests via network.

8. As per claims 12 and 28 Tran discloses the duration of said elapsed time interval, At , is based on the value of i as inherent feature of the number of requests via network.

9. As per claims 22,23,31,32 Tran discloses said computer network is a hierarchical computer network and said first node has m filial nodes [Tran, a network with access requestor and resources, Fig 4; before, after or while an access request is made, col 1 lines 66]; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Tran, the software may calculate a cache value based on the number (more than one) of requests, col 4 lines 25-42].

Claims 1,8,11,12,15,22-24,27-28 and 31-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Chamberlain et al [6,408,360 B1]

10. As per claim 15 Chamberlain discloses, in Fig 6, A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network [Chamberlain, the request and subsequent request, col 2 lines 34-60]; and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Chamberlain, last modified, latest modification, col 2 lines 34-60];
wherein i is an integer and is at least occasionally greater than one [Chamberlain, other request to be tested, col 14 lines 19-26].

11. As per claim 24 Chamberlain discloses A first node in a computer network, said first node comprising:
a cache [Chamberlain, Fig 4, cache 304];
at least one receiver for receiving at least one request for a resource [Chamberlain, the request and subsequent request, col 2 lines 34-60]; and
a processor for retrieving said resource from a second node in said computer network [Chamberlain, Fig 4, HTTPserver 206], and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Chamberlain, last modified, latest modification, col 2 lines 34-60];
wherein i is an integer and is at least occasionally greater than one [Chamberlain, other request to be tested, col 14 lines 19-26].

12. As per claim 8, Chamberlain discloses a data processing system comprising:

a cache for storing a resource [Chamberlain, Fig 4, cache 304]; and a processor for populating said cache with said resource only when at least i requests for said resource have been received [Chamberlain, Fig 4, HTTPserver 206]; wherein i is an integer and is at least occasionally greater than one [Chamberlain, other request to be tested, col 14 lines 19-26].

13. Claim 1, contains the similar limitations set forth of apparatus claim 8. Therefore, claim 1 is rejected for the similar rationale set forth in claim 8.

14. As per claims 11,27 Chamberlain discloses said cache is populated with said resource only when at least i request for said resource have been received within an elapsed time interval, At , as inherent feature of the number of requests via network.

15. As per claims 12 and 28 Chamberlain discloses the duration of said elapsed time interval, At , is based on the value of i as inherent feature of the number of requests via network.

16. As per claims 22,23,31,32 Chamberlain discloses said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Chamberlain, LAN,WAN, Internet, col 6 lines 5-10].

Claims 1,8,11,12,15,22-24,27-28 and 31-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Teoman et al [6,463,509 B1].

Art Unit: 2616

17. As per claim 15 Teoman discloses A method comprising:

receiving at a first node in a computer network at least one request for a resource [Teoman, compares the request against a directory of the content of user cache, col 2 line 63];

retrieving said resource from a second node in said computer network [Teoman, data is retrieved from mass storage, col 9 line 23]; and

populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Teoman, preload and responsive caching, col 9 lines 15-38; preloading all file have been accessed, col 15 lines 24-50]; wherein i is an integer and is at least occasionally greater than one [Teoman, test memory, Fig 12].

18. As per claim 24 Teoman discloses A first node in a computer network, said first node comprising:

a cache [Teoman, cache 25, Fig 1];

at least one receiver for receiving at least one request for a resource [Teoman, server 29, Fig 1]; and

a processor for retrieving said resource from a second node in said computer network [Teoman, processor, col 4 lines 1-8], and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node [Teoman, preload and responsive caching, col 9 lines 15-38; preloading all file have been accessed, col 15 lines 24-50];

Art Unit: 2616

wherein i is an integer and is at least occasionally greater than one [Teoman, test memory, Fig 12].

19. As per claim 8, Teoman discloses a data processing system comprising:

a cache for storing a resource [Teoman, cache 25, Fig 1]; and a processor for populating said cache with said resource only when at least i requests for said resource have been received [Teoman, preload and responsive caching, col 9 lines 15-38; preloading all file have been accessed, col 15 lines 24-50]; wherein i is an integer and is at least occasionally greater than one [Teoman, test memory, Fig 12].

20. Claim 1, contains the similar limitations set forth of apparatus claim 8. Therefore, claim 1 is rejected for the similar rationale set forth in claim 8.

21. As per claims 11,27 Teoman discloses said cache is populated with said resource only when at least i request for said resource have been received within an elapsed time interval, A_t , as inherent feature of the number of requests via network.

22. As per claims 12 and 28 Teoman discloses the duration of said elapsed time interval, A_t , is based on the value of i as inherent feature of the number of requests via network.

23. As per claims 22,23,31,32 Chamberlain discloses said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Teoman, LAN,WAN, Internet, col 4 line 45-50].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong H. Vu whose telephone number is 571-272-3904. The examiner can normally be reached on 6:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Lynn Feild* can be reached on 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thong Vu
Primary Examiner



THONG VU
PRIMARY PATENT EXAMINER

Notice of References Cited	Application/Control No. 09/725,737	Applicant(s)/Patent Under Reexamination GIACOMINI ET AL.	
	Examiner Thong H. Vu	Art Unit 2616	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,408,360 B1	06-2002	Chamberlain et al.	711/124
*	B	US-6,463,509 B1	10-2002	Teoman et al.	711/137
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims 	Application/Control No. 09725737	Applicant(s)/Patent Under Reexamination GIACOMINI ET AL.
	Examiner Vu, Thong H.	Art Unit 2616

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant			☐ CPA			☐ T.D.			☐ R.1.47		
CLAIM		DATE									
Final	Original	04/23/2007									
	1	✓									
	2	✓									
	3	O									
	4	O									
	5	O									
	6	O									
	7	O									
	8	✓									
	9	✓									
	10	O									
	11	✓									
	12	✓									
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	26	✓									
	27	✓									
	28	✓									
	29	O									
	30	O									
	31	✓									
	32	✓									

Search Notes 	Application/Control No. 09725737	Applicant(s)/Patent Under Reexamination GIACOMINI ET AL.
	Examiner Vu, Thong H	Art Unit 2616

SEARCHED			
Class	Subclass	Date	Examiner
711	137,124	4/12/07	TV

SEARCH NOTES		
Search Notes	Date	Examiner
EAST,NPL,IEEE	4./12/07	TV

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	306	calend\$4 same cach\$3	US-PGPUB; USPAT	OR	ON	2007/04/25 06:49
L2	70	calend\$4 same cach\$3 and @ad<"20001129"	US-PGPUB; USPAT	OR	ON	2007/04/25 06:50
L3	26	calend\$4 same cach\$3 same request and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/25 06:51
L4	12	calend\$4 with time same cach\$3 same request and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/25 06:51

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	629	calend\$5 and cach\$3 and request same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:35
L3	121	calend\$5 and cach\$3 and request with "within" with (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:36
L4	2	calend\$5 same time same request and cach\$3 and request with "within" with (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:38
L5	0	calend\$5 same time same cach\$3 and cach\$3 same request with "within" same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:38
L6	0	calend\$5 same time same cach\$3 and cach\$3 same request same "within" same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:38
L7	0	calend\$5 same frequen\$3 same cach\$3 and cach\$3 same request same "within" same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:39
L8	1	calend\$5 and frequen\$3 same cach\$3 and cach\$3 same request same "within" same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:42
L9	1	calend\$5 and frequen\$3 same cach\$3 same request same "within" same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:52
L10	558	cach\$3 same request same "within" same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:53

EAST Search History

L11	1	cach\$3 with request with "within" with only with (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:53
L12	216	cach\$3 with request with ("within" during only) with (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:54
L13	1	cach\$3 with request with ("within" during only) with (interval period\$6 timeslot) with elapsed and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:57
L14	37	cach\$3 same (number frequen\$3) with request with ("within" during only) with (interval period\$6 timeslot) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:59
L15	12	cach\$3 same (number frequen\$3) with request with ("within" during only) with (interval period\$6 timeslot) and (time timer) with (day date calend\$5) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 10:02
L16	0	cach\$3 same (number frequen\$3) with request with ("within" during only) with (interval period\$6 timeslot) same (time timer) with (day date calend\$5) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 10:02
L17	0	cach\$3 same (number frequen\$3) with request with ("within" during only) with (interval period\$6 timeslot) same (timer day date calend\$5) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 10:03
L18	38	cach\$3 same (number frequen\$3) with request with ("within" during only) with (interval period\$6 timeslot timer day date calend\$5) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 10:04

EAST Search History

L19	26	cach\$3 with (number frequen\$3) with request with ("within" during only) with (interval period\$6 timeslot timer day date calend\$5) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 10:05
L20	3	cach\$3 with (number statistic\$4 frequen\$3) near5 request with ("within" during only) with (time adj (interval period\$6) timeslot timer day date calend\$5) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 10:06

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	629	calend\$5 and cach\$3 and request same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:35
L3	121	calend\$5 and cach\$3 and request with "within" with (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:36
L4	2	calend\$5 same time same request and cach\$3 and request with "within" with (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:38
L5	0	calend\$5 same time same cach\$3 and cach\$3 same request with "within" same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:38
L6	0	calend\$5 same time same cach\$3 and cach\$3 same request same "within" same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:38
L7	0	calend\$5 same frequen\$3 same cach\$3 and cach\$3 same request same "within" same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:39
L8	1	calend\$5 and frequen\$3 same cach\$3 and cach\$3 same request same "within" same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:42
L9	1	calend\$5 and frequen\$3 same cach\$3 same request same "within" same (interval period\$6 timeslot elapsed) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/24 09:42

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	populat\$3 near5 (cach\$3 ram rom memory).ab. and @rlad<"20001129" and request with (maybe may occasional\$2 random\$2) with (one two more greater)	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 09:26
L2	0	populat\$3 near5 (cach\$3)and @rlad<"20001129" and request and calendrical	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 09:27
L3	9	populat\$3 near5 (cach\$3)and @rlad<"20001129" and request and calend\$5	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 09:32
L6	1	populat\$3 near5 (cach\$3)and @rlad<"20001129" and request same calend\$5	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 09:29
L7	11	populat\$3 near5 (cach\$3)and (@ad<"20001129" @rlad<"20001129") and calend\$5	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 09:34
L8	10	populat\$3 near5 (cach\$3)and (@ad<"20001129" @rlad<"20001129") and (least two greater more) with request and calend\$5	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 10:22
L9	147	populat\$3 near5 (cach\$3)and (@ad<"20001129" @rlad<"20001129") and (delay post adjfil\$3)	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 10:22
L10	123	populat\$3 near5 (cach\$3)and (@ad<"20001129" @rlad<"20001129") and (delay post adj fil\$3)	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 10:22
L15	15	populat\$3 near5 (cach\$3)and (@ad<"20001129" @rlad<"20001129") and (delay with fil\$3)	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 10:24
L16	154	populat\$3 near5 (cach\$3)and (@ad<"20001129" @rlad<"20001129") and (pre post)	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 10:24
L17	49	populat\$3 near5 (cach\$3)and (@ad<"20001129" @rlad<"20001129") and (pre post) same (file filing)	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 10:25

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1360	populat\$3 with (cach\$3 ram rom memory) and @rlad<"20001129"	US-PGPUB; USPAT	OR	ON	2007/04/09 09:14
L2	28174	populat\$3 with (cach\$3 ram rom memory) and @rlad<"20001129" request same greater	US-PGPUB; USPAT	OR	ON	2007/04/09 09:14
L3	96	populat\$3 with (cach\$3 ram rom memory) and @rlad<"20001129" and request same greater	US-PGPUB; USPAT	OR	ON	2007/04/09 09:15
L4	39	populat\$3 with (cach\$3 ram rom memory) and @rlad<"20001129" and request with greater	US-PGPUB; USPAT	OR	ON	2007/04/09 09:18
L5	0	populat\$3 with (cach\$3 ram rom memory) and @rlad<"20001129" and request with greater adj than	US-PGPUB; USPAT	OR	ON	2007/04/09 09:15
L6	409	populat\$3 with (cach\$3 ram rom memory) and @rlad<"20001129" and request with (one two more greater)	US-PGPUB; USPAT	OR	ON	2007/04/09 09:16
L7	0	populat\$3 with (cach\$3 ram rom memory) and @rlad<"20001129" and request with occasional\$2 with (one two more greater)	US-PGPUB; USPAT	OR	ON	2007/04/09 09:16
L8	176	populat\$3 with (cach\$3 ram rom memory) and @rlad<"20001129" and request with (maybe may occasional\$2 random\$2) with (one two more greater)	US-PGPUB; USPAT	OR	ON	2007/04/09 09:17
L9	123	populat\$3 near5 (cach\$3 ram rom memory) and @rlad<"20001129" and request with (maybe may occasional\$2 random\$2) with (one two more greater)	US-PGPUB; USPAT	OR	ON	2007/04/09 09:20
L10	142	(4 9) and (time interval period\$6)	US-PGPUB; USPAT	OR	ON	2007/04/09 09:18
L11	120	(4 9) and (time adj interval period\$6)	US-PGPUB; USPAT	OR	ON	2007/04/09 09:18
L15	1	populat\$3 near5 (cach\$3 ram rom memory).ab. and @rlad<"20001129" and request with (maybe may occasional\$2 random\$2) with (one two more greater)	US-PGPUB; USPAT	OR	ON	2007/04/09 09:21
L16	163	populat\$3 with (cach\$3 ram rom memory).ab. and (@rlad<"20001129" ad<"20001129")	US-PGPUB; USPAT	OR	ON	2007/04/09 09:24

EAST Search History

L17	3	populat\$3 with (cach\$3 ram rom memory).ab. and (@rlad<"20001129" ad<"20001129") and calend\$5	US-PGPUB; USPAT	OR	ON	2007/04/09 09:23
L18	3	16 and calend\$5	US-PGPUB; USPAT	OR	ON	2007/04/09 09:23
L19	67	populat\$3 with (cach\$3) and (@rlad<"20001129" ad<"20001129") and calend\$6	US-PGPUB; USPAT	OR	ON	2007/04/09 09:24

EAST Search History

L18	15	populat\$3 near5 (cach\$3)and (@ad<"20001129" @riad<"20001129") and (post) same (file filing)	US-PGPUB; USPAT; EPO; JPO; IBM_TDB	OR	ON	2007/04/09 10:25

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Conf. No.: 9624

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

- Transmittal Letter
- Replacement Appeal Brief

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**

Reg. No. 35793

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732-578-0103 x11

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**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Conf. No.: 9624

Filing Date: 11/29/2000

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Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

REPLACEMENT APPEAL BRIEF UNDER 37 CFR 41.67

Pursuant to 37 CFR 41.67, this brief is filed in support of the appeal in this application.

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REAL PARTY IN INTEREST

The real party of interest in this application is the assignee of this application: Broadspider Networks, Inc. The applicant's attorneys, Jason Paul DeMont and Wayne S. Breyer, are shareholders in Broadspider Networks, Inc.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1 through 32 stand rejected and are being appealed.

STATUS OF AMENDMENTS

All amendments have been entered. There have been no amendments made subsequent to the final rejection.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention relates to data processing systems and computer networks in general, and, more particularly, to techniques for storing resources in a cache.

In the context of a computer network, when a user of the World Wide Web requests a Web page, the user must wait until the page is available on his or her data processing system (*e.g.*, computer, *etc.*) for viewing. In general, this wait occurs because the request for the Web page must traverse the Internet from the user's data processing system to the data processing system that is the source of the page, the request must be fulfilled, and the requested page must travel back to the user's system. If the Internet is congested or the data processing system that is the source of the page is overwhelmed, the wait can be considerably long. [Specification Page 1, Lines 10-16]

To shorten this wait, special data processing systems are deployed throughout the Internet to expedite the delivery of some Web pages. Some of these data processing systems expedite the delivery of Web pages by functioning as cache memories, which are also known as "caches." For example, a cache stores commonly requested Web pages and thereafter intercepts and fulfills requests for those pages, which eliminates the need for the request having to travel to, and be serviced by, the principal memory. [Specification Page 1, Lines 17-22]

A cache expedites the delivery of the Web page in two ways. First, a cache eliminates the need for the request to travel all of the way to the system that is the ultimate source of the page, and, therefore, eliminates some of the wait associated with the transit. Second, a cache also reduces the number of Web page requests that must be fulfilled by the system that is the ultimate source of the page, and, therefore, the wait associated with contention for the system is eliminated. [Specification Page 1, Lines 18-27]

Caches are also used to expedite processing in data processing systems and their operation in data processing systems is roughly analogous to, with notable exceptions, their operation in computer networks. At this time, the applicants do not believe that the differences between the use of cache in computer networks and in data processing systems are germane to the present appeal and the scope of the pending claims encompass the use of the present invention in both computer networks and data processing systems.

When a cache is full and an additional resource is to be stored in the cache, the cache must have an algorithm for deciding which resource gets purged to make room for the additional resource. There is a lot of prior art in this area.

In contrast, there is not a lot of prior art addressing the issue of when to store the resource in the cache in the first place. Typically, a resource is stored in a cache either (1) the first time that it is requested, or (2) it is pre-fetched before the first time that it is requested. The present invention addresses the issue of when to store a resource in a cache that is particularly efficient in many cases.

For example, a cache in accordance with the present invention is populated with a resource only when at least i requests for the resource have been received, wherein i is an integer and is, at least occasionally, greater than one. For example, a cache in accordance with the illustrative embodiment might not be populated with a resource unless two requests for the resource have been received within 10 minutes. In general, embodiments of the present invention are advantageous because *they prevent the cache from being populated with infrequently requested resources*. [Specification Page 3, Lines 21-31]

Here's a way to keep all of these ideas straight in one mind. There are only three ways that a cache can be populated:

- **Pre-Filling** (AKA Pre-Fetching) — Populating a cache with a resource before a request for the resource has arrived.
- **Post-Filling** — Populating a cache with a resource after one request for the resource has arrived.
- **Delayed Post-Filling** — Populating a cache with a resource after more than one request for the resource has arrived.

Pre-filling and post-filling are old and well-known in the art. The present invention can be thought of as delayed post-filling and the combination of post-filling and delayed post-filling.

The present application comprises four (4) independent claims. Each shall be presented, summarized, and mapped to the specification by page and line number and to the drawings, if any.

Independent claim 1 recites:

1. (Previously Presented) A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.

Claim recites a method of delayed post-filling, and is described in the specification at **Page 9, lines 19-20; Page 13, lines 1-4; and drawings at Figure 6, boxes 608 and 609.**

Independent claim 8 recites:

8. (Previously Presented) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.

Claim 8 recites a data processing system that performs delayed post-filling, and is described in the specification at **Page 7, line 11; Page 9, lines 19-20; Page 13, lines 14-18 and drawings at Figure 5, boxes 502 and 503.**

Independent claim 15 recites:

15. (Previously Presented) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.

Claim 15 recites a method of delayed post-filling, and is described in the specification at **Page 4, lines 21-23; Page 9, lines 19-20; Page 14, lines 1-6; and drawings at Figure 4, boxes 411 and 423; and Figure 6, boxes 608 and 609.**

Independent claim 24 recites:

24. (Previously Presented) A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and
a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.

Claim 24 recites a node in a computer network that comprises hardware for populating a cache in accordance with delayed post-filling, and is described in the specification at **Page 7, line 11; Page 9, lines 19-20; Page 15, lines 1-7, and drawings at Figure 5, boxes 502 and 503.**

GROUND OF OBJECTION AND REJECTION TO BE REVIEWED ON APPEAL

Ground 1: 35 U.S.C. 112 Rejection of Claims 1, 8, 15, and 24

Claims 1, 8, 15, and 24 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention.

Ground 2: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by S. Ali et al., U.S. Patent 5,896,506 (hereinafter "**Ali**").

Ground 3: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by V. Tran et al., U.S. Patent 7,039,683 B1 (hereinafter "**Tran**").

ARGUMENTS

Ground 1: 35 U.S.C. 112 Rejection of Claims 1, 8, 15, and 24

Claims 1, 8, 15, and 24 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention. In particular, the Office action asserts that it is unclear How and When occasionally or under What condition the integer will be greater than one. The applicants respectfully traverse the rejection.

In order to comply with 35 U.S.C. 112, second paragraph, the claims do not need to specify how, when or under what conditions the integer i will be greater than one. Such a detail describes the invention. In contrast, 35 U.S.C. 112, second paragraph, requires that the applicant define the invention, and there is no vagueness or ambiguity in the scope of the claim as it currently reads.

The limitation at issue is this: wherein i is an integer and is at least occasionally greater than one. This is equal to reciting that there exists at least one instant in calendrical time t when $i > 1$, wherein i is an integer. Therefore, the applicants respectfully submit that the rejection is traversed.

If the utility of this limitation is in dispute, consider, for example and without limitation, a cache that has different criteria for caching resources based on the time of day. From Midnight until 7:00 AM, the cache is populated with a resource when one request for the resource has been received. From 7:00 AM until Midnight, the cache is not populated with a resource unless there have been two requests for the resource have been received. In other words, from 7:00 AM until Midnight, the cache is not populated with a resource until two requests for the resource has been received.

For these reasons, the applicants respectfully submit that the rejection is traversed.

Ground 2: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by S. Ali et al., U.S. Patent 5,896,506 (hereinafter "**Ali**").

Claim 1 recites:

1. A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

Nowhere does Ali teach or suggest, alone or in combination with the other references, what claim 1 recites – namely, populating a cache with a resource only – in some situations – upon there being at least two or more requests for the resource.

Ali teaches a distributed file caching system that comprises multiple caches. Ali teaches that the caches can be turned on or turned off. In particular, Ali teaches that all of the caches can be turned ON or OFF – signified by a "global" flag – or that individual caches can be turned ON or OFF – signified by a "local" flag. Clearly, the fact that a cache can be turned ON or OFF isn't at all related to the recited limitation that – implicitly when the cache is ON – the cache is not populated with a resource until at least two requests for the resource have been received.

For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claims 2 through 7 depend on claim 1, the applicants respectfully submit that the rejection of them is also traversed.

Claim 8 recites:

8. A data processing system comprising:
a cache for storing a resource; and
a processor for *populating said cache with said resource only when at least i requests for said resource have been received;*
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Ali teach or suggest, alone or in combination with the other references, what claim 8 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 9 through 14 depend on claim 8, the applicants respectfully submit that the rejection of them is also traversed.

Claim 15 recites:

15. A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Ali teach or suggest, alone or in combination with the other references, what claim 15 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 16 through 23 depend on claim 15, the applicants respectfully submit that the rejection of them is also traversed.

Claim 24 recites:

24. A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and
a processor for retrieving said resource from a second node in said computer network, and for *populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;*
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Ali teach or suggest, alone or in combination with the other references, what claim 24 recites –

namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 26 through 32 depend on claim 24, the applicants respectfully submit that the rejection of them is also traversed.

Ground 3: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by V. Tran et al., U.S. Patent 7,039,683 B1 (hereinafter “**Tran**”).

Claim 1 recites:

1. A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

Nowhere does Tran teach or suggest, alone or in combination with the other references, what claim 1 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Tran teaches a variety of factors for determining when to pre-fetch a resource — in other words, when to put a resource into a cache before a request has arrived for the resource. The first sentence of Tran makes this perfectly clear:

In one general aspect, electronic information caching may make electronic information more readily available to an access requestor based on an anticipated demand for that information.
Tran Col. 1, lines 28-31 (*emphasis supplied*)

Pre-filling and “delayed” post-filling — as the present invention might be called — are completely different.

In general, pre-filling is difficult to do well, and Tran teaches a number of factors for deciding whether or not to pre-fetch a reference. These are described in the Summary of the Invention:

Anticipating future requests for access to selected electronic information may be based on: past requests for access to the same or related electronic information by access requesters; past requests for access to non-related electronic information by access requestors; past requests for access to related non-electronic information by access requesters; or, past requests for access to non-related non-electronic information by access requesters. The relevant access activity that is measured may include the frequency or volume of requests for access to the selected electronic information.

Anticipating requests for access also may determine the file size to assign a cache value based on the file size and the frequency of requests for the selected electronic information. Thus, selected electronic information with a higher cache value is more likely to be anticipated. Anticipating requests for access may also take into account criteria that are unrelated to past access requests. Requests for access may be anticipated before, after, or while an access request is made.

Tran Col. 1, lines 49-56 (*emphasis supplied*)

As the first three words of the section point out, anticipating future requests may be based on past requests for the same resource.

The Office's argument to substantiate the rejection is based on a misreading of language in the detailed description. The Office action cites Col. 4, lines 25-42, which states:

The anticipating module 1110 generally includes a segment of software code that is designed to predict requests for electronic information stored on an accessible source storage medium. For example, the software code may be designed to store requests for electronic information or to access a data storage device (located on the Web or otherwise) that stores requests for electronic information. The software may be designed to measure the stored data to determine the rate or number of requests for the electronic information and the file size of the electronic. The software also may calculate a cache value based on the number of requests and the file size, and to electronically flag the electronic information as being in high demand by access requesters where the cache value or frequency of requests for the electronic information is high. The anticipating module 1110 may predict requests for electronic information based on any or all of the criteria described with reference to step 1010 of FIG. 1.

Tran Col. 4, lines 25-42 (*emphasis supplied*)

In other words, module 1110 predicts whether to pre-fetch a resource for a cache based on the number of previous requests for the cache. Again, this is not the same as the present invention for two reasons. First, the present invention requires at least one request for the resource, which Tran and pre-filling does not, and second, nowhere does Tran require that — under some circumstances — there must be at least two requests for the resource before it is put into the cache.

For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claims 2 through 7 depend on claim 1, the applicants respectfully submit that the rejection of them is also traversed.

Claim 8 recites:

8. A data processing system comprising:
a cache for storing a resource; and
a processor for *populating said cache with said resource only when at least i requests for said resource have been received*;
wherein i is an integer and is at least occasionally greater than one.
(*emphasis supplied*)

For the same reasons as those given with respect to claim 1, nowhere does Tran teach or suggest, alone or in combination with the other references, what claim 8 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 9 through 14 depend on claim 8, the applicants respectfully submit that the rejection of them is also traversed.

Claim 15 recites:

15. A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.
(*emphasis supplied*)

For the same reasons as those given with respect to claim 1, nowhere does Tran teach or suggest, alone or in combination with the other references, what claim 15 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 16 through 23 depend on claim 15, the applicants respectfully submit that the rejection of them is also traversed.

Claim 24 recites:

24. A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and
a processor for retrieving said resource from a second node in said computer network, and for *populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node*;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Tran teach or suggest, alone or in combination with the other references, what claim 24 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 26 through 32 depend on claim 24, the applicants respectfully submit that the rejection of them is also traversed.

CONCLUSION

The applicants have demonstrated that the logic underlying the Office's rejection is untenable, and, therefore, that the rejection is not sustainable. For this reason, the applicants respectfully request the Board of Appeals to reverse the decision of the Examiner as provided for in 37 C.F.R. 41.50(a).

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**

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CLAIMS APPENDIX

- 1.** (Previously Presented) A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
 - 2.** (Original) The method of claim 1 wherein the value of i is invariant.
 - 3.** (Original) The method of claim 1 wherein the value of i is based on calendrical time.
 - 4.** (Original) The method of claim 1 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .
 - 5.** (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on the value of i .
 - 6.** (Original) The method of claim 4 wherein the value of i is based on calendrical time.
 - 7.** (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.
-
- 8.** (Previously Presented) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
 - 9.** (Original) The data processing system of claim 8 wherein the value of i is invariant.
 - 10.** (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

11. (Original) The data processing system of claim 8 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

12. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

13. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

14. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

15. (Previously Presented) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network; and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.

16. (Original) The method of claim 15 wherein the value of i is invariant.

17. (Original) The method of claim 15 wherein the value of i is based on calendrical time.

18. (Original) The method of claim 15 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

19. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

20. (Original) The method of claim 18 wherein the value of i is based on calendrical time.

21. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

22. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

23. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

24. (Previously Presented) A first node in a computer network, said first node comprising:

a cache;

at least one receiver for receiving at least one request for a resource; and

a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;

wherein i is an integer and is at least occasionally greater than one.

25. (Original) The first node of claim 24 wherein the value of i is invariant.

26. (Original) The first node of claim 24 wherein the value of i is based on calendrical time.

27. (Original) The first node of claim 24 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

28. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

29. (Original) The first node of claim 27 wherein the value of i is based on calendrical time.

30. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

31. (Original) The first node of claim 24:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;
wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

32. (Original) The first node of claim 24:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;
wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

EVIDENCE APPENDIX

There is no evidence submitted pursuant to 37 CFR §§ 1.130, 1.131, or 1.132.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.

Electronic Acknowledgement Receipt

EFS ID:	1423361
Application Number:	09725737
International Application Number:	
Confirmation Number:	9624
Title of Invention:	Method and apparatus for economical cache population
First Named Inventor/Applicant Name:	Peter Joseph Giacomini
Customer Number:	22897
Filer:	Jason P. DeMont
Filer Authorized By:	
Attorney Docket Number:	500-002US
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Application Type:	Utility

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Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1	Appeal Brief Filed	appeal_brief_2b_500-002us_.pdf	136661	no	26

Warnings:

Information:	
Total Files Size (in bytes):	136661
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.	



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,737	11/29/2000	Peter Joseph Giacomini	500-002US	9624

22897 7590 12/07/2006

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EXAMINER

ART UNIT	PAPER NUMBER

DATE MAILED: 12/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Notification of Non-Compliant Appeal Brief (37 CFR 41.37)	Application No. 09/725,737	Applicant(s) GIACOMINI ET AL.	
	Examiner Thong Vu	Art Unit 2142	

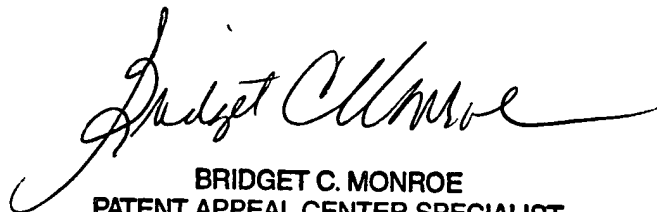
--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The Appeal Brief filed on 24 October 2006 is defective for failure to comply with one or more provisions of 37 CFR 41.37.

To avoid dismissal of the appeal, applicant must file an amended brief or other appropriate correction (see MPEP 1205.03) within **ONE MONTH or THIRTY DAYS** from the mailing date of this Notification, whichever is longer.
EXTENSIONS OF THIS TIME PERIOD MAY BE GRANTED UNDER 37 CFR 1.136.

1. ☐ The brief does not contain the items required under 37 CFR 41.37(c), or the items are not under the proper heading or in the proper order.
2. ☐ The brief does not contain a statement of the status of all claims, (e.g., rejected, allowed, withdrawn, objected to, canceled), or does not identify the appealed claims (37 CFR 41.37(c)(1)(iii)).
3. ☐ At least one amendment has been filed subsequent to the final rejection, and the brief does not contain a statement of the status of each such amendment (37 CFR 41.37(c)(1)(iv)).
4. ☒ (a) The brief does not contain a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings, if any, by reference characters; and/or (b) the brief fails to: (1) identify, for each independent claim involved in the appeal and for each dependent claim argued separately, every means plus function and step plus function under 35 U.S.C. 112, sixth paragraph, and/or (2) set forth the structure, material, or acts described in the specification as corresponding to each claimed function with reference to the specification by page and line number, and to the drawings, if any, by reference characters (37 CFR 41.37(c)(1)(v)).
5. ☐ The brief does not contain a concise statement of each ground of rejection presented for review (37 CFR 41.37(c)(1)(vi)).
6. ☐ The brief does not present an argument under a separate heading for each ground of rejection on appeal (37 CFR 41.37(c)(1)(vii)).
7. ☐ The brief does not contain a correct copy of the appealed claims as an appendix thereto (37 CFR 41.37(c)(1)(viii)).
8. ☐ The brief does not contain copies of the evidence submitted under 37 CFR 1.130, 1.131, or 1.132 or of any other evidence entered by the examiner and **relied upon by appellant in the appeal**, along with a statement setting forth where in the record that evidence was entered by the examiner, as an appendix thereto (37 CFR 41.37(c)(1)(ix)).
9. ☐ The brief does not contain copies of the decisions rendered by a court or the Board in the proceeding identified in the Related Appeals and Interferences section of the brief as an appendix thereto (37 CFR 41.37(c)(1)(x)).
10. ☒ Other (including any explanation in support of the above items):

The claimed invention is not mapped to independent claims 1, 8, 15 and 24, which shall refer to the specification by page and line number and to the drawings, if any.


BRIDGET C. MONROE
PATENT APPEAL CENTER SPECIALIST

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

APPEAL BRIEF UNDER 37 CFR 41.67

Pursuant to 37 CFR 41.67, this brief is filed in support of the appeal in this application.

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REAL PARTY IN INTEREST

The real party of interest in this application is the assignee of this application: Broadspider Networks, Inc. The applicant's attorneys, Jason Paul DeMont and Wayne S. Breyer, are shareholders in Broadspider Networks, Inc.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1 through 32 stand rejected and are being appealed.

STATUS OF AMENDMENTS

All amendments have been entered. There have been no amendments made subsequent to the final rejection.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention relates to data processing systems and computer networks in general, and, more particularly, to techniques for storing resources in a cache.

In the context of a computer network, when a user of the World Wide Web requests a Web page, the user must wait until the page is available on his or her data processing system (*e.g.*, computer, *etc.*) for viewing. In general, this wait occurs because the request for the Web page must traverse the Internet from the user's data processing system to the data processing system that is the source of the page, the request must be fulfilled, and the requested page must travel back to the user's system. If the Internet is congested or the data processing system that is the source of the page is overwhelmed, the wait can be considerably long. [Specification Page 1, Lines 10-16]

To shorten this wait, special data processing systems are deployed throughout the Internet to expedite the delivery of some Web pages. Some of these data processing systems expedite the delivery of Web pages by functioning as cache memories, which are also known as "caches." For example, a cache stores commonly requested Web pages and thereafter intercepts and fulfills requests for those pages, which eliminates the need for the request having to travel to, and be serviced by, the principal memory. [Specification Page 1, Lines 17-22]

A cache expedites the delivery of the Web page in two ways. First, a cache eliminates the need for the request to travel all of the way to the system that is the ultimate source of the page, and, therefore, eliminates some of the wait associated with the transit. Second, a cache also reduces the number of Web page requests that must be fulfilled by the system that is the ultimate source of the page, and, therefore, the wait associated with contention for the system is eliminated. [Specification Page 1, Lines 18-27]

Caches are also used to expedite processing in data processing systems and their operation in data processing systems is roughly analogous to, with notable exceptions, their operation in computer networks. At this time, the applicants do not believe that the differences between the use of cache in computer networks and in data processing systems are germane to the present appeal and the scope of the pending claims encompass the use of the present invention in both computer networks and data processing systems.

When a cache is full and an additional resource is to be stored in the cache, the cache must have an algorithm for deciding which resource gets purged to make room for the additional resource. There is a lot of prior art in this area.

In contrast, there is not a lot of prior art addressing the issue of when to store the resource in the cache in the first place. Typically, a resource is stored in a cache either (1) the first time that it is requested, or (2) it is pre-fetched before the first time that it is requested. The present invention addresses the issue of when to store a resource in a cache that is particularly efficient in many cases.

For example, a cache in accordance with the present invention is populated with a resource only when at least i requests for the resource have been received, wherein i is an integer and is, at least occasionally, greater than one. For example, a cache in accordance with the illustrative embodiment might not be populated with a resource unless two requests for the resource have been received within 10 minutes. In general, embodiments of the present invention are advantageous because *they prevent the cache from being populated with infrequently requested resources*. [Specification Page 3, Lines 21-31]

Here's a way to keep all of these ideas straight in one mind. There are only three ways that a cache can be populated:

- **Pre-Filling** (AKA Pre-Fetching) — Populating a cache with a resource before a request for the resource has arrived.
- **Post-Filling** — Populating a cache with a resource after one request for the resource has arrived.
- **Delayed Post-Filling** — Populating a cache with a resource after more than one request for the resource has arrived.

Pre-filling and post-filling are old and well-known in the art. The present invention can be thought of as delayed post-filling and the combination of post-filling and delayed post-filling.

GROUND OF OBJECTION AND REJECTION TO BE REVIEWED ON APPEAL

Ground 1: 35 U.S.C. 112 Rejection of Claims 1, 8, 15, and 24

Claims 1, 8, 15, and 24 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention.

Ground 2: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by S. Ali et al., U.S. Patent 5,896,506 (hereinafter "**Ali**").

Ground 3: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by V. Tran et al., U.S. Patent 7,039,683 B1 (hereinafter "**Tran**").

ARGUMENTS

Ground 1: 35 U.S.C. 112 Rejection of Claims 1, 8, 15, and 24

Claims 1, 8, 15, and 24 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention. In particular, the Office action asserts that it is unclear How and When occasionally or under What condition the integer will be greater than one. The applicants respectfully traverse the rejection.

In order to comply with 35 U.S.C. 112, second paragraph, the claims do not need to specify how, when or under what conditions the integer i will be greater than one. Such a detail describes the invention. In contrast, 35 U.S.C. 112, second paragraph, requires that the applicant define the invention, and there is no vagueness or ambiguity in the scope of the claim as it currently reads.

The limitation at issue is this: wherein i is an integer and is at least occasionally greater than one. This is equal to reciting that there exists at least one instant in calendrical time t when $i > 1$, wherein i is an integer. Therefore, the applicants respectfully submit that the rejection is traversed.

If the utility of this limitation is in dispute, consider, for example and without limitation, a cache that has different criteria for caching resources based on the time of day. From Midnight until 7:00 AM, the cache is populated with a resource when one request for the resource has been received. From 7:00 AM until Midnight, the cache is not populated with a resource unless there have been two requests for the resource have been received. In other words, from 7:00 AM until Midnight, the cache is not populated with a resource until two requests for the resource has been received.

For these reasons, the applicants respectfully submit that the rejection is traversed.

Ground 2: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by S. Ali et al., U.S. Patent 5,896,506 (hereinafter "**Ali**").

Claim 1 recites:

1. A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

Nowhere does Ali teach or suggest, alone or in combination with the other references, what claim 1 recites – namely, populating a cache with a resource only — in some situations — upon there being at least two or more requests for the resource.

Ali teaches a distributed file caching system that comprises multiple caches. Ali teaches that the caches can be turned on or turned off. In particular, Ali teaches that all of the caches can be turned ON or OFF – signified by a "global" flag — or that individual caches can be turned ON or OFF — signified by a "local" flag. Clearly, the fact that a cache can be turned ON or OFF isn't at all related to the recited limitation that — implicitly when the cache is ON — the cache is not populated with a resource until at least two requests for the resource have been received.

For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claims 2 through 7 depend on claim 1, the applicants respectfully submit that the rejection of them is also traversed.

Claim 8 recites:

8. A data processing system comprising:
a cache for storing a resource; and
a processor for *populating said cache with said resource only when at least i requests for said resource have been received;*
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Ali teach or suggest, alone or in combination with the other references, what claim 8 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 9 through 14 depend on claim 8, the applicants respectfully submit that the rejection of them is also traversed.

Claim 15 recites:

15. A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Ali teach or suggest, alone or in combination with the other references, what claim 15 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 16 through 23 depend on claim 15, the applicants respectfully submit that the rejection of them is also traversed.

Claim 24 recites:

24. A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and
a processor for retrieving said resource from a second node in said computer network, and for *populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;*
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Ali teach or suggest, alone or in combination with the other references, what claim 24 recites –

namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 26 through 32 depend on claim 24, the applicants respectfully submit that the rejection of them is also traversed.

Ground 3: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by V. Tran et al., U.S. Patent 7,039,683 B1 (hereinafter “**Tran**”).

Claim 1 recites:

1. A method comprising:
 populating a cache with a resource only when at least i requests for said resource have been received;
 wherein i is an integer and is at least occasionally greater than one.
 (emphasis supplied)

Nowhere does Tran teach or suggest, alone or in combination with the other references, what claim 1 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Tran teaches a variety of factors for determining when to pre-fetch a resource — in other words, when to put a resource into a cache before a request has arrived for the resource. The first sentence of Tran makes this perfectly clear:

In one general aspect, electronic information caching may make electronic information more readily available to an access requestor based on an anticipated demand for that information.
 Tran Col. 1, lines 28-31 (*emphasis supplied*)

Pre-filling and “delayed” post-filling — as the present invention might be called — are completely different.

In general, pre-filling is difficult to do well, and Tran teaches a number of factors for deciding whether or not to pre-fetch a reference. These are described in the Summary of the Invention:

Anticipating future requests for access to selected electronic information may be based on: past requests for access to the same or related electronic information by access requesters; past requests for access to non-related electronic information by access requestors; past requests for access to related non-electronic information by access requesters; or, past requests for access to non-related non-electronic information by access requesters. The relevant access activity that is measured may include the frequency or volume of requests for access to the selected electronic information.

Anticipating requests for access also may determine the file size to assign a cache value based on the file size and the frequency of requests for the selected electronic information. Thus, selected electronic information with a higher cache value is more likely to be anticipated. Anticipating requests for access may also take into account criteria that are unrelated to past access requests. Requests for access may be anticipated before, after, or while an access request is made.

Tran Col. 1, lines 49-56 (*emphasis supplied*)

As the first three words of the section point out, anticipating future requests may be based on past requests for the same resource.

The Office's argument to substantiate the rejection is based on a misreading of language in the detailed description. The Office action cites Col. 4, lines 25-42, which states:

The anticipating module 1110 generally includes a segment of software code that is designed to predict requests for electronic information stored on an accessible source storage medium. For example, the software code may be designed to store requests for electronic information or to access a data storage device (located on the Web or otherwise) that stores requests for electronic information. The software may be designed to measure the stored data to determine the rate or number of requests for the electronic information and the file size of the electronic. The software also may calculate a cache value based on the number of requests and the file size, and to electronically flag the electronic information as being in high demand by access requesters where the cache value or frequency of requests for the electronic information is high. The anticipating module 1110 may predict requests for electronic information based on any or all of the criteria described with reference to step 1010 of FIG. 1.

Tran Col. 4, lines 25-42 (*emphasis supplied*)

In other words, module 1110 predicts whether to pre-fetch a resource for a cache based on the number of previous requests for the cache. Again, this is not the same as the present invention for two reasons. First, the present invention requires at least one request for the resource, which Tran and pre-filling does not, and second, nowhere does Tran require that — under some circumstances — there must be at least two requests for the resource before it is put into the cache.

For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claims 2 through 7 depend on claim 1, the applicants respectfully submit that the rejection of them is also traversed.

Claim 8 recites:

8. A data processing system comprising:
a cache for storing a resource; and
a processor for *populating said cache with said resource only when at least i requests for said resource have been received*;
wherein i is an integer and is at least occasionally greater than one.
(*emphasis supplied*)

For the same reasons as those given with respect to claim 1, nowhere does Tran teach or suggest, alone or in combination with the other references, what claim 8 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 9 through 14 depend on claim 8, the applicants respectfully submit that the rejection of them is also traversed.

Claim 15 recites:

15. A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.
(*emphasis supplied*)

For the same reasons as those given with respect to claim 1, nowhere does Tran teach or suggest, alone or in combination with the other references, what claim 15 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 16 through 23 depend on claim 15, the applicants respectfully submit that the rejection of them is also traversed.

Claim 24 recites:

24. A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and
a processor for retrieving said resource from a second node in said computer network, and for *populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node*;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Tran teach or suggest, alone or in combination with the other references, what claim 24 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 26 through 32 depend on claim 24, the applicants respectfully submit that the rejection of them is also traversed.

CONCLUSION

The applicants have demonstrated that the logic underlying the Office's rejection is untenable, and, therefore, that the rejection is not sustainable. For this reason, the applicants respectfully request the Board of Appeals to reverse the decision of the Examiner as provided for in 37 C.F.R. 41.50(a).

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**

Reg. No. 35793

Attorney for Applicants

732-578-0103 x11

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Claims Appendix

- 1.** (Previously Presented) A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
 - 2.** (Original) The method of claim 1 wherein the value of i is invariant.
 - 3.** (Original) The method of claim 1 wherein the value of i is based on calendrical time.
 - 4.** (Original) The method of claim 1 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .
 - 5.** (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on the value of i .
 - 6.** (Original) The method of claim 4 wherein the value of i is based on calendrical time.
 - 7.** (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.
-
- 8.** (Previously Presented) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
 - 9.** (Original) The data processing system of claim 8 wherein the value of i is invariant.
 - 10.** (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

11. (Original) The data processing system of claim 8 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

12. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

13. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

14. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

15. (Previously Presented) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network; and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.

16. (Original) The method of claim 15 wherein the value of i is invariant.

17. (Original) The method of claim 15 wherein the value of i is based on calendrical time.

18. (Original) The method of claim 15 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

19. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

20. (Original) The method of claim 18 wherein the value of i is based on calendrical time.

21. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

22. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

23. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

24. (Previously Presented) A first node in a computer network, said first node comprising:

a cache;

at least one receiver for receiving at least one request for a resource; and

a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;

wherein i is an integer and is at least occasionally greater than one.

25. (Original) The first node of claim 24 wherein the value of i is invariant.

26. (Original) The first node of claim 24 wherein the value of i is based on calendrical time.

27. (Original) The first node of claim 24 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

28. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

29. (Original) The first node of claim 27 wherein the value of i is based on calendrical time.

30. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

31. (Original) The first node of claim 24:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;
wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

32. (Original) The first node of claim 24:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;
wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

Evidence Appendix

There is no evidence submitted pursuant to 37 CFR §§ 1.130, 1.131, or 1.132.

Related Proceedings Appendix

There are no related proceedings.

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725732

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-001US

Title: Distributed Caching Architecture For Computer Networks

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

PETITION FOR EXTENSION OF TIME

Applicants respectfully petitions the Commissioner of Patents and Trademarks to extend the time for response to for one (1) month from 26 September 2006 to 26 October 2006.

Pursuant to 37 C.F.R. 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
Peter Joseph Giacomini et al.

By n
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11n

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Suite 250
100 Commons Way
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United States of America

Electronic Patent Application Fee Transmittal

Application Number:	09725737			
Filing Date:	29-Nov-2000			
Title of Invention:	Method and apparatus for economical cache population			
First Named Inventor/Applicant Name:	Peter Joseph Giacomini			
Filer:	Jason P. DeMont			
Attorney Docket Number:	500-002US			
Filed as Small Entity				
Utility Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with \$0 paid	2251	1	Globus Medical, Inc. 60	60

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				60

Electronic Acknowledgement Receipt

EFS ID:	1270643
Application Number:	09725737
International Application Number:	
Confirmation Number:	9624
Title of Invention:	Method and apparatus for economical cache population
First Named Inventor/Applicant Name:	Peter Joseph Giacomini
Customer Number:	22897
Filer:	Jason P. DeMont
Filer Authorized By:	
Attorney Docket Number:	500-002US
Receipt Date:	24-OCT-2006
Filing Date:	29-NOV-2000
Time Stamp:	15:34:45
Application Type:	Utility

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$ 60
RAM confirmation Number	134
Deposit Account	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)

1		appeal_brief_2_500-002us_.pdf	134375	yes	26
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal letter		1	1	
	Appeal Brief Filed		2	25	
	Extension of Time		26	26	
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	8145	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			142520		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.					

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

- Transmittal Letter
- Appeal Brief
- Petition for Extension of Time

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**

Reg. No. 35793

Attorney for Applicants

732-578-0103 x11

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Holmdel, NJ 07733
United States of America

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

- Transmittal Letter
- Notice of Appeal and Request for Reinstatement of Appeal

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**

Reg. No. 35793

Attorney for Applicants

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United States of America

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

**Notice of Appeal from the Examiner to the Board of Patent Appeals and
Interferences**

and

Request for Reinstatement of Appeal

The applicant hereby appeals to the Board of Patent Appeals and Interferences from the last decision of the Examiner.

In response to the Office action of 06/02/2006 and pursuant to MPEP 1208.02, the applicants respectfully request reinstatement of the appeal. No fee is due.

Respectfully,
Peter Joseph Giacomini et al.

By **/Jason Paul DeMont/**

Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

Electronic Acknowledgement Receipt

EFS ID:	1129228
Application Number:	09725737
Confirmation Number:	9624
Title of Invention:	Method and apparatus for economical cache population
First Named Inventor:	Peter Joseph Giacomini
Customer Number:	22897
Filer:	Jason P. DeMont
Filer Authorized By:	
Attorney Docket Number:	500-002US
Receipt Date:	26-JUL-2006
Filing Date:	29-NOV-2000
Time Stamp:	19:24:49
Application Type:	Utility
International Application Number:	

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part	Pages
1		notice_of_appeal_3_500-002us_.pdf	45152	yes	2

	Multipart Description		
	Doc Desc	Start	End
	Transmittal to TC	1	1
	Notice of Appeal Filed	2	2
Warnings:			
Information:			
Total Files Size (in bytes):		45152	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.			

Interview Summary	Application No.	Applicant(s)	
	09/725,737	GIACOMINI ET AL.	
	Examiner	Art Unit	
	Thong H. Vu	2142	

All participants (applicant, applicant's representative, PTO personnel):

(1) Thong H. Vu. (3) _____.

(2) Jason Paul DeMont #35,793. (4) _____.

Date of Interview: 21 June 2006.

Type: a) ☐ Telephonic b) ☐ Video Conference
c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☐ No.
If Yes, brief description: _____.

Claim(s) discussed: 1-32.

Identification of prior art discussed: Ali-Tran.

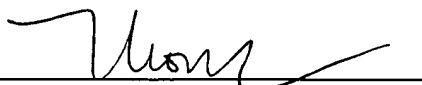
Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Applicant discusses the invention in view of the prior art and indicates to file the appeal brief. Examiner will take to consider and response in due time.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

THONG VU
P.E.

Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.

09/725,737

11/29/2000

Peter Joseph Giacomini

500-002US

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06/02/2006

DEMONT & BREYER, LLC
SUITE 250
100 COMMONS WAY
HOLMDEL, NJ 07733

EXAMINER

VU, THONG H

ART UNIT

PAPER NUMBER

2142

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/725,737

Applicant(s)

GIACOMINI ET AL.

Examiner

Thong H. Vu

Art Unit

2142

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

1. Claims 1-32 are pending.
2. The copending information is recorded.
3. Applicant's arguments, see pages 3-8, filed 2/23/06, with respect to the rejection(s) of claim(s) 1-32 under Mulla and Fuoco have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ali and Tran.

Claim Rejections - 35 USC § 112

4. Claims 1-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It was unclear that When and How an occasionally the i integer request is greater or more than one request. Examiner reminds the applicant that the invention was required a useful, concrete and tangible result to be patentability.
5. Claims 1-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1 the i integer may be one or occasionally more (i.e.: greater) than one or variable. In claim 2, I integer claimed as invariant. It 's totally contradictory.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2142

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Ali et al [Ali, 5,896,506].

6. As per claim 8, Ali discloses a data processing system comprising:

a cache for storing a resource [Ali, cache server, library server and object server via WAN, col 6 lines 29-44]; and

a processor for populating said cache with said resource only when at least number (i) requests for said resource have been received [Ali, cache server populated the resource by the clients requests, col 9 lines 1-25]; wherein number (i) is an integer is an at least occasionally greater than one [Ali, one or more client or one or occasionally more requests, col 6 lines 29-44].

7. As per claims 2,9,16,25 Ali discloses the value of number (i) is invariant [as a design choice.

8. As per claims 3,10,17,26 Ali discloses the value of i is based on calendrical time [Ali, specific time of the day, col 9 lines 60-62].

Art Unit: 2142

9. As per claims 4,11,18,27 Ali discloses said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval [Ali, later time, col 8 lines 5].

10. As per claims 5,12,19,28 Ali discloses the duration of said elapsed time interval, A_t , is based on the value of i [Ali, hours earlier, col 10 line 5].

11. As per claims 6,13,20,29 Ali discloses the value of i is based on calendrical time [Ali, specific time of the day, col 9 lines 60-62].

12. As per claims 7,14,21,30 Ali discloses the duration of said elapsed time interval, A_t , is based on calendrical time [Ali, hours earlier, col 10 line 5].

13. Claims 1,15,24 contain the similar limitations set forth of apparatus claim 8. Therefore, claims 1,15,24 are rejected for the similar rationale set forth in claim 8.

14. As per claims 22,31 Ali discloses said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes [Ali, a plurality of clients or requests, col 1 lines 25-47]; and wherein m is an integer greater than one, n is an integer greater than

Art Unit: 2142

one, and $m \geq n$ [Ali, one or more client or one or occasionally more requests, col 6 lines 29-44].

15. As per claim 23,32 Ali discloses said computer network is a hierarchical computer network and said first node has m filial nodes [Ali, a plurality of clients or requests, col 1 lines 25-47]; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, At [Ali, later time, col 8 lines 5]; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Ali, one or more client or one or occasionally more requests, col 6 lines 29-44].

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Tran et al [Tran, 7,039,683 B1].

16. As per claim 8, Tran discloses a data processing system comprising:

a cache for storing a resource [Tran, cache value, col 4 lines 25-42] ; and a processor for populating said cache with said resource only when at least i requests for said resource have been received [Tran, network with access requestor and resources, Fig 4; popularity of the subject matter, col 2 line 51-col 3 line 19; or determine the rate or number of request, col 4 lines 25-42]; wherein i is an integer and is at least occasionally greater than one [Tran, number of request is an integer and randomly or occasionally greater than one, col 4 lines 25-42].

17. As per claims 2,9,16,25 Tran discloses the value of i is invariant as a design choice.

18. As per claims 3,10,17,26 Tran discloses the value of i is based on calendrical time [Tran, delay time, col 12 lines 42-67].

19. As per claims 4,11,18,27 Tran discloses said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval [Tran, delay time, col 12 lines 42-67]

20. As per claims 5,12,19,28 Tran discloses the duration of said elapsed time interval, At , is based on the value of i [Tran, delay time, col 12 lines 42-67].

21. As per claims 6,13,20,29 Tran discloses the value of i is based on calendrical time [Tran, delay time, col 12 lines 42-67].

22. As per claims 7,14,21,30 Tran discloses the duration of said elapsed time interval, A_t , is based on calendrical time [Tran, delay time, col 12 lines 42-67].

23. Claims 1,15,24 contain the similar limitations set forth of apparatus claim 8. Therefore, claims 1,15,24 are rejected for the similar rationale set forth in claim 8.

24. As per claims 22,31 Tran discloses said computer network is a hierarchical computer network and said first node has m filial nodes [Tran, network with access requestor and resources, Fig 4; popularity of the subject matter, col 2 line 51-col 3 line 19; or determine the rate or number of request, col 4 lines 25-42]; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Tran, number of request is an integer and randomly or occasionally greater than one, col 4 lines 25-42].

25. As per claim 23,32 Tran discloses said computer network is a hierarchical computer network and said first node has m filial nodes [Tran, network with access requestor and resources, Fig 4; popularity of the subject matter, col 2 line 51-col 3 line 19; or determine the rate or number of request, col 4 lines 25-42]; wherein said cache is

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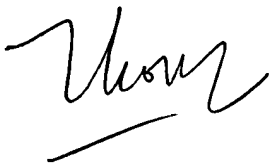
populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, At [Tran, delay time, col 12 lines 42-67]; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Tran, number of request is an integer and randomly or occasionally greater than one, col 4 lines 25-42].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Thong Vu*, whose telephone number is (571)-272-3904. The examiner can normally be reached on Monday-Thursday from 6:00AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Andrew Caldwell*, can be reached at (571) 272-3868. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval IP AIRI system. Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thong Vu
Primary Examiner
Art Unit 2142



Notice of References Cited	Application/Control No. 09/725,737		Applicant(s)/Patent Under Reexamination GIACOMINI ET AL.	
	Examiner Thong H. Vu		Art Unit 2142	Page 1 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,286,084 B1	09-2001	Wexler et al.	711/152
*	B	US-6,618,751 B1	09-2003	Challenger et al.	709/213
*	C	US-6,725,265 B1	04-2004	Challenger et al.	709/226
*	D	US-7,039,683 B1	05-2006	Tran et al.	709/213
*	E	US-6,687,761 A	02-2004	Collins et al.	719/315
*	F	US-6,275,919 B1	08-2001	Johnson, Peter	711/216
*	G	US-6,253,240 B1	06-2001	Axberg et al.	709/223
*	H	US-6,502,135 B1	12-2002	Munger et al.	709/225
*	I	US-6,778,524 B1	08-2004	Augart, Steven	370/351
*	J	US-5,926,476 A	07-1999	Ghaibeh, Gihad	370/395.65
*	K	US-6,070,184 A	05-2000	Blount et al.	709/200
*	L	US-6,035,324 A	03-2000	Chang et al.	709/203
*	M	US-5,919,247 A	07-1999	Van Hoff et al.	709/217

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
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	S					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
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	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 09/725,737		Applicant(s)/Patent Under Reexamination GIACOMINI ET AL.	
	Examiner Thong H. Vu		Art Unit 2142	Page 2 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,820,133 B1	11-2004	Grove et al.	709/238
*	B	US-6,175,869 B1	01-2001	Ahuja et al.	709/226
*	C	US-6,742,059 B1	05-2004	Todd et al.	710/19
*	D	US-2003/0009538 A1	01-2003	Shah et al.	709/219
*	E	US-6,687,761 B1	02-2004	Collins et al.	719/315
*	F	US-5,896,506	04-1999	Ali et al.	709/213
*	G	US-6,732,237 B1	05-2004	Jacobs et al.	711/119
	H	US-			
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FOREIGN PATENT DOCUMENTS

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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes

Application/Control No.

09/725,737

Examiner

Thong H. Vu

Applicant(s)/Patent under
Reexamination

GIACOMINI ET AL.

Art Unit

2142

SEARCHED

Class	Subclass	Date	Examiner
709	213-219	5/30/2006	TV
711	152,216	5/30/2006	TV
711	119	5/30/2006	TV

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
EAST,NPL,IEEE	5/30/2006	TV
Appeal Conference with A.Caldwell and Rupal Dharia	5/23/2006	TV

Index of Claims



Application/Control No.

09/725,737

Examiner

Thong H. Vu

Applicant(s)/Patent under Reexamination

GIACOMINI ET AL.

Art Unit

2142

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EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	68	709/213 and cach\$3 and resource and populat\$3 and (time calend\$5 interval period\$6 ttl) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/29 07:57
L2	19	709/213 and cach\$3 same populat\$3 and resource and (time calend\$5 interval period\$6 ttl) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/29 07:58
L3	10	709/213 and cach\$3 same populat\$3 same (server isp provider url html http resource) and (time calend\$5 interval period\$6 ttl) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/29 07:58

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	93902	(web\$6 internet http) and (cach\$3 queue buffer) same (plurality multiple two more repeat\$5) with (copies duplicat\$3 replica\$3 request) and populat\$3 same requestand occasional\$2 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 10:56
L2	48	(web\$6 internet http) and (cach\$3 queue buffer) same (plurality multiple two more repeat\$5) with (copies duplicat\$3 replica\$3 request) and populat\$3 same request and occasional\$2 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 10:43
L3	45	2 and request near5 (resource server database)	US-PGPUB; USPAT	OR	ON	2006/05/25 10:56
L4	45	2 and request near3 (resource server database)	US-PGPUB; USPAT	OR	ON	2006/05/25 10:50
L5	47	2 and (plurality multiple two more repeat\$5) near5 (receiv\$5 transmi\$5)	US-PGPUB; USPAT	OR	ON	2006/05/25 10:50
L6	44	4 and (plurality multiple two more repeat\$5) near5 (receiv\$5 transmi\$5)	US-PGPUB; USPAT	OR	ON	2006/05/25 10:50
L7	42	4 and (plurality multiple two more repeat\$5) near3 (receiv\$5 transmi\$5)	US-PGPUB; USPAT	OR	ON	2006/05/25 10:54
L8	35	7 and (number intger) with request with (receiv\$5 transmi\$5)	US-PGPUB; USPAT	OR	ON	2006/05/25 10:53
L11	1	7 and (integer) with request	US-PGPUB; USPAT	OR	ON	2006/05/25 10:53
L12	31	7 and (integer)	US-PGPUB; USPAT	OR	ON	2006/05/25 11:05
L13	41	4 and (plurality multiple two more repeat\$5) near2 (receiv\$5 transmi\$5)	US-PGPUB; USPAT	OR	ON	2006/05/25 10:55
L14	93902	(web\$6 internet http) and (cach\$3 queue buffer) same (plurality multiple two more repeat\$5) with (receiv\$5 transmi\$5 request) and populat\$3 same requestand occasional\$2 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 10:56

EAST Search History

L15	82	(web\$6 internet http) and (cach\$3 queue buffer) same (plurality multiple two more repeat\$5) with (receiv\$5 transmi\$5 request) and populat\$3 same request and occasional\$2 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 11:03
L16	35	15 and request near5 (resource server database)near3 (id identifier name)	US-PGPUB; USPAT	OR	ON	2006/05/25 11:04
L17	205	(web\$6 internet http) and (cach\$3 queue buffer) and (plurality multiple two more repeat\$5) with (receiv\$5 transmi\$5) with request and populat\$3 and occasional\$2 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 11:13
L18	104	17 and (resource server database)near3 (id identifier name)	US-PGPUB; USPAT	OR	ON	2006/05/25 11:29
L19	64	18 and (integer)	US-PGPUB; USPAT	OR	ON	2006/05/25 11:05
L20	50	(web\$6 internet http) and (cach\$3 queue buffer) and populat\$3 same occasional\$2 and (integer) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 11:14
L23	2	(web\$6 internet http html) and (cach\$3 queue buffer) and populat\$3 with (cach\$3 queue buffer) and occasional\$2 with (cach\$3 queue buffer) and (integer number multiple plurality) near5 (cach\$3 queue buffer) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 11:26
L24	97	(web\$6 internet http html) and (cach\$3 queue buffer) and populat\$3 near5 request and (integer number multiple plurality) near5 (request) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 11:36
L25	73	24 and (resource server database)near3 (id identifier name)	US-PGPUB; USPAT	OR	ON	2006/05/25 11:30
L26	71	24 and (resource server database)near3 (id identifier name) and (greater more) near3 one	US-PGPUB; USPAT	OR	ON	2006/05/25 11:30

EAST Search History

L27	34	24 and (resource server database)near3 (id identifier name) and (greater more) near3 one with request	US-PGPUB; USPAT	OR	ON	2006/05/25 11:32
L28	1	24 and (resource server database)near3 (id identifier name) and (greater more) near3 least with request	US-PGPUB; USPAT	OR	ON	2006/05/25 11:36
L29	43	(web\$6 internet http html) and (resource server database) near3 (id identifier name) and (greater more least) near5 one with request and populat\$3 near5 cache and (integer number multiple plurality) near5 (request) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 11:46
L30	53	(web\$6 internet http html) and (resource server database) near3 (id identifier name address) and (greater more least) near5 one with (occasional\$2 request randomly) and populat\$3 near5 cache and (integer number multiple plurality) with (request) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 11:50
L31	21	(web\$6 internet http html) and (resource) near3 (id identifier name address) and (greater more least) near5 one with (occasional\$2 request randomly) and populat\$3 near5 cache and (integer number multiple plurality) with (request) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 11:55
L32	0	709/213 and (occasional\$2) and populat\$3 near5 cache and (integer number multiple plurality) with (request) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 11:55
L33	0	709/213 and (occasional\$2) and populat\$3 near5 cache and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 11:56
L34	8	709/213 and (occasional\$2) and populat\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 11:56

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	551	(web internet) same cache and (plurality multiple two more repeat\$5) with (copies duplicat\$3 replica\$3 request) and populat\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 08:30
L2	566	(web\$6 internet) same cache and (plurality multiple two more repeat\$5) with (copies duplicat\$3 replica\$3 request) and populat\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 08:30
L3	107	(web\$6 internet) same cache and (plurality multiple two more repeat\$5) with (copies duplicat\$3 replica\$3 request) and populat\$3 and occasional\$2 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 08:30
L6	28	(web\$6 internet) and cache same (plurality multiple two more repeat\$5) with (copies duplicat\$3 replica\$3 request) and populat\$3 and occasional\$2 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 08:33
L8	4	(web\$6 internet) and cache same (plurality multiple two more repeat\$5) with (copies duplicat\$3 replica\$3 request) and cache same populat\$3 and cache same occasional\$2 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 08:36
L9	3	cache same (web\$6 internet http) and cache same (plurality multiple two more repeat\$5) with (copies duplicat\$3 replica\$3 request) and cache same populat\$3 and cache same occasional\$2 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/25 08:36

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2734	(cach\$3 queue buffer port) with request.ab. and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 08:16
L2	7019	(cach\$3 queue buffer port) with request.clm. and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 08:16
L3	5997	(cach\$3 queue buffer port) with request and popula\$4 and(@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 08:16
L4	249	1 and 2 and 3	US-PGPUB; USPAT	OR	ON	2006/05/10 08:17
L5	27	1 and 2 and 3 and integer	US-PGPUB; USPAT	OR	ON	2006/05/10 08:17
L6	9	1 and 2 and 3 and integer and populat\$3	US-PGPUB; USPAT	OR	ON	2006/05/10 08:18
L7	0	1 and 2 and 3 and integer and populating	US-PGPUB; USPAT	OR	ON	2006/05/10 08:18
L8	173	cache and integer and populating and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 08:19
L9	19	cache same populating and integer and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 08:21
L10	17	cache same populating and integer and (occasionally randomly greater) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 08:22
L11	0	cache same populating and integer and (occasionally randomly) same greater and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 08:23
L12	2	cache same populating and integer and (occasionally randomly) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 08:24
L13	19	cache same populating and integer and (greater more) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 08:32
L14	6	cache same populating and integer same (greater more) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 09:06

EAST Search History

L15	0	cache same populating same integer same (greater more) near5 ("1" one) and (@ad<"20001129" @riad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 09:10
L16	1	cache same populating and integer same (greater more) near5 ("1" one) and (@ad<"20001129" @riad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/05/10 09:10

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	63502	"709"/\$\$\$\$	US-PGPUB; USPAT	OR	OFF	2006/04/17 13:28
L7	35	cach\$3 with request with (more greater) adj2 one.clm.	US-PGPUB; USPAT	OR	ON	2006/04/17 13:43
L8	8	1 and 7	USPAT	OR	OFF	2006/04/17 13:42
L9	13	1 and 7	US-PGPUB; USPAT	OR	OFF	2006/04/17 13:42
L10	1	1 and 7 and populat\$3	US-PGPUB; USPAT	OR	ON	2006/04/17 13:43
L11	11	cach\$3 with request with (more greater) adj2 one and populat\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/04/17 13:44
L12	2	cach\$3 with request with (more greater) adj2 one and populat\$3 with cach\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/04/17 13:45
L13	128	cach\$3 with request and request\$3 with (multiple plurality (more greater) adj2 one) and populat\$3 with cach\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/04/17 13:46
L14	93	cach\$3 with request and request\$3 with (multiple plurality (more greater) adj2 one) and populat\$3 with cach\$3 and (sometime occasion\$2 random\$2) and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/04/17 13:47
L15	3	cach\$3 with request and request\$3 with (multiple plurality (more greater) adj2 one) same (sometime occasion\$2 random\$2) and populat\$3 with cach\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/04/17 13:48
L16	80	cach\$3 with request and request\$3 with (multiple plurality (more greater) adj2 one) same (sometime occasion\$2 random\$2 maybe may possib\$5) and populat\$3 with cach\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/04/17 13:49

EAST Search History

L17	45	cach\$3 with request and request\$3 with (multiple plurality (more greater) adj2 one) with (sometime occasion\$2 random\$2 maybe may possib\$5) and populat\$3 with cach\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/04/17 13:50
L18	83	cach\$3 with request and request\$3 with (multiple plurality (more greater)) with (occasion\$2 random\$2 maybe may possib\$5) and populat\$3 with cach\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/04/17 13:50
L19	45	cach\$3 with request and request\$3 with (multiple plurality (more greater) adj one) with (occasion\$2 random\$2 maybe may possib\$5) and populat\$3 with cach\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/04/17 13:50
L20	6	cach\$3 with request and request\$3 with ((more greater) adj one) with (occasion\$2 random\$2 maybe may possib\$5) and populat\$3 with cach\$3 and (@ad<"20001129" @rlad<"20001129")	US-PGPUB; USPAT	OR	ON	2006/04/17 13:51

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**



Patent Application

Inventors: Peter Joseph
Giacomini et al.

Serial No.: 09/725,737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

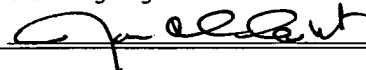
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APPEAL BRIEF UNDER 37 CFR 41.67

Pursuant to 37 CFR 41.67, this brief is filed in support of the appeal in this
application.

REAL PARTY IN INTEREST

The real party of interest in this application is the assignee of this application:
Broadspider Networks, Inc.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1 through 32 stand rejected and are being appealed.

STATUS OF AMENDMENTS

There have been no amendments made subsequent to the final rejection.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention relates to data processing systems and computer networks in
general, and, more particularly, to techniques for storing resources in a cache.

In the context of a computer network, when a user of the World Wide Web requests a Web page, the user must wait until the page is available on his or her data processing system (e.g., computer, etc.) for viewing. In general, this wait occurs because the request for the Web page must traverse the Internet from the user's data processing system to the data processing system that is the source of the page, the request must be fulfilled, and the requested page must travel back to the user's system. If the Internet is congested or the data processing system that is the source of the page is overwhelmed, the wait can be considerably long. [Specification Page 1, Lines 10-16]

To shorten this wait, special data processing systems are deployed throughout the Internet to expedite the delivery of some Web pages. Some of these data processing systems expedite the delivery of Web pages by functioning as cache memories, which are also known as "caches." For example, a cache stores commonly requested Web pages and thereafter intercepts and fulfills requests for those pages, which eliminates the need for the request having to travel to, and be serviced by, the principal memory. [Specification Page 1, Lines 17-22]

A cache expedites the delivery of the Web page in two ways. First, a cache eliminates the need for the request to travel all of the way to the system that is the ultimate source of the page, and, therefore, eliminates some of the wait associated with the transit. Second, a cache also reduces the number of Web page requests that must be fulfilled by the system that is the ultimate source of the page, and, therefore, the wait associated with contention for the system is eliminated. [Specification Page 1, Lines 18-27]

Caches are also used to expedite processing in data processing systems and their operation in data processing systems is roughly analogous to, with notable exceptions, their operation in computer networks. At this time, the applicants do not believe that the differences between the use of cache in computer networks and in data processing systems are germane to the present appeal and the scope of the pending claims encompass the use of the present invention in both computer networks and data processing systems.

When a cache is full and an additional resource is to be stored in the cache, the cache must have an algorithm for deciding which resource gets purged to make room for the additional resource. There is a lot of prior art in this area.

In contrast, there is not a lot of prior art addressing the issue of when to store the resource in the cache in the first place. Typically, a resource is stored in a cache either (1) the first time that it is requested, or (2) pre-emptively before the first time that it is

requested. The present invention addresses the issue of when to store a resource in a cache that is particularly efficient.

For example, a cache in accordance with the present invention is populated with a resource only when at least i requests for the resource have been received, wherein i is an integer and is, at least occasionally, greater than one. For example, a cache in accordance with the illustrative embodiment might not be populated with a resource unless two requests for the resource have been received within 10 minutes. In general, embodiments of the present invention are advantageous because they prevent the cache from being populated with infrequently requested resources. [Specification Page 3, Lines 21-31]

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Ground 1: 35 U.S.C. 112 Rejection of Claims 1, 8, 15, and 24

Claims 1, 8, 15, and 24 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention.

Ground 2: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by D.A. Mulla et al., U.S. Patent 6,427,189 (hereinafter "**Mulla**").

Ground 3: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by C.L. Fuoco et al., U.S. Patent 6,408,345 (hereinafter "**Fuoco**").

ARGUMENTS

Ground 1: 35 U.S.C. 112 Rejection of Claims 1, 8, 15, and 24

Claims 1, 8, 15, and 24 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention. In particular, the Office action asserts that it is unclear How and When occasionally or under What condition the integer will be greater than one. The applicants respectfully traverse the rejection.

In order to comply with 35 U.S.C. 112, second paragraph, the claims do not need to specify how, when or under what conditions the integer i will be greater than one. Such a detail describes the invention. In contrast, 35 U.S.C. 112, second paragraph, requires that

the applicant define the invention, and there is no vagueness or ambiguity in the scope of the claim as it currently reads. Therefore, the applicants respectfully submit that the rejection is traversed.

The Office action states:

The term "occasionally" in claims 1, 8, 15, 24 are used by the claim to mean "parallel or concurrently request" or "the threshold for at least two requests", while the accepted meaning is "an integer at least occasionally greater than one." The term is indefinite because the specification does not clearly redefine the term.

The applicants respectfully disagree.

The meaning of the term "occasionally" in the claims is the same as its ordinary meaning: "now and then," "from time to time," "sometimes," *etc.* The applicants have not exercised their right to be their own lexicographer.

Contrary to the contention of the Office, the term "occasionally" does not mean "parallel or concurrently request" or "the threshold for at least two requests." Furthermore, and again contrary to the contention of the Office, the term "occasionally" does not mean "an integer at least occasionally greater than one."

For these reasons, the applicants respectfully submit that the rejection is traversed.

Ground 2: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by D.A. Mulla et al., U.S. Patent 6,427,189 (hereinafter "**Mulla**").

Claim 1 recites:

1. A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

Nowhere does Mulla teach or suggest, alone or in combination with the other references, what claim 1 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Mulla teaches a multi-port cache that can be populated with two resources in one clock cycle. The Office is confusing the ability to store two resources into a cache simultaneously as the same thing as waiting to populate a cache with a resource until there have been two requests for the resource. Clearly, they are not the same thing. In fact, the reference isn't even near the present invention.

For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claims 2 through 7 depend on claim 1, the applicants respectfully submit that the rejection of them is also traversed.

Claim 8 recites:

8. A data processing system comprising:
a cache for storing a resource; and
a processor for *populating said cache with said resource only when at least i requests for said resource have been received*;
wherein i is an integer and is at least occasionally greater than one.
(*emphasis supplied*)

For the same reasons as those given with respect to claim 1, nowhere does Mulla teach or suggest, alone or in combination with the other references, what claim 8 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 9 through 14 depend on claim 8, the applicants respectfully submit that the rejection of them is also traversed.

Claim 15 recites:

15. A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Mulla teach or suggest, alone or in combination with the other references, what claim 15 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 16 through 23 depend on claim 15, the applicants respectfully submit that the rejection of them is also traversed.

Claim 24 recites:

24. A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and
a processor for retrieving said resource from a second node in said computer network, and for *populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;*
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Mulla teach or suggest, alone or in combination with the other references, what claim 24 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 26 through 32 depend on claim 24, the applicants respectfully submit that the rejection of them is also traversed.

Ground 3: 35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by C.L. Fuoco et al., U.S. Patent 6,408,345 (hereinafter "**Fuoco**").

Claim 1 recites:

1. A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

Nowhere does Fuoco teach or suggest, alone or in combination with the other references, what claim 1 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Like Mulla above, Fuoco teaches a multi-port cache that can read two resources in one clock cycle, and here again, the Office is confusing the ability to read two resources into a cache simultaneously as the same thing as waiting to populate a cache with a resource until there have been two requests for the resource.

For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claims 2 through 7 depend on claim 1, the applicants respectfully submit that the rejection of them is also traversed.

Claim 8 recites:

8. A data processing system comprising:
a cache for storing a resource; and
a processor for *populating said cache with said resource only when at least i requests for said resource have been received;*
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Fuoco teach or suggest, alone or in combination with the other references, what claim 8 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 9 through 14 depend on claim 8, the applicants respectfully submit that the rejection of them is also traversed.

Claim 15 recites:

15. A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Fuoco teach or suggest, alone or in combination with the other references, what claim 15 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 16 through 23 depend on claim 15, the applicants respectfully submit that the rejection of them is also traversed.

Claim 24 recites:

24. A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and
a processor for retrieving said resource from a second node in said computer network, and for *populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;*
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

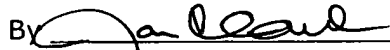
For the same reasons as those given with respect to claim 1, nowhere does Fuoco teach or suggest, alone or in combination with the other references, what claim 24 recites – namely, populating a cache with a resource only upon the successful resolution of a test – the test (at least occasionally) being the reception of two or more requests for the resource.

Because claims 26 through 32 depend on claim 24, the applicants respectfully submit that the rejection of them is also traversed.

CONCLUSION

The applicants have demonstrated that the logic underlying the Office's rejections is untenable, and, therefore, that the rejections are not sustainable. For this reason, the applicants request that the Board of Appeals reverse the decision of the Examiner as provided for in 37 C.F.R. § 41.50(a).

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

Date 2/20/06

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

CLAIMS APPENDIX

1. (Previously Presented) A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
 2. (Original) The method of claim 1 wherein the value of i is invariant.
 3. (Original) The method of claim 1 wherein the value of i is based on calendrical time.
 4. (Original) The method of claim 1 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .
 5. (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on the value of i .
 6. (Original) The method of claim 4 wherein the value of i is based on calendrical time.
 7. (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.
-
8. (Previously Presented) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
 9. (Original) The data processing system of claim 8 wherein the value of i is invariant.
 10. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

11. (Original) The data processing system of claim 8 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

12. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

13. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

14. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

15. (Previously Presented) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network; and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.

16. (Original) The method of claim 15 wherein the value of i is invariant.

17. (Original) The method of claim 15 wherein the value of i is based on calendrical time.

18. (Original) The method of claim 15 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

19. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

20. (Original) The method of claim 18 wherein the value of i is based on calendrical time.

21. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

22. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

23. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

24. (Previously Presented) A first node in a computer network, said first node comprising:

a cache;

at least one receiver for receiving at least one request for a resource; and

a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;

wherein i is an integer and is at least occasionally greater than one.

25. (Original) The first node of claim 24 wherein the value of i is invariant.

26. (Original) The first node of claim 24 wherein the value of i is based on calendrical time.

27. (Original) The first node of claim 24 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

28. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

29. (Original) The first node of claim 27 wherein the value of i is based on calendrical time.

30. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

31. (Original) The first node of claim 24:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;
wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

32. (Original) The first node of claim 24:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;
wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

EVIDENCE APPENDIX

No evidence has been entered in this case.

RELATED PROCEEDINGS APPENDIX

There are no related appeals or interferences.



**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph
Giacomini et al.

Serial No.: 09/725,737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

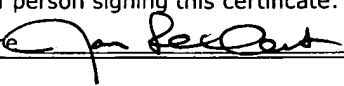
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:
Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on 20 February 2006.

Name of person signing this certificate: Jason Paul DeMont.

Signature 

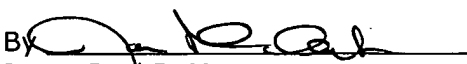
PETITION FOR EXTENSION OF TIME

Applicants respectfully petitions the Commissioner of Patents and Trademarks to extend the time for response to the Notice of Appeal dated 23 November 2005 for one (1) month from 23 January 2006 to 23 February 2006.

Please find Credit Card Payment Form PTO-2038 to cover the cost of the extension.

Pursuant to 37 C.F.R. 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

Date 2/20/06

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

ATF
2/20/06



**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph
Giacomini et al.

Serial No.: 09/725,737

Filing Date: 11/29/2000

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

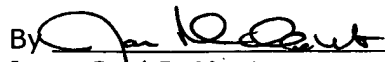
Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

1. Transmittal Letter with Certificate of Mailing - 1 Page (1x)
2. Appeal Brief with Certificate of Mailing - 15 Pages (3x)
3. Credit Card Payment Form PTO-2038 - 1 Page (1x)
4. Petition for Extension of Time with Certificate of Mailing - 1 Page (1x)

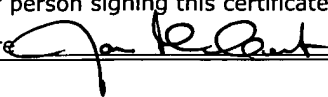
Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

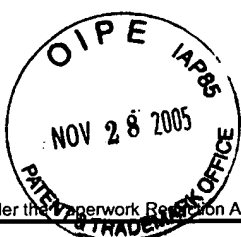
Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

Date 2/20/06

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

<u>Certificate of Mailing</u> I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on 20 February 2006. Name of person signing this certificate: Jason Paul DeMont. Signature 



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PTO/SB/31 (04-05)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

**NOTICE OF APPEAL FROM THE EXAMINER TO
THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Docket Number (Optional)

500-002us

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]
on 23 November 2005

Signature

Typed or printed
name

Jason Paul DeMont

In re Application of

P. Giacomini et al.

Application Number

09/725,737

Filed

11/29/2000

For

Method and Apparatus for ...

Art Unit

2142

Examiner

Vu, Thong H

Applicant hereby **appeals** to the Board of Patent Appeals and Interferences from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 41.20(b)(1))

\$ 500.00

☒ Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee shown above is reduced by half, and the resulting fee is:

\$ 250.00

☐ A check in the amount of the fee is enclosed.

☒ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account. I have enclosed a duplicate copy of this sheet.

☐ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. _____ I have enclosed a duplicate copy of this sheet.

☐ A petition for an extension of time under 37 CFR 1.136(a) (PTO/SB/22) is enclosed.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

☒ attorney or agent of record.
Registration number 35,793

☐ attorney or agent acting under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34. _____

Signature

Jason Paul DeMont

Typed or printed name

732-578-0103 x11

Telephone number

23 November 2005

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 41.31. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

11/28/2005 HGUTEM1 00000043 09725737

01 FC:2401

250.00 OP

Globus Medical, Inc.

IPR2015-00111 Exhibit 1017, p. 259



**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph
Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

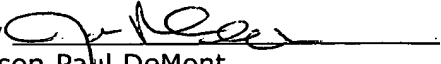
Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

1. Transmittal Letter with Certificate of Mailing – 1 Page (1x)
2. Notice of Appeal with Certificate of Mailing – 1 Page (1x)
3. Credit Card Payment Form PTO-2038 – 1 Page (1x)
4. Petition for Extension of Time with Certificate of Mailing – 1 Page (1x)

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

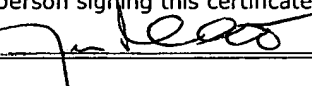
Date 11/23/05

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

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Name of person signing this certificate: Jason Paul DeMont.

Signature 



**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph
Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

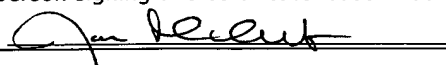
Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

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Name of person signing this certificate: Jason Paul DeMont.

Signature 

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

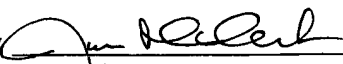
PETITION FOR EXTENSION OF TIME

Applicants respectfully petitions the Commissioner of Patents and Trademarks to extend the time for response to the Office action dated August 1, 2005 for one (1) month from 1 November 2005 to 1 December 2005.

Please find Credit Card Payment Form PTO-2038 to cover the cost of the extension.

Pursuant to 37 C.F.R. 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

Date 11/23/05

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

11/28/2005 HGUER01 00000043 09725737 60.00 0P
02 FC:2251



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.

09/725,737

EXAMINER

ART UNIT	PAPER NUMBER

DATE MAILED:

INTERVIEW SUMMARY

All participants (applicant, applicant's representative, PTO personnel):

(1) Jacob Pau Demoot # 35,793 (3) _____

(2) THONG VU (4) _____

Date of Interview 10/27/05

Type: ☐ Telephonic ☒ Personal (copy is given to ☒ applicant ☐ applicant's representative).

Exhibit shown or demonstration conducted: ☐ Yes ☐ No If yes, brief description: _____

Agreement ☐ was reached. ☐ was not reached.

Claim(s) discussed: _____

Identification of prior art discussed: _____

Description of the general nature of what was agreed to if an agreement was reached, or any other comments: _____

Applicant discusses the claim & invention. Examiner takes to consider and make further search.

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

1. ☐ It is not necessary for applicant to provide a separate record of the substance of the interview.

Unless the paragraph above has been checked to indicate to the contrary. A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04): If a response to the last Office action has been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW.

2. ☐ Since the Examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action. Applicant is not relieved from providing a separate record of the interview unless box 1 above is also checked.

Examiner Note: You must sign this form unless it is an attachment to another form.

Manual of Patent Examining Procedure, Section 713.04 Substance of Interview must Be Made of Record

A complete written statement as to the substance of any face-to-face or telephone interview with regard to an application must be made of record in the application, whether or not an agreement with the examiner was reached at the interview.

§1.133 Interviews

(b) In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for response to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

§ 1.2. Business to be transacted in writing. All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete a two-sheet carbon interleaf Interview Summary Form for each interview held after January 1, 1978 where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks in neat handwritten form using a ball point pen. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below.

The Interview Summary Form shall be given an appropriate paper number, placed in the right hand portion of the file, and listed on the "Contents" list on the file wrapper. The docket and serial register cards need not be updated to reflect interviews. In a personal interview, the duplicate copy of the Form is removed and given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephonic interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the telephonic interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Serial Number of the application
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (personal or telephonic)
- Name of participant(s) (applicant, attorney or agent, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the claims discussed
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). (Agreements as to allowability are tentative and do not restrict further action by the examiner to the contrary.)
- The signature of the examiner who conducted the interview
- Names of other Patent and Trademark Office personnel present.

The Form also contains a statement reminding the applicant of his responsibility to record the substance of the interview.

It is desirable that the examiner orally remind the applicant of his obligation to record the substance of the interview in each case unless both applicant and examiner agree that the examiner will record same. Where the examiner agrees to record the substance of the interview, or when it is adequately recorded on the Form or in an attachment to the Form, the examiner should check a box at the bottom of the Form informing the applicant that he need not supplement the Form by submitting a separate record of the substance of the interview.

It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview:

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner. The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he feels were or might be persuasive to the examiner,
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete or accurate, the examiner will give the applicant one month from the date of the notifying letter or the remainder of any period for response, whichever is longer, to complete the response and thereby avoid abandonment of the application (37 CFR 1.135(c)).

Examiner to Check for Accuracy.

Applicant's summary of what took place at the interview should be carefully checked to determine the accuracy of any argument or statement attributed to the examiner during the interview. If there is an inaccuracy and it bears directly on the question of patentability, it should be pointed out in the next Office letter. If the claims are allowable for other reasons of record, the examiner should send a letter setting forth his or her version of the statement attributed to him. If the record is complete and accurate, the examiner should place the indication "Interview record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,737	11/29/2000	Peter Joseph Giacomini	500-002US	9624
22897	7590	08/01/2005	EXAMINER	
DEMONT & BREYER, LLC SUITE 250 100 COMMONS WAY HOLMDEL, NJ . 07733			VU, THONG H	
			ART UNIT	PAPER NUMBER
			2142	

DATE MAILED: 08/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/725,737

Applicant(s)

GIACOMINI ET AL.

Examiner

Thong H. Vu

Art Unit

2142

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. Claims 1-32 are pending.
2. The copending information is recorded.
3. Applicant's arguments with respect to claims 1-32 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

4. Claims 1,8,15,24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention (i.e.: it was unclear How and When occasionally or under What condition the integer will be greater than one). Examiner considers the occasionally requests greater than one as either one request or two requests.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Mulla et al [Mulla, 6,427,189 B1].

5. As per claim 8, Mulla discloses a data processing system comprising:

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a cache for storing a resource [Mulla, information stored in the cache, col 6 line 47-48]; and

a processor for populating said cache with said resource [Mulla, CPU issues an integer load type instruction, col 7 lines 52] only when at least i requests for said resource have been received; wherein i is an integer is an at least occasionally greater than one [Mulla, cache may supply up two integer per clock, col 6 line 58; each request may require one or two port, col 15 lines 22-26; col 16 lines 51-55].

6. As per claims 2,9,16,25 Mulla discloses the value of i is invariant [Mulla, cache may supply up two integer per clock, col 6 line 58].

7. As per claims 3,10,17,26 Mulla discloses the value of i is based on calendrical time as inherent feature of system clock [Mulla, cache may supply up two integer per clock, col 6 line 58].

8. As per claims 4,11,18,27 Mulla discloses said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval as inherent feature of system clock [Mulla, cache may supply up two integer per clock, col 6 line 58]

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9. As per claims 5,12,19,28 Mulla discloses the duration of said elapsed time interval, At , is based on the value of i as inherent feature of system clock [Mulla, cache may supply up two integer per clock, col 6 line 58].

10. As per claims 6,13,20,29 Mulla discloses the value of i is based on calendrical time as inherent feature of system clock [Mulla, cache may supply up two integer per clock, col 6 line 58].

11. As per claims 7,14,21,30 Mulla discloses the duration of said elapsed time interval, At , is based on calendrical time as inherent feature of system clock [Mulla, cache may supply up two integer per clock, col 6 line 58].

12. Claims 1,15,24 contain the similar limitations set forth of apparatus claim 8. Therefore, claims 1,15,24 are rejected for the similar rationale set forth in claim 8.

13. As per claims 22,31 Mulla discloses said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Mulla, each request may require one or two port, col 15 lines 22-26;col 16 lines 51-55].

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14. As per claim 23,32 Mulla discloses said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, A_t ; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Mulla, each request may require one or two port, col 15 lines 22-26; col 16 lines 51-55].

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Fuoco et al [Fuoco, 6,408,345 B1].

15. As per claim 8, Fuoco discloses a data processing system comprising:
a cache for storing a resource [Fuoco, level one and two instruction cache, col 3 lines 43-60]; and a processor for populating said cache with said resource only when at least i requests for said resource have been received; [Fuoco, CPU 110, Fig 1]; wherein i is an integer and is at least occasionally greater than one [Fuoco, an integer logic unit,

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an integer multiplier, col 3 lines 30-42; multiple request in the same cycle, col 8 lines 1-7]

16. As per claims 2,9,16,25 Fuoco discloses the value of i is invariant [Fuoco, multiple request in the same cycle, col 8 lines 1-7].

17. As per claims 3,10,17,26 Fuoco discloses the value of i is based on calendrical time [Fuoco, multiple request in the same cycle, col 8 lines 1-7; programmable timers, col 10 line 39].

18. As per claims 4,11,18,27 Fuoco discloses said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval [Fuoco, multiple request in the same cycle, col 8 lines 1-7; programmable timers, col 10 line 39]

19. As per claims 5,12,19,28 Fuoco discloses the duration of said elapsed time interval, At , is based on the value of i [Fuoco, multiple request in the same cycle, col 8 lines 1-7].

20. As per claims 6,13,20,29 Fuoco discloses the value of i is based on calendrical time [Fuoco, multiple request in the same cycle, col 8 lines 1-7; programmable timers, col 10 line 39].

21. As per claims 7,14,21,30 Fuoco discloses the duration of said elapsed time interval, Δt , is based on calendrical time [Fuoco, multiple request in the same cycle, col 8 lines 1-7; programmable timers, col 10 line 39].

22. Claims 1,15,24 contain the similar limitations set forth of apparatus claim 8. Therefore, claims 1,15,24 are rejected for the similar rationale set forth in claim 8.

23. As per claims 22,31 Fuoco discloses said computer network is a hierarchical computer network and said first node has m filial nodes (i.e.: ports) ; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Fuoco, an integer logic unit, an integer multiplier, col 3 lines 30-42; multiple request in the same cycle, col 8 lines 1-7; ports, Fig 3].

24. As per claim 23,32 Fuoco discloses said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$

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[Fuoco, an integer logic unit, an integer multiplier, col 3 lines 30-42; multiple request in the same cycle, col 8 lines 1-7].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Thong Vu*, whose telephone number is (571)-272-3904. The examiner can normally be reached on Monday-Thursday from 7:00AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Andrew Caldwell*, can be reached at (571) 272-3868. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thong Vu
Patent Examiner
Art Unit 2142

A handwritten signature in black ink, appearing to read 'Thong', with a horizontal line underneath.

Notice of References Cited	Application/Control No. 09/725,737	Applicant(s)/Patent Under Reexamination GIACOMINI ET AL.	
	Examiner Thong H. Vu	Art Unit 2142	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,408,345 B1	06-2002	Fuoco et al.	710/22
	B	US-6,427,189 B1	07-2002	Mulla et al.	711/122
	C	US-6,148,372 A	11-2000	Mehrotra et al.	711/122
	D	US-6,085,290 A	07-2000	Smith et al.	711/131
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	A Declarative Approach to Calendrical Calculations - Bielikova, Navrat (1996) www.dcs.elf.stuba.sk/publ/1996/calenda.ps
	V	Architectural Considerations for Conversational Systems .. - Görz, Spilker, Strom.. (1999) www8.informatik.uni-erlangen.de/IMMD8/staff/Goerz/.papersgg/bellagio.ps.gz
	W	Querying Temporal Databases Using Controlled Natural Language - Nelken, Francez (2000) nlp3.korea.ac.kr/proceeding/coling2000/COLING/pdf/161.pdf
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims



Application/Control No.

09/725,737

Examiner

Thong H. Vu

Applicant(s)/Patent under Reexamination

GIACOMINI ET AL.

Art Unit

2142

✓	Rejected
=	Allowed

—	(Through numeral) Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim		Date									
Final	Original	7/25/05									
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Search Notes

Application/Control No.

09/725,737

Examiner

Thong H. Vu

Applicant(s)/Patent under
Reexamination

GIACOMINI ET AL.

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2142

SEARCHED

Class	Subclass	Date	Examiner
709	216	7/25/2005	TVU
711	122,131	7/25/2005	TVU
710	22	7/25/2005	TVU

INTERFERENCE SEARCHED

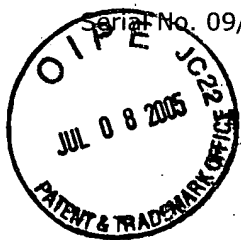
Class	Subclass	Date	Examiner

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
EAST,NPL,IEEE	7/25/2005	TVU

	L #	Hits	Search Text
1	L2	34	(two parallel multi\$3 plurality) adj3 requests with cach\$3 with resource
2	L3	0	(two parallel multi\$3 plurality) adj3 requests with cach\$3 with resource same integer same (occasionally random\$2)
3	L4	4	(two parallel multi\$3 plurality) adj3 requests with cach\$3 with resource and integer and (occasionally random\$2)

1/2142



Serial No. 09/725737

Attorney Docket: 500-002US

IN THE UNITED STATES
PATENT AND TRADE MARK OFFICE

Patent Application

Inventors: Peter Joseph
Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

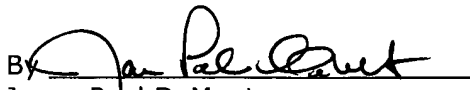
Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

1. Transmittal Letter with Certificate of Mailing - 1 Page (1x)
2. Amendment - 13 Pages (1x)

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

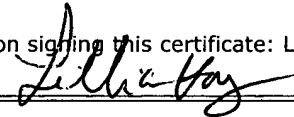
Date 5 July 2005

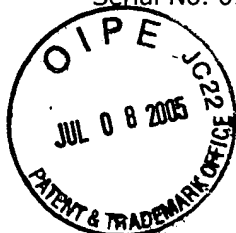
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United States of America

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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on 6th July 2005.

Name of person signing this certificate: Lillian Hayes.

Signature 



**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph
Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

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Name of person signing this certificate: Lillian Hayes.

Signature

AMENDMENT

The following claims are presented for examination:

- 1.** (Previously Presented) A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
- 2.** (Original) The method of claim 1 wherein the value of i is invariant.
- 3.** (Original) The method of claim 1 wherein the value of i is based on calendrical time.
- 4.** (Original) The method of claim 1 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .
- 5.** (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on the value of i .
- 6.** (Original) The method of claim 4 wherein the value of i is based on calendrical time.
- 7.** (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.
- 8.** (Previously Presented) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
- 9.** (Original) The data processing system of claim 8 wherein the value of i is invariant.
- 10.** (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

11. (Original) The data processing system of claim 8 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

12. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

13. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

14. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

15. (Previously Presented) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network; and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.

16. (Original) The method of claim 15 wherein the value of i is invariant.

17. (Original) The method of claim 15 wherein the value of i is based on calendrical time.

18. (Original) The method of claim 15 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

19. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

20. (Original) The method of claim 18 wherein the value of i is based on calendrical time.

21. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

22. (Original) The method of claim 15:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

23. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

24. (Previously Presented) A first node in a computer network, said first node comprising:

a cache;

at least one receiver for receiving at least one request for a resource; and

a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;

wherein i is an integer and is at least occasionally greater than one.

25. (Original) The first node of claim 24 wherein the value of i is invariant.

26. (Original) The first node of claim 24 wherein the value of i is based on calendrical time.

27. (Original) The first node of claim 24 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

28. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

29. (Original) The first node of claim 27 wherein the value of i is based on calendrical time.

30. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

31. (Original) The first node of claim 24:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

32. (Original) The first node of claim 24:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

Please revoke the amendment to the Specification made in the applicants' amendment of 1 July 2004, and amend paragraphs [0001] and [0061] of the Specification as follows:

[0001] This application is related to U.S. patent application Serial No. 09/725,732, entitled "Distributed Caching Architecture For Computer Networks," (Attorney Docket "500-001us") filed on 29 November 2000, which is incorporated by reference.

[0061] At step 604, the *Parental Node* uses the resource identifier as an index into cache 503 to determine if the resource is contained in the *Parental Node's* cache. Alternatively, as taught in applicants' co-pending U.S. patent application Serial No. 09/725,732, entitled "Distributed Caching Architecture For Computer Networks," the *Parental Node* can use a hashed function of the resource identifier as the index into cache 503. In either case, if the requested resource is in cache 503 (*i.e.*, a cache hit), then control passes to step 610; otherwise (*i.e.*, a cache "miss") control passes to step 605.

REMARKS

Claims 1 through 32 were presented for examination and were rejected. The applicants respectfully traverse the rejections and request reconsideration in light of the following comments.

Objection to the Specification

The specification was objected to because the serial number of the co-pending applications was missing in paragraphs [0001] and [0061]. The specification has been amended accordingly, and, therefore, the applicants respectfully submit that the objection is overcome.

35 U.S.C. 112 Rejection of Claims 1, 8, 15, and 24

Claims 1, 8, 15, and 24 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention. In particular, the Office action asserts that it is unclear How and When occasionally or under What condition the integer will be greater than one. The applicants respectfully traverse the rejection.

In order to comply with 35 U.S.C. 112, second paragraph, the claims do not need to specify how, when or under what conditions the integer will be greater than one. Such a detail describes the invention. In contrast, 35 U.S.C. 112, second paragraph, requires that the applicant define the invention, and there is no vagueness or ambiguity in the scope of the claim as it currently reads. Therefore, the applicants respectfully submit that the rejection is traversed.

The Office action states:

The term "occasionally" in claims 1, 8, 15, 24 are used by the claim to mean "parallel or concurrently request" or "the threshold for at least two requests", while the accepted meaning is "an integer at least occasionally greater than one." The term is indefinite because the specification does not clearly redefine the term.

The applicants respectfully disagree.

The meaning of the term "occasionally" in the claims is the same as its ordinary meaning: "now and then," "from time to time," "sometimes," etc. The applicants have not exercised their right to be their own lexicographer.

Contrary to the contention of the Office, the term "occasionally" does not mean "parallel or concurrently request" or "the threshold for at least two requests." Furthermore,

and again contrary to the contention of the Office, the term "occasionally" does not mean "an integer at least occasionally greater than one."

For these reasons, the applicants respectfully submit that the rejection is traversed.

35 U.S.C. 103 Rejection of Claims 1-32

Claims 1 through 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over "Directory Algorithm for Communication Peer Networks", IBM Technical Disclosure Bulletin, published March 1989 (hereinafter "IBM") in view of E.A. Melton et al., U.S. Patent 5,133,061 (hereinafter "Melton"). The applicants respectfully traverse the rejection.

Claim 1 recites:

1. A method comprising:
populating a cache with a resource only when at least *i* requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

Nowhere does IBM or Melton teach or suggest, alone or in combination with the other references, what claim 1 recites – namely populating a cache with a resource only when at least *i* requests for the resource have been received, and wherein *i is at least occasionally greater than one*. ***The cited permutation mechanism in Melton relates to how the cache is organized, not to when it is populated with a resource.*** Melton states:

Since a cache can contain thousands of lines, in order to reduce its search time, very often it is logically organized in a two-dimensional storage of rows and columns. In such a case, cache accesses are memory mapped, a consecutive segment of data from the memory that makes up a cache line is assigned uniquely to a row and each row has its own independent logic for controlling the line replacement. These rows, which are called congruence classes, allow any cache line to be accessed in a fixed amount of time. The disadvantage is when the congruence classes are not evenly utilized as a result of poor spatial locality of any running program, the hit ratio of a program can be decreased substantially. This is very likely a result of two factors. First, the number of congruence classes in a cache is always in the power of two, e.g., 128. Second, a running program usually accesses its data in a stride of a multiple of two, if not consecutive. These two factors can cause a small subset of the congruence classes in a cache to be heavily used while many others are unused. ***The purpose of the present invention is to alleviate such a problem.***
(emphasis supplied)

For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claims 2 through 7 depend on claim 1, the applicants respectfully submit that the rejection of them is also traversed.

Claim 8 recites:

8. A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least *i* requests for said resource have been received;
wherein *i* is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does IBM or Melton teach or suggest, alone or in combination with the other references, what claim 8 recites – namely populating a cache with a resource only when at least *i* requests for the resource have been received, and wherein *i* is at least occasionally greater than one.

Because claims 9 through 14 depend on claim 8, the applicants respectfully submit that the rejection of them is also traversed.

Claim 15 recites:

15. A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and
populating a cache in said first node with said resource only when at least *i* requests for said resource have been received at said first node;
wherein *i* is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does IBM or Melton teach or suggest, alone or in combination with the other references, what claim 15 recites – namely populating a cache with a resource only when at least *i* requests for the resource have been received, and wherein *i* is at least occasionally greater than one.

Because claims 16 through 23 depend on claim 15, the applicants respectfully submit that the rejection of them is also traversed.

Claim 24 recites:

24. A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and
a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least *i* requests for said resource have been received at said first node;
wherein *i* is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does IBM or Melton teach or suggest, alone or in combination with the other references, what claim 24 recites – namely populating a cache with a resource only when at least *i* requests for the resource have been received, and wherein *i* is at least occasionally greater than one.

Because claims 26 through 32 depend on claim 24, the applicants respectfully submit that the rejection of them is also traversed.

35 U.S.C. 103 Rejection of Claims 1-32

Claims 1 through 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over A.R. Desai, U.S. Patent 6,434,608 (hereinafter "Desai") in view of D. Gaskins et al., U.S. Patent 5,809,562 (hereinafter "Gaskins"). The applicants respectfully traverse the rejection.

Claim 1 recites:

1. A method comprising:
populating a cache with a resource only when at least *i* requests for said resource have been received;
wherein *i* is an integer and is at least occasionally greater than one.
(emphasis supplied)

Nowhere does Desai or Gaskins teach or suggest, alone or in combination with the other references, what claim 1 recites – namely populating a cache with a resource only when at least *i* requests for the resource have been received, and wherein *i* is at least occasionally greater than one.

The Office action cites:

Gaskins taught a cache populates with a high speed SRAM resource [col 7 lines 34-46] wherein the cache memory of **size** $N \times M$ is an integer having a value greater than 1.

(emphasis supplied)

The applicant agrees – and respectfully asserts that it is irrelevant to the issue at hand. ***The size of the cache memory is not relevant to the issue of how many requests for a resource must occur before the cache is populated with the resource.*** There is simply nothing in any of the references that teaches or suggests the claimed limitations for when the cache is populated.

For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claims 2 through 7 depend on claim 1, the applicants respectfully submit that the rejection of them is also traversed.

Claim 8 recites:

8. A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the same reasons as those given with respect to claim 1, nowhere does Desai or Gaskins teach or suggest, alone or in combination with the other references, what claim 8 recites – namely populating a cache with a resource only when at least i requests for the resource have been received, and wherein i is *at least occasionally greater than one*.

Because claims 9 through 14 depend on claim 8, the applicants respectfully submit that the rejection of them is also traversed.

Claim 15 recites:

15. A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and

populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.
(*emphasis supplied*)

For the same reasons as those given with respect to claim 1, nowhere does Desai or Gaskins teach or suggest, alone or in combination with the other references, what claim 15 recites – namely populating a cache with a resource only when at least i requests for the resource have been received, and wherein i is *at least occasionally greater than one*.

Because claims 16 through 23 depend on claim 15, the applicants respectfully submit that the rejection of them is also traversed.

Claim 24 recites:

24. A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and
a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer and is at least occasionally greater than one.
(*emphasis supplied*)

For the same reasons as those given with respect to claim 1, nowhere does Desai or Gaskins teach or suggest, alone or in combination with the other references, what claim 24 recites – namely populating a cache with a resource only when at least i requests for the resource have been received, and wherein i is *at least occasionally greater than one*.

Because claims 26 through 32 depend on claim 24, the applicants respectfully submit that the rejection of them is also traversed.

Request for Reconsideration Pursuant to 37 C.F.R. 1.111

Having responded to each and every ground for objection and rejection in the Office action mailed June 27, 2005, applicants request reconsideration of the instant application pursuant to 37 CFR 1.111 and request that the Examiner allow all of the pending claims and pass the application to issue.

Should there remain unresolved issues the applicants respectfully request that Examiner telephone the applicants' attorney at 732-578-0103 x11 so that those issues can be resolved as quickly as possible.

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

Date 5 July 2008

DeMont & Breyer, L.L.C.
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100 Commons Way
Holmdel, NJ 07733
United States of America

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 2003

Application or Docket Number

09/725737

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS		
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	minus 20=	*
INDEPENDENT CLAIMS	minus 3 =	*
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	* 32	Minus ** 32	=
Independent	* 4	Minus *** 4	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus **	=
Independent	*	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus **	=
Independent	*	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

SMALL ENTITY TYPE ☐

OR OTHER THAN SMALL ENTITY

RATE	FEE		RATE	FEE
BASIC FEE	385.00	OR	BASIC FEE	770.00
X\$ 9=		OR	X\$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL		OR	TOTAL	

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X43=		OR	X86=	
+145=		OR	+290=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

- * If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
- ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
- *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,737	11/29/2000	Peter Joseph Giacomini	500-002US	9624
22897	7590	06/27/2005		
DEMONT & BREYER, LLC SUITE 250 100 COMMONS WAY HOLMDEL, NJ 07733			EXAMINER VU, THONG H	
			ART UNIT 2142	PAPER NUMBER

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/725,737

Applicant(s)

GIACOMINI ET AL.

Examiner

Thong H. Vu

Art Unit

2142

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/00.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

1. Claims 1-32 are pending.
2. The copending information is missing [0001,0061]. Correction requires.
3. Applicant's arguments with respect to claims 1-32 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

4. Claims 1,8,15,24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention (i.e.: it was unclear How and When occasionally or under What condition the integer will be greater than one).
5. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "occasionally" in claims 1,8,15,24 are used by the claim to mean "parallel or concurrently request" or "the threshold for at least two requests", while the accepted meaning is "an integer at least occasionally greater than one." The term is indefinite because the specification does not clearly redefine the term.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2142

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-32 are rejected under 35 U.S.C. § 103 as being unpatentable over IBM (Directory Algorithm Communication Peer Networks) in view of Melton et al [Melton, 5,133,061].

6. As per claim 8, IBM discloses a data processing system [IBM, a computer network, page 1] comprising:

a cache for storing a resource [IBM, cache response to queries, page 1]; and
a processor for populating said cache with said resource [IBM, each cache server is populated, page 4]

However IBM does not detail
only when at least i requests for said resource have been received; wherein i is an integer is an at least occasionally (i.e.: randomly) greater than one.

In the same endeavor, Melton discloses a computer system using a permutation mechanism for improving the randomization of cache accesses utilizing a bit matrix multiplication wherein an integer having a value greater than 1 [Melton, abstract, col 12 line 30-col 14 line 8; 15 line 50-col 16 line 20].

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the cache request with a value greater than 1 as taught by Melton into the IBM's apparatus in order to utilize the cache memory. Doing so would provide a way to improve the distribution of data.

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7. As per claims 2,9,16,25 IBM-Melton disclose the value of i is invariant [Melton, a fixed amount of time, col 2 lines 52-67].

8. As per claims 3,10,17,26 IBM-Melton disclose the value of i is based on calendrical time [Melton, at any time, col 4 lines 34-60].

9. As per claims 4,11,18,27 IBM-Melton disclose said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval [Melton, the cache access time, col 14 line 58-col 15 line 12]

10. As per claims 5,12,19,28 IBM-Melton disclose the duration of said elapsed time interval, A_t , is based on the value of I [Melton, at any time, col 4 lines 34-60].

11. As per claims 6,13,20,29 IBM-Melton disclose the value of i is based on calendrical time [Melton, at any time, col 4 lines 34-60].

12. As per claims 7,14,21,30 IBM-Melton disclose the duration of said elapsed time interval, A_t , is based on calendrical time [Melton, at any time, col 4 lines 34-60].

13. Claims 1,15,24 contain the similar limitations set forth of apparatus claim 8. Therefore, claims 1,15,24 are rejected for the similar rationale set forth in claim 8.

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14. As per claims 22,31 IBM-Melton disclose said computer network is a hierarchical computer network and said first node has m filial (i.e.: all) nodes [IBM, a computer network, page 1]; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes [IBM, each cache server is populated, page 4]; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Melton, an integer having a value greater than 1, abstract, col 12 line 30-col 14 line 8; 15 line 50-col 16 line 20].

15. As per claim 23,32 IBM-Melton disclose said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, At [IBM, each cache server is populated, page 4]; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Melton, an integer having a value greater than 1, abstract, col 12 line 30-col 14 line 8; 15 line 50-col 16 line 20].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2142

Claims 1-32 are rejected under 35 U.S.C. § 103 as being unpatentable over Desai [6,434,608 B1] in view of Gaskins et al [Gaskins 5,809,562].

16. As per claim 8, Desai discloses a data processing system comprising:

a cache for storing a resource [Desai, an object is cached, col 3 lines 35-58]; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received; [Desai, a processor 202, Fig 2; cache population with a population threshold which ensure the cache fills up more quickly than it would, col 6 line 30-61; adjusting caching threshold accordingly (i.e.: occasionally).

However Desai does not explicitly detail

wherein i is an integer is an at least occasionally greater than one.

Gaskins taught a cache populates with a high speed SRAM resource [col 7 lines 34-46] wherein the cache memory of size $M*N$ is an integer having value greater than 1 [Gaskins, col 6 line 27-44]

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the cache request with a value greater than 1 as taught by Gaskins into the Desai's apparatus in order to utilize the cache memory. Doing so would provide a way to improve the distribution of data.

17. As per claims 2,9,16,25 Desai-Gaskins disclose the value of i is invariant as a design choice of system administrator [Desai, col 7 lines 40-55].

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18. As per claims 3,10,17,26 Desai-Gaskins disclose the value of i is based on calendrical time as a design choice of system administrator [Desai, any time, col 6 lines 43-45; variety of times, col 7 lines 40-55].

19. As per claims 4,11,18,27 Desai-Gaskins disclose said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval as a design choice of system administrator [Desai, col 7 lines 40-55]

20. As per claims 5,12,19,28 Desai-Gaskins disclose the duration of said elapsed time interval, At , is based on the value of I [Desai, cache is idle, col 3 lines 45-57].

21. As per claims 6,13,20,29 Desai-Gaskins disclose the value of i is based on calendrical time as a design choice of system administrator [Desai, col 7 lines 40-55].

22. As per claims 7,14,21,30 Desai-Gaskins disclose the duration of said elapsed time interval, At , is based on calendrical time [Desai, any time, col 6 lines 43-45; variety of times, col 7 lines 40-55].

23. Claims 1,15,24 contain the similar limitations set forth of apparatus claim 8. Therefore, claims 1,15,24 are rejected for the similar rationale set forth in claim 8.

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24. As per claims 22,31 Desai-Gaskins disclose said computer network is a hierarchical computer network and said first node has m filial (i.e.: all) nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Gaskins, an integer having value greater than 1 col 6 line 27-44].

25. As per claim 23,32 Desai-Gaskins disclose said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, At; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$ [Gaskins, an integer having value greater than 1 col 6 line 27-44].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Thong Vu*, whose telephone number is (571)-272-3904. The examiner can normally be reached on Monday-Thursday from 7:00AM- 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Andrew Caldwell*, can be reached at (571) 272-3868. The fax number for the organization where this application or proceeding is assigned is 703-872-9306

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval IP AIRI system. Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thong Vu
Patent Examiner
Art Unit 2142



	Case: 2	Serial No. NYA
INFORMATION DISCLOSURE STATEMENT	Applicant: Broadspider	
	Filing Date: 11/29/00	Group: NYA

1921 U.S. PTO
09/25/37

Examiner: Initial box if reference is considered, whether or not citation is in conformance with MPEP 609. Draw a line through citation if not in conformance and not considered. Include a copy of this form with next communication to applicant.

U.S. PATENT DOCUMENTS

- ☒ AA: Patent No. 5,924,116, issued Jul. 13, 1999 to C.C. Aggarwal et al.
- ☐ AB:
- ☐ AC:

FOREIGN PATENT DOCUMENTS

- ☐ AL:
- ☐ AM:
- ☐ AN:

OTHER DOCUMENTS

- ☐ AR:
- ☐ AS:
- ☐ AT:

Att: References as noted above

Examiner: <i>Thorn</i>	Date Considered: 6/21/05

Notice of References Cited	Application/Control No. 09/725,737	Applicant(s)/Patent Under Reexamination GIACOMINI ET AL.	
	Examiner Thong H. Vu	Art Unit 2142	Page 1 of 1

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,434,608 B1	08-2002	Desai, Arun Raghavendra	709/217
	B	US-5,459,742 A	10-1995	Cassidy et al.	714/769
	C	US-5,754,753 A	05-1998	Smelser, Donald	714/8
	D	US-6,845,429 B2	01-2005	Matlausch et al.	711/131
	E	US-6,538,928 B1	03-2003	Mobley, Kenneth J.	365/189.05
	F	US-6,446,062 B1	09-2002	Levine et al.	707/3
	G	US-6,295,575 B1	09-2001	Blumenau et al.	711/5
	H	US-6,216,212 B1	04-2001	Challenger et al.	711/163
	I	US-2001/0047400 A1	11-2001	Coates et al.	709/219
	J	US-6,606,721 B1	08-2003	Gowin et al.	714/728
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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N	05-274385	10-1993	Japan	Suzuki Kaoru	
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Timepatch: A Novel Technique for the Parallel Simulation of.. - Gautam Shah (1994) □□ftp.cc.gatech.edu/pub/tech_reports/1994/GIT-CC-94-52.ps.Z
	V	A Hierarchical Internet Object Cache - Chankhunthod, Danzig, Neerdaels.. (1995) □□ftp.cs.colorado.edu/pub/techreports/schwartz/HarvestCache.ps.Z
	W	The Multidcluster Architecture: Reducing Cycle Time.. - Farkas, Chow.. (1997) □□cardit.et.tudelft.nl/~steven/ilp/farkas97a.ps.gz
	X	Directory Algorithm for Communicaiton Peer Netwroks□□IBM technical Bulletin, 3/1989. TDB-ACC-No: NN8903300

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-274385

(43)Date of publication of application : 22.10.1993

(51)Int.Cl.

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G06F 11/22
G06F 11/26

(21)Application number : 04-066527

(71)Applicant : HITACHI LTD

(22)Date of filing : 25.03.1992

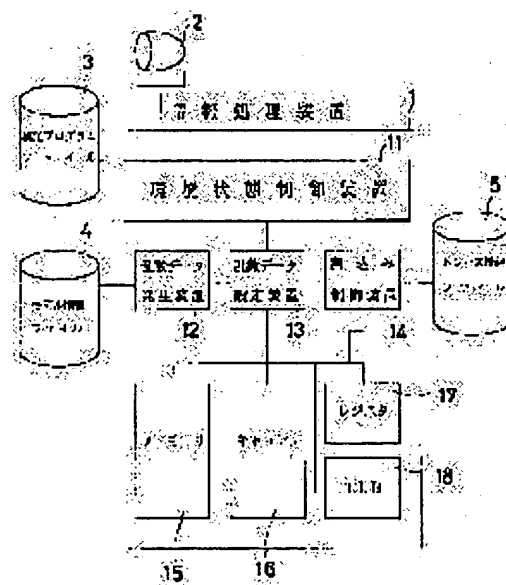
(72)Inventor : SUZUKI KAORU

(54) LOGIC VERIFICATION ENVIRONMENT CONTROLLING DEVICE

(57)Abstract:

PURPOSE: To provide the logic verification environment controlling device realizing accurate logic verification by setting environment equivalent to the real use environment and readily analyzing a fault in case of occurring a fault.

CONSTITUTION: The system consists of an information processor 1 for logic verification, system console 2, verification program file 3, model information file 4, and trace information file 5. The information processor 1 is provided with an environment state controlling device 11, random data generating device 12 for an entry embedding random number data, entry random number data setting device 13, interrupt controlling device 14 performing a back trace at the run away of a program, memory 15, cache 16, register 17, and TLB 18. Before executing the logic verification program, the resource in the information processor 1 is initialized.



LEGAL STATUS

[Date of request for examination] 05.09.1995

[Date of sending the examiner's decision of rejection] 28.04.1998

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[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]

[Claim 1] The random-number data generator which is a logic verification environment control unit to the logic simulation equipment which carries out circuit simulation of gate level, or an information processor, and creates random random-number data, The random-number data setting device which sets these random-number data as the data storage means in said logic simulation equipment or an information processor, The interrupt control equipment which controls the interruption generated within said logic simulation equipment or an information processor, Control of operator interface control, said logic simulation equipment, or an information processor, And the logic verification environment control unit characterized by having the environment condition control unit which carries out the edit output of trace information, and setting said logic simulation equipment or the resource in an information processor as an environment equivalent to a real operating environment before logic verification program execution.

[Claim 2] The logic verification environment control unit according to claim 1 characterized by creating so that these entry data may be adjusted in the logical format of said logic simulation equipment or an information processor, and embedding said random-number data to these entry data in case the entry data of said data storage means are created.

[Claim 3] The logic verification environment control unit according to claim 1 characterized by said random-number data generator generating the instruction and address data which operate on said specific logic simulation equipment or an information processor.

[Claim 4] The logic verification environment control unit according to claim 1 characterized by generating an interruption generating instruction operand code in dozens to hundreds of byte pitch in case said random-number data generator creates the random-number data set as said data storage means.

[Claim 5] The logic verification environment control unit according to claim 1 characterized by for said interrupt-processing equipment checking the interruption generating address and an interrupt type, carrying out back trace in the range traceable from the interruption generating address, and saving trace information.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] About the logic verification technique of the logical circuit which constitutes logic simulation equipment or an information processor, especially, this invention is complicated, is applied to the suitable logic verification environment control unit for highly precise verification of the big logical circuit of a scale, and relates to an effective technique.

[0002]

[Description of the Prior Art] For example, by the conventional logic verification method, from the condition similar to the condition that the memory in an information processor after power on reset, a cache, a register, TLB (Table Look-aside Buffer), etc. were initialized (zero clear), or it, the information processor set the logic verification program to a memory load or the memory which corresponds verification program data, the cache, the register, etc., and was realized by performing.

[0003] In addition, the technique indicated by JP,3-250225,A is mentioned as this related kind of a conventional technique.

[0004]

[Problem(s) to be Solved by the Invention] However, in the above conventional techniques, by the operating environment of an actual information processor, two or more jobs also including user application jobs including an operating system are performed by asynchronous, under such a situation, the contents, such as memory in an information processor, a cache, a register, and TLB, are seen from an object program, and random data are arranged.

[0005] In this case, it is known that random data are arranged on the resource in an information processor like an operating environment, will cause malfunction when poor logic is inherent in the information processor under the situation that two or more conditions overlap, and poor logic will tend to be revealed from a condition with an information processor similar to the condition after power on reset or it.

[0006] Therefore, in the logic verification technique of the conventional technique, since logic verification by the information-processor milieu interne equivalent to a real operating environment was not carried out, there was a problem that verification precision was low.

[0007] Then, the purpose of this invention builds an environment equivalent to an actual user program being performed under operation system, and is by enabling logic verification under an environment equivalent to this real operating environment to offer the logic verification environment control unit which can realize highly precise logic verification.

[0008] Moreover, other purposes of this invention are to offer the logic verification environment control unit which can perform back trace from the interruption address of this failure generating, and can realize failure analysis easily by this trace information at the time of failure generating.

[0009] The other purposes and the new description will become clear from description and the accompanying drawing of this specification along [said] this invention.

[0010]

[Means for Solving the Problem] It will be as follows if the outline of a typical thing is briefly explained among invention indicated in this application.

[0011] Namely, the logic verification environment control unit of this invention The random-number data generator which is a logic verification environment control unit to the logic simulation equipment which carries out circuit simulation of gate level, or an information processor, and creates random random-number data, The random-number data setting device which sets this random-number data to the data storage means in logic simulation equipment or an information processor, for example, memory, a cache, TLB, a register, etc., The interrupt control equipment which

Globus Medical, Inc.

controls the interruption generated within logic simulation equipment or an information processor, It has the environment condition control unit which carries out control of operator interface control, logic simulation equipment, or an information processor and the edit output of trace information.

[0012] In this case, in case the entry data of said data storage means are created, it creates so that this entry data, for example, a parity bit, Hamming code (ECC:Error Correcting Code), etc. may be adjusted in the logical format of logic simulation equipment or an information processor, and random-number data are embedded to entry data.

[0013] Moreover, it is made for said random-number data generator to generate the instruction which operates on specific logic simulation equipment or an information processor and address data, for example, an absolute-instruction code, operand address data, etc.

[0014] Furthermore, in case said random-number data generator creates the random-number data set as a data storage means, it is made to generate an interruption generating instruction operand code in dozens to hundreds of byte pitch.

[0015] Moreover, said interrupt-processing equipment checks the interruption generating address and an interrupt type, carries out back trace in the range traceable from the interruption generating address, and saves trace information.

[0016]

[Function] According to the above mentioned logic verification environment control unit, by having a random-number data generator, a random-number data setting device, interrupt control equipment, and an environment condition control unit For example, it creates so that entry data, such as a parity bit and Hamming code, may be adjusted in a logical format. The random-number data based on a random-number data generator are embedded to this entry data. This entry data can be set as a data storage means with a random-number data setting device, and the resource in logic simulation equipment or an information processor can be set as an environment equivalent to a real operating environment before logic verification program execution.

[0017] Moreover, it can be made to operate only on specific logic simulation equipment or an information processor according to generating of a specific absolute-instruction code, operand address data, etc.

[0018] Furthermore, by an interruption generating instruction operand code's being generated by dozens to hundreds of byte pitch, and checking the interruption generating address and an interrupt type, back trace can be carried out in the range traceable from the interruption generating address, and this trace information can be saved.

[0019] An equipment environment equivalent to an actual user program being performed under operation system by this is built, and while realizing highly precise logic verification by enabling logic verification under this environment, failure analysis is easily realizable at the time of failure generating.

[0020]

[Example] The explanatory view showing processing of the block diagram showing the logic verification environment control unit whose drawing 1 is one example of this invention, a random-number data generator [in / in drawing 2 / the logic verification environment control unit of this example], and a random-number data setting device, the flow chart Fig. in which drawing 3 shows cache data-origination processing of a random-number data generator in this example, the flow chart Fig. in which drawing 4 shows data origination / setting processing, and drawing 5 are the flow chart Figs. showing logic verification processing of having used the logic verification environment control unit of this example. [the hardware register of a random-number data generator and a random-number data setting device]

[0021] First, drawing 1 explains the configuration of the logic verification environment control unit of this example.

[0022] It considers as the logic verification environment control unit to an information processor, and the logic verification environment control unit of this example consists of trace information files 5 for storing the model-information file 4 and back trace information that the verification program file 3 in which the logic verification program of the target information processor 1, a system console 2, and execute form is stored, the size of each RAM, an entry, etc. are stored etc.

[0023] Random-number data are embedded for the object RAM of the environment condition control device 11 and an information processor which carries out operator interface control, control of each equipment, and edit output processing of trace information in the target information processor 1. The logic verification program performed under the random-number data generator 12 which creates an entry, the random-number data setting device 13 which sets the created entry as Object RAM, and the set-up environment overruns recklessly by poor logic. When an interrupt occurs with an interruption generating instruction, it has memory 15, a cache 16, a register 17, TLB18, etc. as an object RAM of interrupt control equipment 14 and a data storage means which carries out the recovery and back trace.

[0024] Next, an operation of this example is explained.

[0025] Introduction and drawing 2 explain processing of the random-number data generator 12 and the random-number data setting device 13.

[0026] If the random-number data generator 12 is started from the environment condition control device 11, it will first read a format of sizes, such as the memory 15 of each RAM in an information processor 1, a cache 16, a register 17, and TLB18, and an entry, a block/linesize, etc. from the model-information file 4, and will generate the entry data of each RAM according to the directions.

[0027] Under the present circumstances, the generate time of entry data which has parity bits, Hamming codes (ECC), etc., such as TLB18 and a cache address array, generates the data suitable for the logical format of an information processor 1 to the predetermined bit position according to directions of the model-information file 4.

[0028] Moreover, the data of memory 15 and a cache 16 generate random-number data per the specified block/linesize. In this case, the machine language code of the interrupt instruction of dedication which makes interrupt control equipment 14 generate the interruption for moving control is embedded at several bytes of the last of each block/Rhine. And the random-number data generator 12 moves control to the random-number data setting device 13 after generating entry data.

[0029] Furthermore, the random-number data setting device 13 sets up the entry data for the size (the number of entries) registered into the model-information file 4 by predetermined RAM in the entry data generated with the random-number data generator 12.

[0030] Next, the flow of drawing 3 explains creation processing of the code cache data of the random-number data generator 12.

[0031] The random-number data generator 12 creates a Hamming code (ECC) part for code cache entry information according to read-out (step 301) and this entry information from the model-information file 4 first (step 302), carries out random number generation of the code data actual next, and creates random-number data (step 303).

[0032] Furthermore, interruption generating instruction code is embedded at the last of a block of a code cache entry (step 304), and the random-number data setting device 13 is started (step 305).

[0033] Next, the flow of drawing 4 explains data origination / setting processing of a hardware (H/W) register.

[0034] When waiting arises in advanced-control processing of an information processor 1 (i.e., when the next MVC (data transfer from memory to memory) instruction is using the contents of the register decided with LD (data transfer from memory to register) instruction as a memory address), since address computation processing of an MVC instruction cannot be performed until processing of this LD instruction is completed, waiting will arise in processing and a register will once be in idle status.

[0035] When such a condition occurs, the environment condition control device 11 senses that the bubble occurred with a lock for example, with A stage register (step 401), and issues generation directions of data to the random-number data generator 12.

[0036] Furthermore, the random-number data generator 12 creates the data of A stage register (step 402), and takes out the setup instruction of data to the random-number data setting device 13.

[0037] And the random-number data setting device 13 embeds the data based on the random-number value generated by A stage register (step 403).

[0038] Next, drawing 5 explains the processing flow of the logic verification using the logic verification environment control unit of this example.

[0039] First, the environment condition control device 11 starts the random-number data generator 12 with directions of an operator (step 501). And the random-number data generator 12 reads the creation information of the entry data of each RAM from the model-information file 4 (step 502), and creates the entry data of each RAM according to this model information (step 503).

[0040] Furthermore, the random-number data generator 12 starts the random-number data setting device 13 (step 504), and the created entry data are initialized to each RAM according to the size of each RAM by which the random-number data setting device 13 is registered into the model-information file 4 (step 505).

[0041] And control is returned to the environment condition control unit 11 after initialization termination (step 506), and this environment condition control unit 11 loads the logic verification program which corresponds with directions of an operator to memory 15 (step 507), and starts this logic verification program (step 508).

[0042] Furthermore, if logic verification program execution is completed normally, the processing whose environment condition control unit 11 carries out the next processing demand to an operator will be repeated.

[0043] When a logic verification program overruns recklessly (step 509), with an interruption generating instruction, control moves to interrupt control equipment 14 (step 510), goes back to the address in which back trace is possible, collects trace information, and registers with the trace information file 5 (step 511).

[0044] And control edits trace information into the environment condition control unit 11, return (step 512) and the

environment condition control unit 11 output this trace information to a system console 2 (step 513), and analysis of the cause of an overrun is performed by this.

[0045] Therefore, according to the logic verification environment control unit of this example, it has the environment condition control device 11, the random-number data generator 12, the random-number data setting device 13, and interrupt control equipment 14. By embedding random-number data to entry data, and initializing this entry data to memory 15, a cache 16, a register 17, TLB18, etc. of each RAM in an information processor 1 The data storage means in the information news processor 1 set as the object of logic verification can be set as an environment equal to an actual user program being performed, and the logic verification under a real operating environment is attained by this.

[0046] Moreover, since back trace becomes possible from the interruption generating address with an interruption generating instruction also when a logic verification program overruns recklessly, this trace information can perform easily failure analysis at the time of failure generating.

[0047] As mentioned above, although invention made by this invention person was concretely explained based on the example, it cannot be overemphasized that it can change variously in the range which this invention is not limited to said example and does not deviate from the summary.

[0048] For example, although the case where the object of the logic verification about the logic verification environment control unit of this example was an information processor 1 was explained, this invention is not limited to said example and can be applied widely also about the logic simulation equipment which carries out circuit simulation of gate level.

[0049] Moreover, you may make it generate an absolute-instruction code, operand address data, etc. which operate, for example on a specific information processor as a random-number data generator 12.

[0050]

[Effect of the Invention] It will be as follows if the effectiveness acquired by the typical thing among invention indicated in this application is explained briefly.

[0051] (1) Since it can create so that entry data may be adjusted in a logical format by having . random-number data generator, a random-number data setting device, interrupt control equipment, and an environment condition control device, and random-number data can be embedded to this entry data and it can be set as a data storage means, the resource in logic simulation equipment or an information processor can be built by the environment equivalent to a real operating environment before logic verification program execution.

[0052] (2) It can be made to operate only on specific logic simulation equipment or an information processor, when . random-number data generator generates a specific instruction and address data.

[0053] (3) Since . random-number data generator can generate an interruption generating instruction operand code in dozens to hundreds of byte pitch, interrupt-processing equipment can carry out back trace from the interruption generating address of this interruption generating instruction operand code and trace information can be saved, failure analysis when a failure occurs can be performed easily.

[0054] (4) . above (1) - (3) While realizing highly precise logic verification by enabling logic verification under a real operating environment to the logic simulation equipment or the information processor used as the candidate for logic verification, the logic verification environment control unit with which failure analysis at the time of failure generating is enabled easily can be obtained.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application] About the logic verification technique of the logical circuit which constitutes logic simulation equipment or an information processor, especially, this invention is complicated, is applied to the suitable logic verification environment control unit for highly precise verification of the big logical circuit of a scale, and relates to an effective technique.

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PRIOR ART

[Description of the Prior Art] For example, by the conventional logic verification method, from the condition similar to the condition that the memory in an information processor after power on reset, a cache, a register, TLB (Table Look-aside Buffer), etc. were initialized (zero clear), or it, the information processor set the logic verification program to a memory load or the memory which corresponds verification program data, the cache, the register, etc., and was realized by performing.

[0003] In addition, the technique indicated by JP,3-250225,A is mentioned as this related kind of a conventional technique.

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EFFECT OF THE INVENTION

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[0052] (2) It can be made to operate only on specific logic simulation equipment or an information processor, when . random-number data generator generates a specific instruction and address data.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, in the above conventional techniques, by the operating environment of an actual information processor, two or more jobs also including user application jobs including an operating system are performed by asynchronous, under such a situation, the contents, such as memory in an information processor, a cache, a register, and TLB, are seen from an object program, and random data are arranged. [0005] In this case, it is known that random data are arranged on the resource in an information processor like an operating environment, will cause malfunction when poor logic is inherent in the information processor under the situation that two or more conditions overlap, and poor logic will tend to be revealed from a condition with an information processor similar to the condition after power on reset or it.

[0006] Therefore, in the logic verification technique of the conventional technique, since logic verification by the information-processor milieu interne equivalent to a real operating environment was not carried out, there was a problem that verification precision was low.

[0007] Then, the purpose of this invention builds an environment equivalent to an actual user program being performed under operation system, and is by enabling logic verification under an environment equivalent to this real operating environment to offer the logic verification environment control unit which can realize highly precise logic verification.

[0008] Moreover, other purposes of this invention are to offer the logic verification environment control unit which can perform back trace from the interruption address of this failure generating, and can realize failure analysis easily by this trace information at the time of failure generating.

[0009] The other purposes and the new description will become clear from description and the accompanying drawing of this specification along [said] this invention.

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MEANS

[Means for Solving the Problem] It will be as follows if the outline of a typical thing is briefly explained among invention indicated in this application.

[0011] Namely, the logic verification environment control unit of this invention The random-number data generator which is a logic verification environment control unit to the logic simulation equipment which carries out circuit simulation of gate level, or an information processor, and creates random random-number data, The random-number data setting device which sets this random-number data to the data storage means in logic simulation equipment or an information processor, for example, memory, a cache, TLB, a register, etc., The interrupt control equipment which controls the interruption generated within logic simulation equipment or an information processor, It has the environment condition control unit which carries out control of operator interface control, logic simulation equipment, or an information processor and the edit output of trace information.

[0012] In this case, in case the entry data of said data storage means are created, it creates so that this entry data, for example, a parity bit, Hamming code (ECC:Error Correcting Code), etc. may be adjusted in the logical format of logic simulation equipment or an information processor, and random-number data are embedded to entry data.

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[0014] Furthermore, in case said random-number data generator creates the random-number data set as a data storage means, it is made to generate an interruption generating instruction operand code in dozens to hundreds of byte pitch.

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OPERATION

[Function] According to the above mentioned logic verification environment control unit, by having a random-number data generator, a random-number data setting device, interrupt control equipment, and an environment condition control unit For example, it creates so that entry data, such as a parity bit and Hamming code, may be adjusted in a logical format. The random-number data based on a random-number data generator are embedded to this entry data. This entry data can be set as a data storage means with a random-number data setting device, and the resource in logic simulation equipment or an information processor can be set as an environment equivalent to a real operating environment before logic verification program execution.

[0017] Moreover, it can be made to operate only on specific logic simulation equipment or an information processor according to generating of a specific absolute-instruction code, operand address data, etc.

[0018] Furthermore, by an interruption generating instruction operand code's being generated by dozens to hundreds of byte pitch, and checking the interruption generating address and an interrupt type, back trace can be carried out in the range traceable from the interruption generating address, and this trace information can be saved.

[0019] An equipment environment equivalent to an actual user program being performed under operation system by this is built, and while realizing highly precise logic verification by enabling logic verification under this environment, failure analysis is easily realizable at the time of failure generating.

[Translation done.]

Family list

4 family members for:

EP0768612

Derived from 3 applications.

[Back to EP0768612](#)

- 1 Method and apparatus for generating structured document**
Publication info: **EP0768612 A2** - 1997-04-16
EP0768612 A3 - 2005-02-16
- 2 METHOD AND DEVICE FOR GENERATING STRUCTURED DOCUMENT**
Publication info: **JP9069101 A** - 1997-03-11
- 3 Method and apparatus for generating structured document**
Publication info: **US6014680 A** - 2000-01-11

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EXAMPLE

[Example] The explanatory view showing processing of the block diagram showing the logic verification environment control unit whose drawing 1 is one example of this invention, a random-number data generator [in / in drawing 2 / the logic verification environment control unit of this example], and a random-number data setting device, the flow chart Fig. in which drawing 3 shows cache data-origination processing of a random-number data generator in this example, the flow chart Fig. in which drawing 4 shows data origination / setting processing, and drawing 5 are the flow chart Figs. showing logic verification processing of having used the logic verification environment control unit of this example. [the hardware register of a random-number data generator and a random-number data setting device] [0021] First, drawing 1 explains the configuration of the logic verification environment control unit of this example. [0022] It considers as the logic verification environment control unit to an information processor, and the logic verification environment control unit of this example consists of trace information files 5 for storing the model-information file 4 and back trace information that the verification program file 3 in which the logic verification program of the target information processor 1, a system console 2, and execute form is stored, the size of each RAM, an entry, etc. are stored etc.

[0023] Random-number data are embedded for the object RAM of the environment condition control device 11 and an information processor which carries out operator interface control, control of each equipment, and edit output processing of trace information in the target information processor 1. The logic verification program performed under the random-number data generator 12 which creates an entry, the random-number data setting device 13 which sets the created entry as Object RAM, and the set-up environment overruns recklessly by poor logic. When an interrupt occurs with an interruption generating instruction, it has memory 15, a cache 16, a register 17, TLB18, etc. as an object RAM of interrupt control equipment 14 and a data storage means which carries out the recovery and back trace.

[0024] Next, an operation of this example is explained.

[0025] Introduction and drawing 2 explain processing of the random-number data generator 12 and the random-number data setting device 13.

[0026] If the random-number data generator 12 is started from the environment condition control device 11, it will first read a format of sizes, such as the memory 15 of each RAM in an information processor 1, a cache 16, a register 17, and TLB18, and an entry, a block/linesize, etc. from the model-information file 4, and will generate the entry data of each RAM according to the directions.

[0027] Under the present circumstances, the generate time of entry data which has parity bits, Hamming codes (ECC), etc., such as TLB18 and a cache address array, generates the data suitable for the logical format of an information processor 1 to the predetermined bit position according to directions of the model-information file 4.

[0028] Moreover, the data of memory 15 and a cache 16 generate random-number data per the specified block/linesize. In this case, the machine language code of the interrupt instruction of dedication which makes interrupt control equipment 14 generate the interruption for moving control is embedded at several bytes of the last of each block/Rhine. And the random-number data generator 12 moves control to the random-number data setting device 13 after generating entry data.

[0029] Furthermore, the random-number data setting device 13 sets up the entry data for the size (the number of entries) registered into the model-information file 4 by predetermined RAM in the entry data generated with the random-number data generator 12.

[0030] Next, the flow of drawing 3 explains creation processing of the code cache data of the random-number data generator 12.

[0031] The random-number data generator 12 creates a Hamming code (ECC) part for code cache entry information according to read-out (step 301) and this entry information from the model-information file 4 first (step 302), carries

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out random number generation of the code data actual next, and creates random-number data (step 303).

[0032] Furthermore, interruption generating instruction code is embedded at the last of a block of a code cache entry (step 304), and the random-number data setting device 13 is started (step 305).

[0033] Next, the flow of drawing 4 explains data origination / setting processing of a hardware (H/W) register.

[0034] When waiting arises in advanced-control processing of an information processor 1 (i.e., when the next MVC (data transfer from memory to memory) instruction is using the contents of the register decided with LD (data transfer from memory to register) instruction as a memory address), since address computation processing of an MVC instruction cannot be performed until processing of this LD instruction is completed, waiting will arise in processing and a register will once be in idle status.

[0035] When such a condition occurs, the environment condition control device 11 senses that the bubble occurred with a lock for example, with A stage register (step 401), and issues generation directions of data to the random-number data generator 12.

[0036] Furthermore, the random-number data generator 12 creates the data of A stage register (step 402), and takes out the setup instruction of data to the random-number data setting device 13.

[0037] And the random-number data setting device 13 embeds the data based on the random-number value generated by A stage register (step 403).

[0038] Next, drawing 5 explains the processing flow of the logic verification using the logic verification environment control unit of this example.

[0039] First, the environment condition control device 11 starts the random-number data generator 12 with directions of an operator (step 501). And the random-number data generator 12 reads the creation information of the entry data of each RAM from the model-information file 4 (step 502), and creates the entry data of each RAM according to this model information (step 503).

[0040] Furthermore, the random-number data generator 12 starts the random-number data setting device 13 (step 504), and the created entry data are initialized to each RAM according to the size of each RAM by which the random-number data setting device 13 is registered into the model-information file 4 (step 505).

[0041] And control is returned to the environment condition control unit 11 after initialization termination (step 506), and this environment condition control unit 11 loads the logic verification program which corresponds with directions of an operator to memory 15 (step 507), and starts this logic verification program (step 508).

[0042] Furthermore, if logic verification program execution is completed normally, the processing whose environment condition control unit 11 carries out the next processing demand to an operator will be repeated.

[0043] When a logic verification program overruns recklessly (step 509), with an interruption generating instruction, control moves to interrupt control equipment 14 (step 510), goes back to the address in which back trace is possible, collects trace information, and registers with the trace information file 5 (step 511).

[0044] And control edits trace information into the environment condition control unit 11, return (step 512) and the environment condition control unit 11 output this trace information to a system console 2 (step 513), and analysis of the cause of an overrun is performed by this.

[0045] Therefore, according to the logic verification environment control unit of this example, it has the environment condition control device 11, the random-number data generator 12, the random-number data setting device 13, and interrupt control equipment 14. By embedding random-number data to entry data, and initializing this entry data to memory 15, a cache 16, a register 17, TLB18, etc. of each RAM in an information processor 1 The data storage means in the information news processor 1 set as the object of logic verification can be set as an environment equal to an actual user program being performed, and the logic verification under a real operating environment is attained by this.

[0046] Moreover, since back trace becomes possible from the interruption generating address with an interruption generating instruction also when a logic verification program overruns recklessly, this trace information can perform easily failure analysis at the time of failure generating.

[0047] As mentioned above, although invention made by this invention person was concretely explained based on the example, it cannot be overemphasized that it can change variously in the range which this invention is not limited to said example and does not deviate from the summary.

[0048] For example, although the case where the object of the logic verification about the logic verification environment control unit of this example was an information processor 1 was explained, this invention is not limited to said example and can be applied widely also about the logic simulation equipment which carries out circuit simulation of gate level.

[0049] Moreover, you may make it generate an absolute-instruction code, operand address data, etc. which operate, for

example on a specific information processor as a random-number data generator 12.

[Translation done.]

* NOTICES *

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
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3. In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the logic verification environment control unit which is one example of this invention.

[Drawing 2] It is the explanatory view showing processing of the random-number data generator in the logic verification environment control unit of this example and a random-number data setting device.

[Drawing 3] In this example, it is the flow chart Fig. showing cache data origination processing of a random-number data generator.

[Drawing 4] In this example, it is the flow chart Fig. showing data origination / setting processing of the hardware register of a random-number data generator and a random-number data setting device.

[Drawing 5] It is the flow chart Fig. showing the logic verification processing using the logic verification environment control unit of this example.

[Description of Notations]

- 1 Information Processor
- 2 System Console
- 3 Verification Program File
- 4 Model-Information File
- 5 Trace Information File
- 11 Environment Condition Control Unit
- 12 Random-Number Data Generator
- 13 Random-Number Data Setting Device
- 14 Interrupt Control Equipment
- 15 Memory
- 16 Cache
- 17 Register
- 18 TLB

[Translation done.]

* NOTICES *

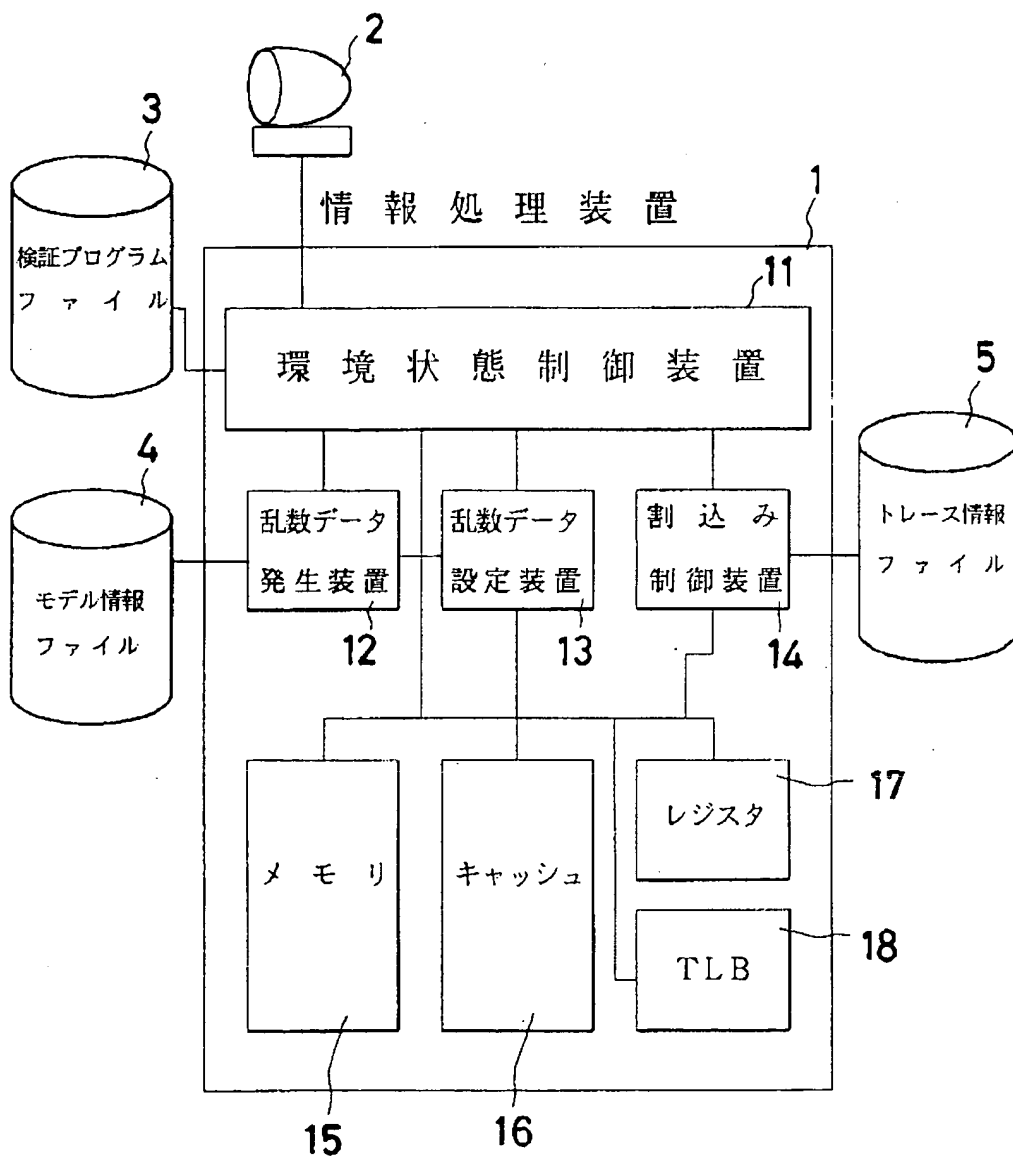
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DRAWINGS

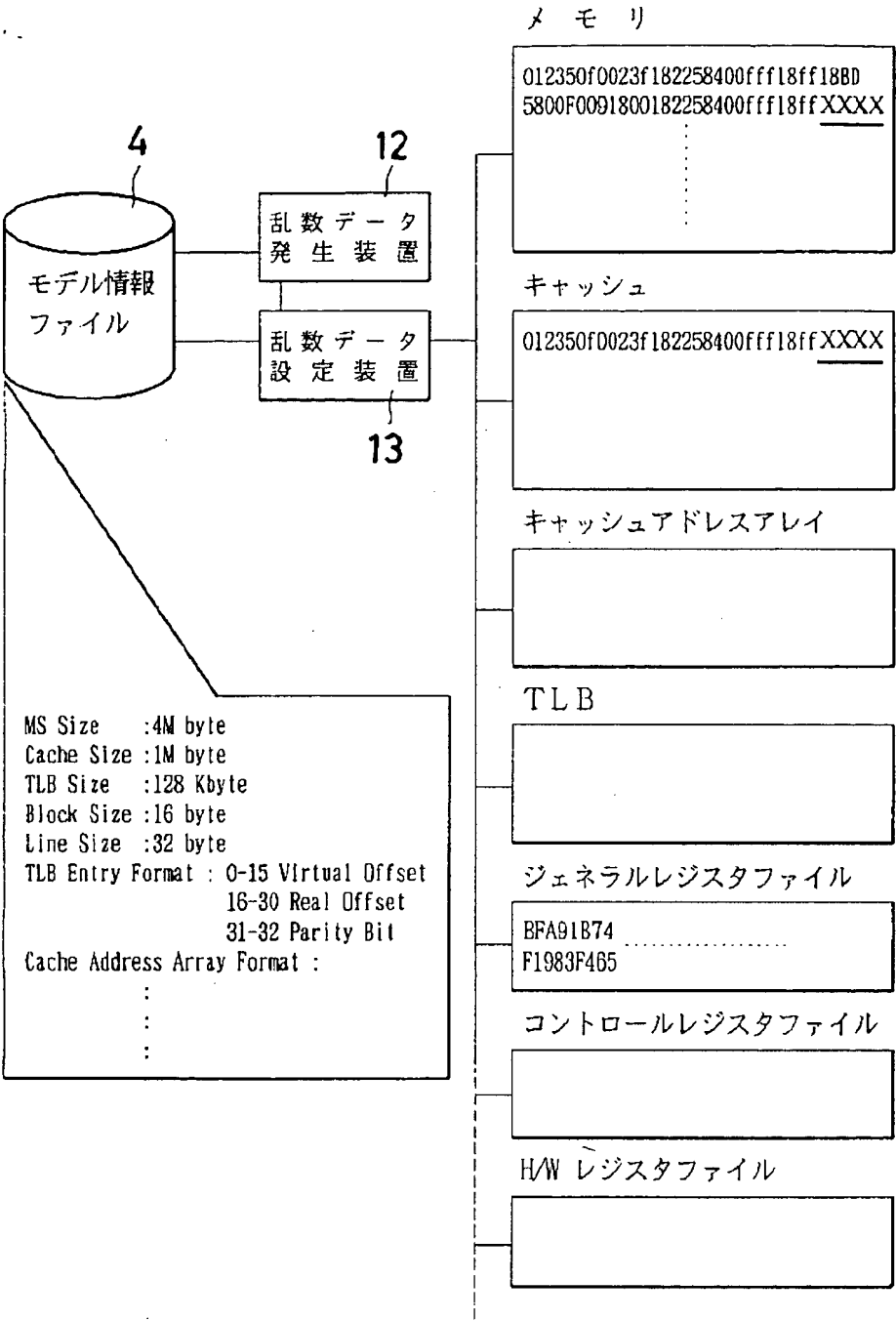
[Drawing 1]

図 1



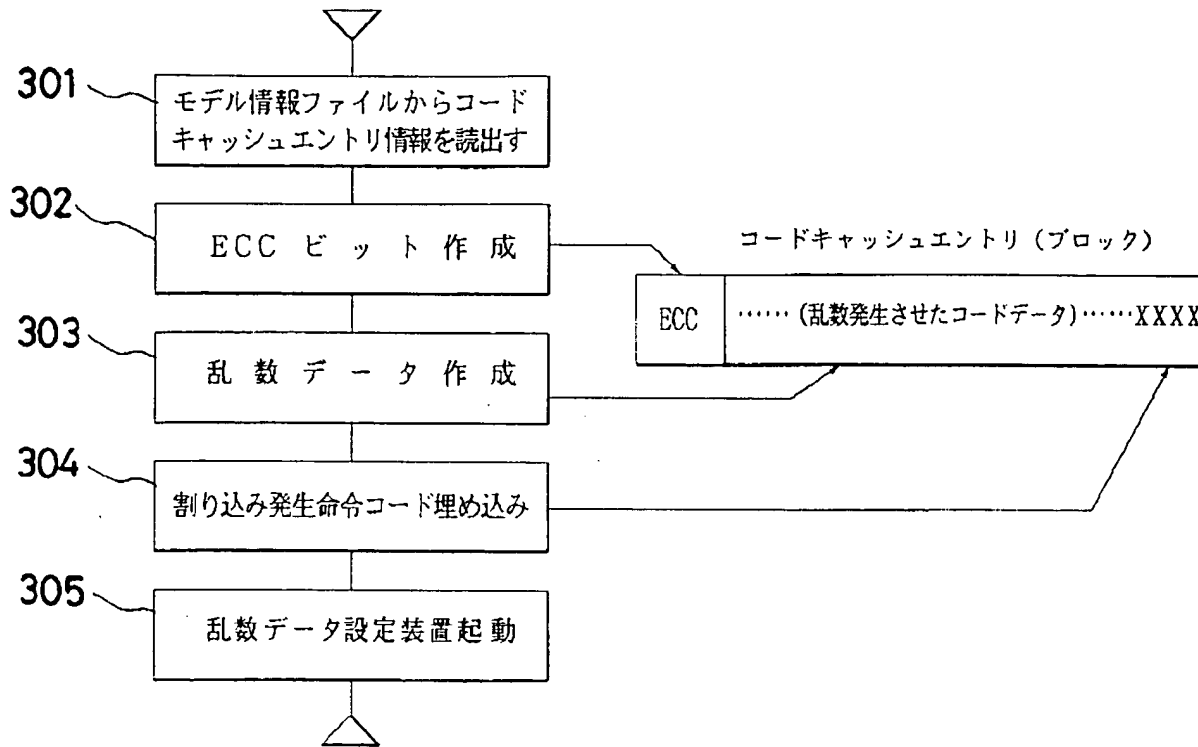
[Drawing 2]

図 2



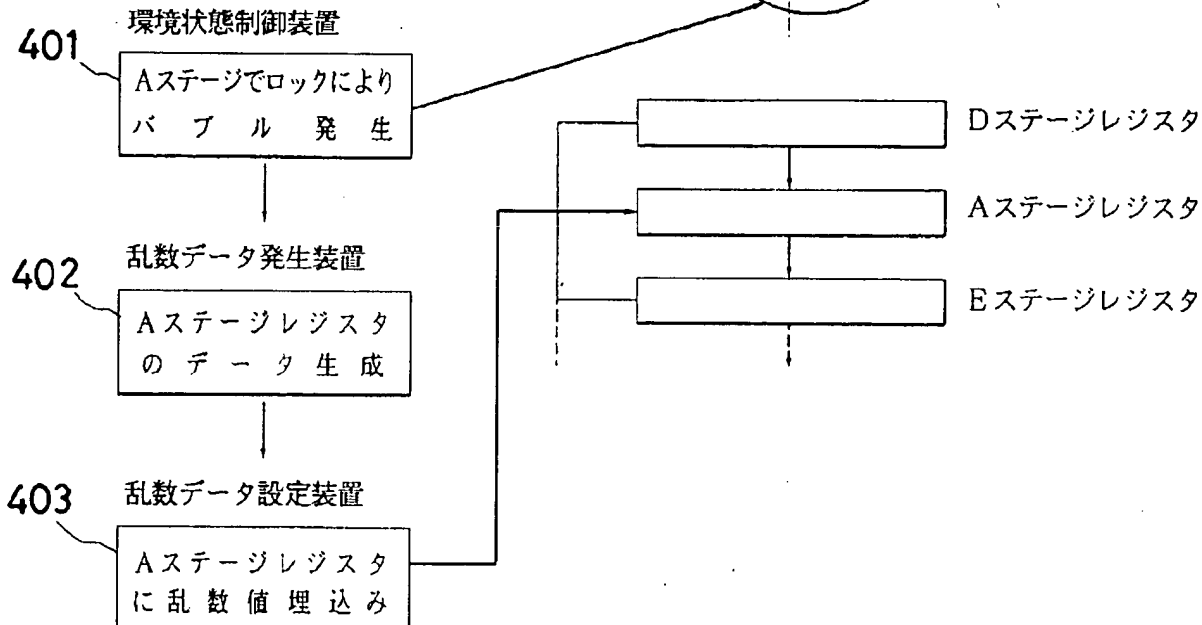
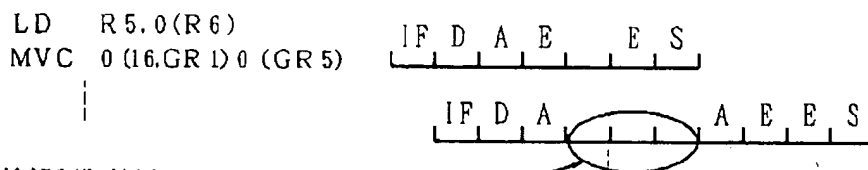
[Drawing 3]

図 3



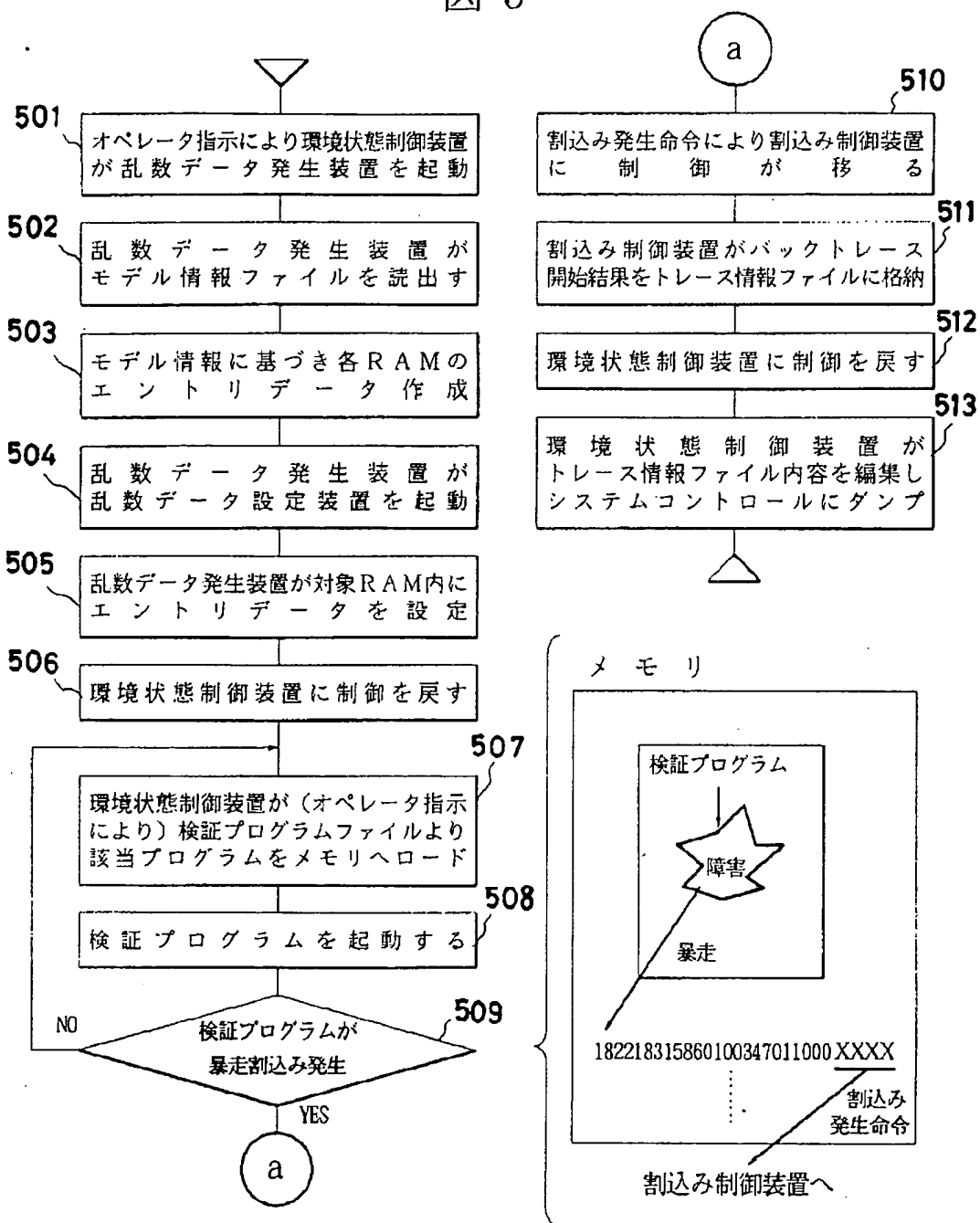
[Drawing 4]

図 4



[Drawing 5]

図 5



[Translation done.]

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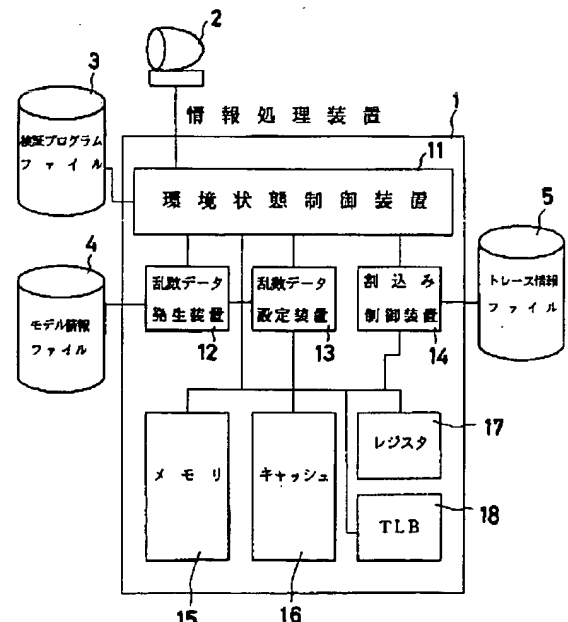
(54)【発明の名称】 論理検証環境制御装置

(57)【要約】

【目的】 論理シミュレーション装置または情報処理装置に対する論理検証の際、実使用環境と等価な環境設定によって高精度な論理検証を実現すると共に、障害発生時の障害解析を容易に実現できる論理検証環境制御装置を提供する。

【構成】 論理検証の対象となる情報処理装置1、システムコンソール2、検証プログラムファイル3、モデル情報ファイル4、トレース情報ファイル5などから構成され、情報処理装置1には、環境状態制御装置11、乱数データを埋め込んだエントリの乱数データ発生装置12、エントリの乱数データ設定装置13、プログラムの暴走時にバクトレースを実施する割込み制御装置14、メモリ15、キャッシュ16、レジスタ17およびTLB18が備えられている。そして、論理検証プログラムの実行以前に情報処理装置1内資源が初期設定される。

図 1



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【特許請求の範囲】

【請求項1】 ゲートレベルの回路シミュレーションを実施する論理シミュレーション装置、または情報処理装置に対する論理検証環境制御装置であって、ランダムな乱数データを作成する乱数データ発生装置と、該乱数データを前記論理シミュレーション装置または情報処理装置内のデータ格納手段に設定する乱数データ設定装置と、前記論理シミュレーション装置または情報処理装置内で発生した割込みを制御する割込み制御装置と、オペレータインタフェース制御、前記論理シミュレーション装置または情報処理装置の制御、およびトレース情報の編集出力を実施する環境状態制御装置とを備え、論理検証プログラムの実行以前に、前記論理シミュレーション装置または情報処理装置内資源を実使用環境と等価な環境に設定することを特徴とする論理検証環境制御装置。

【請求項2】 前記データ格納手段のエントリデータを作成する際、該エントリデータを前記論理シミュレーション装置または情報処理装置の論理フォーマットに整合するように作成し、該エントリデータに前記乱数データを埋め込むことを特徴とする請求項1記載の論理検証環境制御装置。

【請求項3】 前記乱数データ発生装置が、特定の前記論理シミュレーション装置または情報処理装置上で動作する命令およびアドレスデータを発生することを特徴とする請求項1記載の論理検証環境制御装置。

【請求項4】 前記乱数データ発生装置が、前記データ格納手段に設定する乱数データを作成する際、数十から数百バイトピッチに割込み発生命令オペランドコードを発生することを特徴とする請求項1記載の論理検証環境制御装置。

【請求項5】 前記割込み処理装置が、割込み発生アドレスおよび割込み種別をチェックし、割込み発生アドレスからトレース可能な範囲でバックトレースを実施してトレース情報をセーブすることを特徴とする請求項1記載の論理検証環境制御装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、論理シミュレーション装置または情報処理装置などを構成する論理回路の論理検証技術に関し、特に複雑で規模の大きな論理回路の高精度な検証に好適な論理検証環境制御装置に適用して有効な技術に関する。

【0002】

【従来の技術】たとえば、従来の論理検証方式では、情報処理装置がパワーオンリセット後の情報処理装置内メモリ、キャッシュ、レジスタ、TLB (Table Look-aside Buffer) などがイニシャライズ (ゼロクリア) された状態、またはそれと類似な状態から論理検証プログラムをメモリロード、または検証プログラムデータを該当するメモリ、キャッシュ、レジスタなどに設定し、実行

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することで実現されていた。

【0003】なお、関連するこの種の従来技術として、たとえば特開平3-250225号公報に記載される技術などが挙げられる。

【0004】

【発明が解決しようとする課題】ところが、前記のような従来技術において、実際の情報処理装置の使用環境では、オペレーティングシステムを始めとして、ユーザアプリケーションジョブも含めて複数のジョブが非同期に実行されており、このような状況下では、情報処理装置内メモリ、キャッシュ、レジスタ、TLBなどの内容は対象プログラムから見てランダムなデータが配されている。

【0005】この場合に、情報処理装置がパワーオンリセット後の状態、またはそれと類似な状態より、使用環境のように情報処理装置内資源にランダムなデータが配され、複数の条件が重なり合う状況下では、もし情報処理装置に論理不良が内在している場合に誤動作を起こして論理不良が発覚し易いことが知られている。

【0006】従って、従来技術の論理検証技術においては、実使用環境と等価な情報処理装置内環境での論理検証が実施されていないために、検証精度が低いという問題があった。

【0007】そこで、本発明の目的は、オペレーションシステム下で実際のユーザプログラムが実行されるのと等価な環境を構築し、この実使用環境と等価な環境下での論理検証を可能とすることによって高精度な論理検証を実現することができる論理検証環境制御装置を提供することにある。

【0008】また、本発明の他の目的は、障害発生時に、この障害発生の割込みアドレスからのバックトレースを行い、このトレース情報によって障害解析を容易に実現することができる論理検証環境制御装置を提供することにある。

【0009】本発明の前記ならびにその他の目的と新規な特徴は、本明細書の記述および添付図面から明らかになるであろう。

【0010】

【課題を解決するための手段】本願において開示される発明のうち、代表的なものの概要を簡単に説明すれば、下記のとおりである。

【0011】すなわち、本発明の論理検証環境制御装置は、ゲートレベルの回路シミュレーションを実施する論理シミュレーション装置、または情報処理装置に対する論理検証環境制御装置であって、ランダムな乱数データを作成する乱数データ発生装置と、この乱数データを論理シミュレーション装置または情報処理装置内のデータ格納手段、たとえばメモリ、キャッシュ、TLB、レジスタなどに設定する乱数データ設定装置と、論理シミュレーション装置または情報処理装置内で発生した割込み

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を制御する割込み制御装置と、オペレータインタフェース制御、論理シミュレーション装置または情報処理装置の制御、およびトレース情報の編集出力を実施する環境状態制御装置とを備えるものである。

【0012】この場合に、前記データ格納手段のエントリデータを作成する際、このエントリデータ、たとえばパリティビット、ハミングコード(ECC: Error Correcting Code)などを論理シミュレーション装置または情報処理装置の論理フォーマットに整合するように作成し、エントリデータに乱数データを埋め込むようにした10

【0013】また、前記乱数データ発生装置が、特定の論理シミュレーション装置または情報処理装置上で動作する命令およびアドレスデータ、たとえば機械語命令コード、オペランドアドレスデータなどを発生するようにしたものである。

【0014】さらに、前記乱数データ発生装置が、データ格納手段に設定する乱数データを作成する際、数十から数百バイトピッチに割込み発生命令オペランドコードを発生するようにしたものである。

【0015】また、前記割込み処理装置が、割込み発生アドレスおよび割込み種別をチェックし、割込み発生アドレスからトレース可能な範囲でバックトレースを実施してトレース情報をセーブするようにしたものである。

【0016】

【作用】前記した論理検証環境制御装置によれば、乱数データ発生装置、乱数データ設定装置、割込み制御装置および環境状態制御装置が備えられることにより、たとえばパリティビットおよびハミングコードなどのエントリデータを論理フォーマットに整合するように作成し、このエントリデータに乱数データ発生装置による乱数データを埋め込み、このエントリデータを乱数データ設定装置によりデータ格納手段に設定し、論理検証プログラムの実行以前に、論理シミュレーション装置または情報処理装置内資源を実使用環境と等価な環境に設定することができる。

【0017】また、特定の機械語命令コードおよびオペランドアドレスデータなどの発生により、特定の論理シミュレーション装置または情報処理装置上でのみ動作させることができる。

【0018】さらに、数十から数百バイトピッチに割込み発生命令オペランドコードが発生され、割込み発生アドレスおよび割込み種別がチェックされることにより、割込み発生アドレスからトレース可能な範囲でバックトレースを実施し、このトレース情報をセーブすることができる。

【0019】これにより、オペレーションシステム下で実際のユーザプログラムが実行されるのと等価な装置環境を構築し、この環境下での論理検証を可能とすることによって高精度な論理検証を実現すると共に、障害発生

時に障害解析を容易に実現することができる。

【0020】

【実施例】図1は本発明の一実施例である論理検証環境制御装置を示すブロック図、図2は本実施例の論理検証環境制御装置における乱数データ発生装置および乱数データ設定装置の処理を示す説明図、図3は本実施例において、乱数データ発生装置のキャッシュデータ作成処理を示すフローチャート図、図4は乱数データ発生装置および乱数データ設定装置のハードウェアレジスタのデータ作成/設定処理を示すフローチャート図、図5は本実施例の論理検証環境制御装置を用いた論理検証処理を示すフローチャート図である。

【0021】まず、図1により本実施例の論理検証環境制御装置の構成を説明する。

【0022】本実施例の論理検証環境制御装置は、たとえば情報処理装置に対する論理検証環境制御装置とされ、対象となる情報処理装置1、システムコンソール2、実行形式の論理検証プログラムが格納されている検証プログラムファイル3、各RAMのサイズおよびエントリなどが格納されているモデル情報ファイル4、バックトレース情報を格納するためのトレース情報ファイル5などから構成されている。

【0023】対象となる情報処理装置1には、オペレータインタフェース制御、各装置の制御およびトレース情報の編集出力処理を実施する環境状態制御装置11、情報処理装置の対象RAMに乱数データを埋め込み、エントリを作成する乱数データ発生装置12、作成されたエントリを対象RAMに設定する乱数データ設定装置13、設定された環境下で実行された論理検証プログラムが論理不良により暴走し、割込み発生命令で割込みが発生した場合、その回復処理およびバックトレースを実施する割込み制御装置14、データ格納手段の対象RAMとしてのメモリ15、キャッシュ16、レジスタ17およびTLB18などが備えられている。

【0024】次に、本実施例の作用について説明する。

【0025】始めに、図2により乱数データ発生装置12および乱数データ設定装置13の処理を説明する。

【0026】乱数データ発生装置12は、環境状態制御装置11から起動されると、まずモデル情報ファイル4から情報処理装置1内の各RAMのメモリ15、キャッシュ16、レジスタ17、TLB18などのサイズ、エントリのフォーマット、ブロック/ラインサイズなどを読み出し、その指示に従って各RAMのエントリデータを生成する。

【0027】この際、TLB18、キャッシュアドレスアレイなどのパリティビットやハミングコード(ECC)などを有するエントリデータの生成時は、情報処理装置1の論理フォーマットに合ったデータをモデル情報ファイル4の指示に従い所定のビット位置に生成する。

【0028】また、メモリ15、キャッシュ16のデータ

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タは指定されたブロック／ラインサイズ単位に乱数データを生成する。この場合、各ブロック／ラインの最後の数バイトに、割込み制御装置14に制御を移すための割込みを発生させる専用の割込み命令の機械語コードを埋め込む。そして、エントリデータを生成後、乱数データ発生装置12は乱数データ設定装置13へ制御を移す。

【0029】さらに、乱数データ設定装置13は、乱数データ発生装置12で生成されたエントリデータを所定のRAMに、モデル情報ファイル4に登録されているサイズ(エントリ数)分のエントリデータを設定する。

【0030】次に、図3のフローにより乱数データ発生装置12のコードキャッシュデータの作成処理を説明する。

【0031】乱数データ発生装置12は、まずモデル情報ファイル4からコードキャッシュエントリ情報を読み出し(ステップ301)、このエントリ情報に従ってハミングコード(ECC)部分を作成し(ステップ302)、次に実際のコードデータを乱数発生させて乱数データを作成する(ステップ303)。

【0032】さらに、コードキャッシュエントリのブロックの最後に割込み発生命令コードを埋め込み(ステップ304)、そして乱数データ設定装置13を起動する(ステップ305)。

【0033】次に、図4のフローによりハードウェア(H/W)レジスタのデータ作成/設定処理を説明する。

【0034】もし、情報処理装置1の先行制御処理に待ちが生じた場合、つまりLD(メモリからレジスタへのデータ転送)命令により確定するレジスタの内容を、次のMVC(メモリからメモリへのデータ転送)命令が、メモリアドレスとして使用している場合、このLD命令の処理が終了するまでMVC命令のアドレス計算処理ができないために処理に待ちが生じてレジスタが一旦空き状態となる。

【0035】このような状態が発生した場合、環境状態制御装置11がたとえばAステージレジスタでロックによりバブルが発生したことを感知し(ステップ401)、乱数データ発生装置12に対してデータの生成指示を出す。

【0036】さらに、乱数データ発生装置12は、Aステージレジスタのデータを作成し(ステップ402)、乱数データ設定装置13に対してデータの設定指示を出す。

【0037】そして、乱数データ設定装置13は、Aステージレジスタに生成された乱数値によるデータを埋め込む(ステップ403)。

【0038】次に、図5により本実施例の論理検証環境制御装置を用いた論理検証の処理フローを説明する。

【0039】まず、オペレータの指示により、環境状態制御装置11が乱数データ発生装置12を起動する(ス

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テップ501)。そして、乱数データ発生装置12は、モデル情報ファイル4から各RAMのエントリデータの生成情報を読み出し(ステップ502)、このモデル情報に従って各RAMのエントリデータを作成する(ステップ503)。

【0040】さらに、乱数データ発生装置12が乱数データ設定装置13を起動し(ステップ504)、乱数データ設定装置13がモデル情報ファイル4に登録されている各RAMのサイズに従って、作成されたエントリデータを各RAMに初期設定する(ステップ505)。

【0041】そして、初期設定終了後、環境状態制御装置11に制御を戻し(ステップ506)、この環境状態制御装置11がオペレータの指示により該当する論理検証プログラムをメモリ15にロードし(ステップ507)、この論理検証プログラムを起動する(ステップ508)。

【0042】さらに、論理検証プログラムの実行が正常に終了すれば、環境状態制御装置11がオペレータに対して次の処理要求をする処理を繰り返す。

【0043】もし、論理検証プログラムが暴走した場合(ステップ509)、割込み発生命令によって制御が割込み制御装置14に移り(ステップ510)、バックトレース可能なアドレスまで遡ってトレース情報を収集してトレース情報ファイル5に登録する(ステップ511)。

【0044】そして、環境状態制御装置11に制御が戻り(ステップ512)、環境状態制御装置11がトレース情報を編集し、このトレース情報をシステムコンソール2に出力し(ステップ513)、これによって暴走原因の解析が行われる。

【0045】従って、本実施例の論理検証環境制御装置によれば、環境状態制御装置11、乱数データ発生装置12、乱数データ設定装置13および割込み制御装置14が備えられ、エントリデータに乱数データを埋め込み、このエントリデータを情報処理装置1内の各RAMのメモリ15、キャッシュ16、レジスタ17およびTLB18などに初期設定することにより、論理検証の対象となる情報処理装置1内のデータ格納手段を、実際のユーザプログラムが実行されるのと等しい環境に設定することができ、これによって実使用環境下での論理検証が可能となる。

【0046】また、論理検証プログラムが暴走した場合にも、割込み発生命令によって割込み発生アドレスからバックトレースが可能となるので、このトレース情報によって障害発生時の障害解析を容易に行うことができる。

【0047】以上、本発明者によってなされた発明を実施例に基づき具体的に説明したが、本発明は前記実施例に限定されるものではなく、その要旨を逸脱しない範囲で種々変更可能であることはいうまでもない。

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【0048】たとえば、本実施例の論理検証環境制御装置については、論理検証の対象が情報処理装置1である場合について説明したが、本発明は前記実施例に限定されるものではなく、ゲートレベルの回路シミュレーションを実施する論理シミュレーション装置などについても広く適用可能である。

【0049】また、乱数データ発生装置12としては、たとえば特定の情報処理装置上で動作するような機械語命令コードおよびオペランドアドレスデータなどを発生するようにしてもよい。

【0050】

【発明の効果】本願において開示される発明のうち、代表的なものによって得られる効果を簡単に説明すれば、下記のとおりである。

【0051】(1).乱数データ発生装置、乱数データ設定装置、割込み制御装置および環境状態制御装置を備えることにより、エントリデータを論理フォーマットに整合するように作成し、このエントリデータに乱数データを埋め込んでデータ格納手段に設定することができるので、論理検証プログラムの実行以前に、論理シミュレーション装置または情報処理装置内資源を実使用環境と等価な環境に構築することができる。

【0052】(2).乱数データ発生装置が特定の命令およびアドレスデータを発生することにより、特定の論理シミュレーション装置または情報処理装置上でのみ動作させることができる。

【0053】(3).乱数データ発生装置が数十から数百バイトピッチに割込み発生命令オペランドコードを発生し、この割込み発生命令オペランドコードの割込み発生アドレスから割込み処理装置がバックトレースを実施してトレース情報をセーブすることができるので、障害が発生した場合の障害解析を容易に行うことができる。

【0054】(4).前記(1)～(3)により、論理検証対象

となる論理シミュレーション装置または情報処理装置に対して、実使用環境下での論理検証を可能とすることによって高精度な論理検証を実現すると共に、障害発生時の障害解析が容易に可能とされる論理検証環境制御装置を得ることができる。

【図面の簡単な説明】

【図1】本発明の一実施例である論理検証環境制御装置を示すブロック図である。

【図2】本実施例の論理検証環境制御装置における乱数データ発生装置および乱数データ設定装置の処理を示す説明図である。

【図3】本実施例において、乱数データ発生装置のキャッシュデータ作成処理を示すフローチャート図である。

【図4】本実施例において、乱数データ発生装置および乱数データ設定装置のハードウェアレジスタのデータ作成/設定処理を示すフローチャート図である。

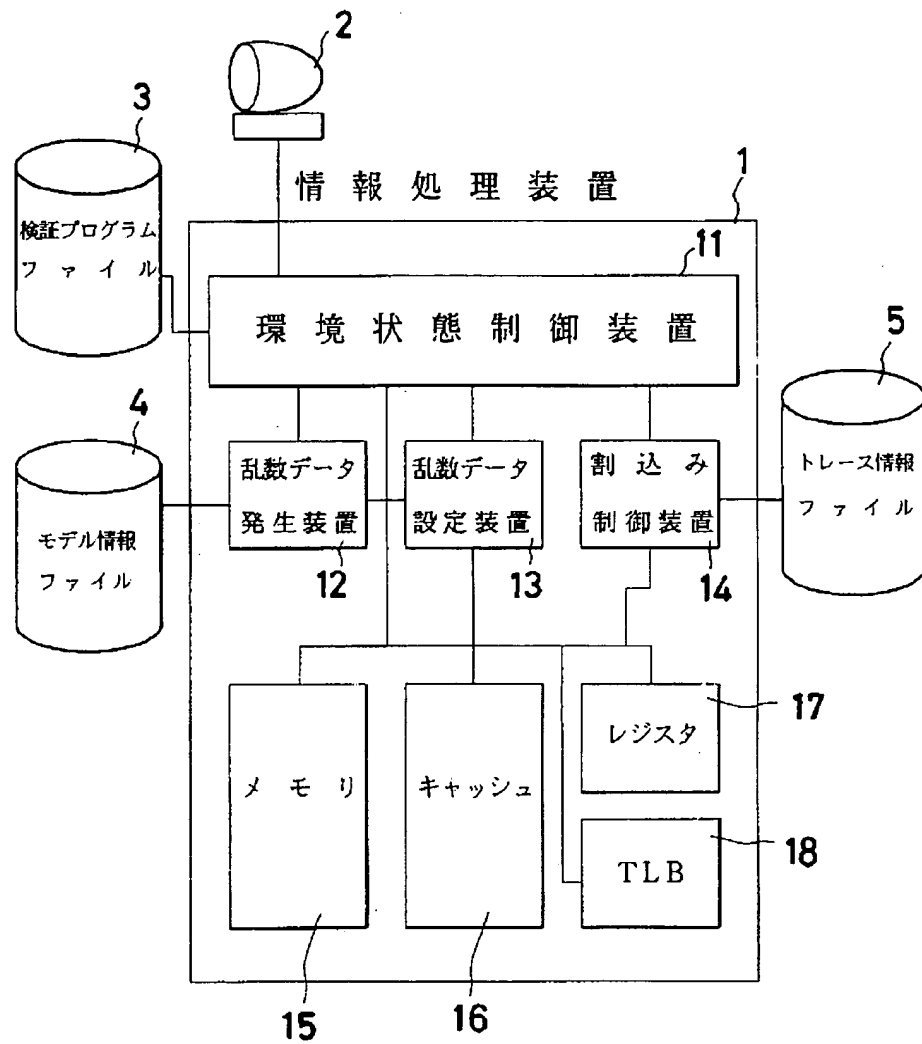
【図5】本実施例の論理検証環境制御装置を用いた論理検証処理を示すフローチャート図である。

【符号の説明】

- 1 情報処理装置
- 2 システムコンソール
- 3 検証プログラムファイル
- 4 モデル情報ファイル
- 5 トレース情報ファイル
- 11 環境状態制御装置
- 12 乱数データ発生装置
- 13 乱数データ設定装置
- 14 割込み制御装置
- 15 メモリ
- 16 キャッシュ
- 17 レジスタ
- 18 TLB

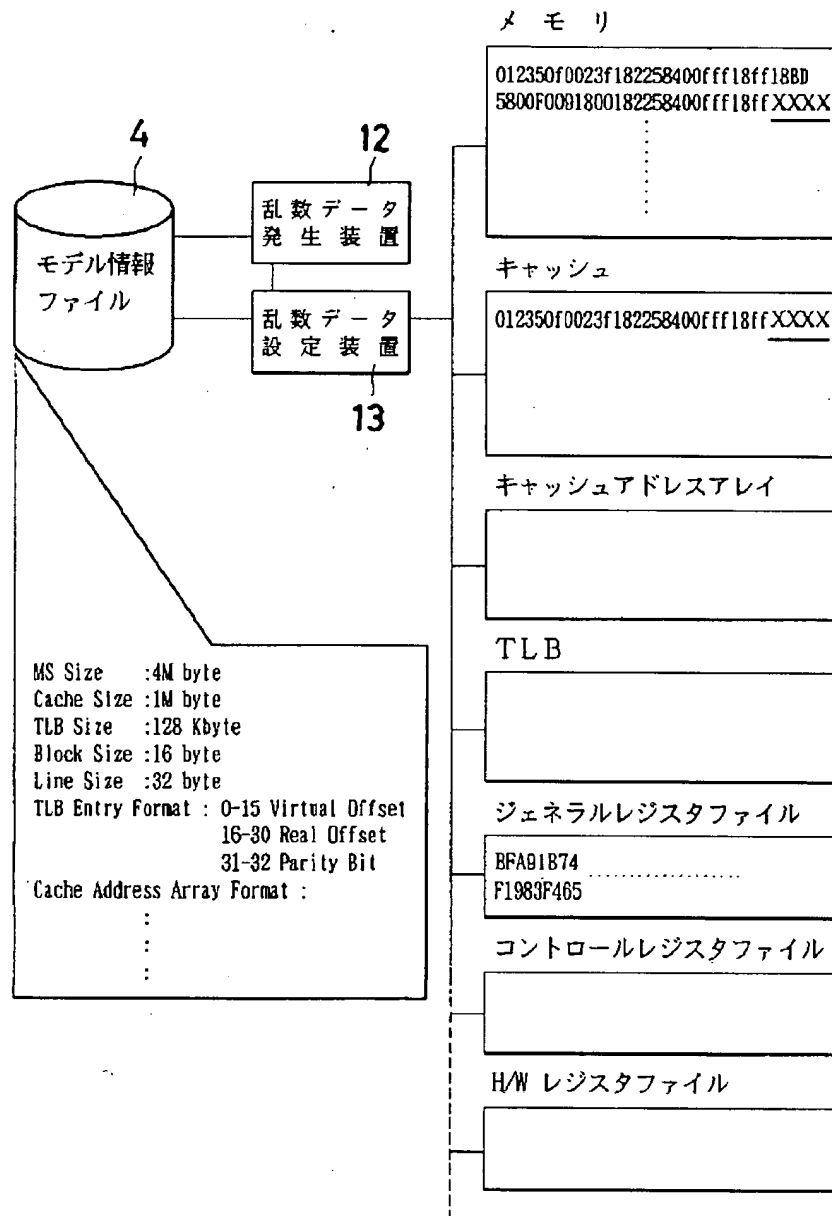
【図1】

図 1



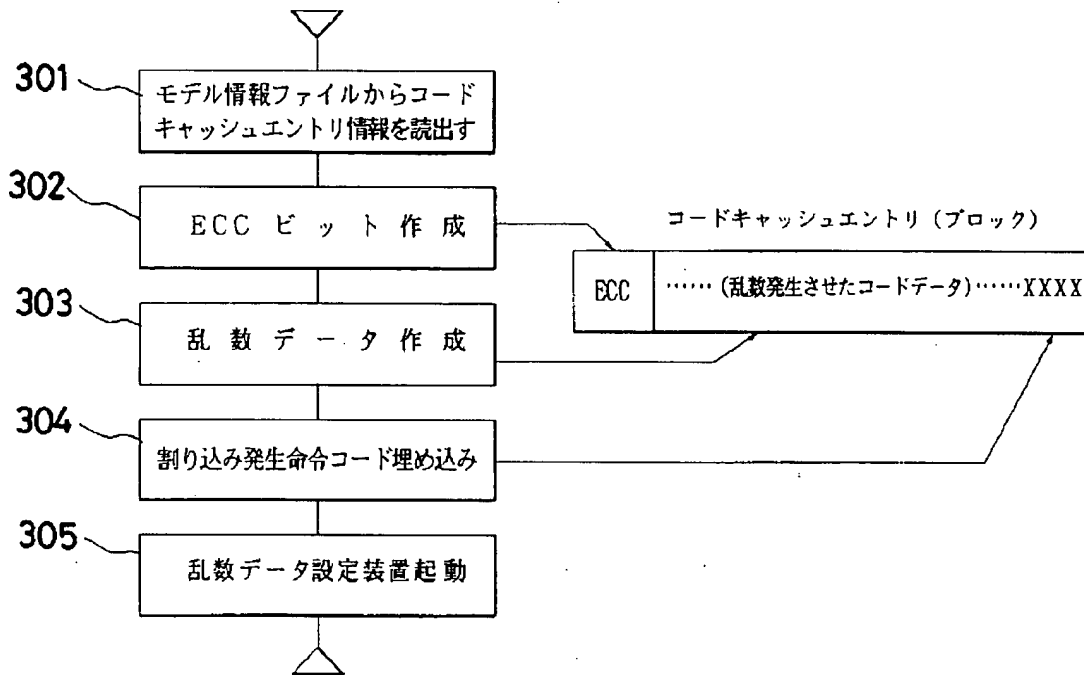
【図2】

図 2



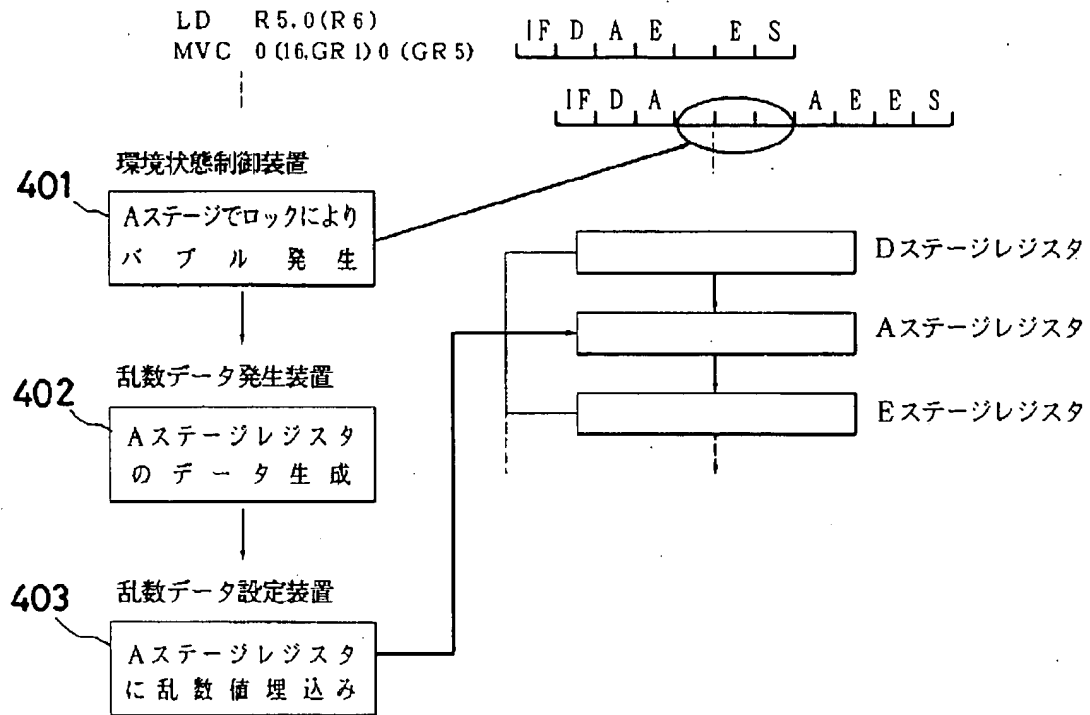
【図3】

図 3



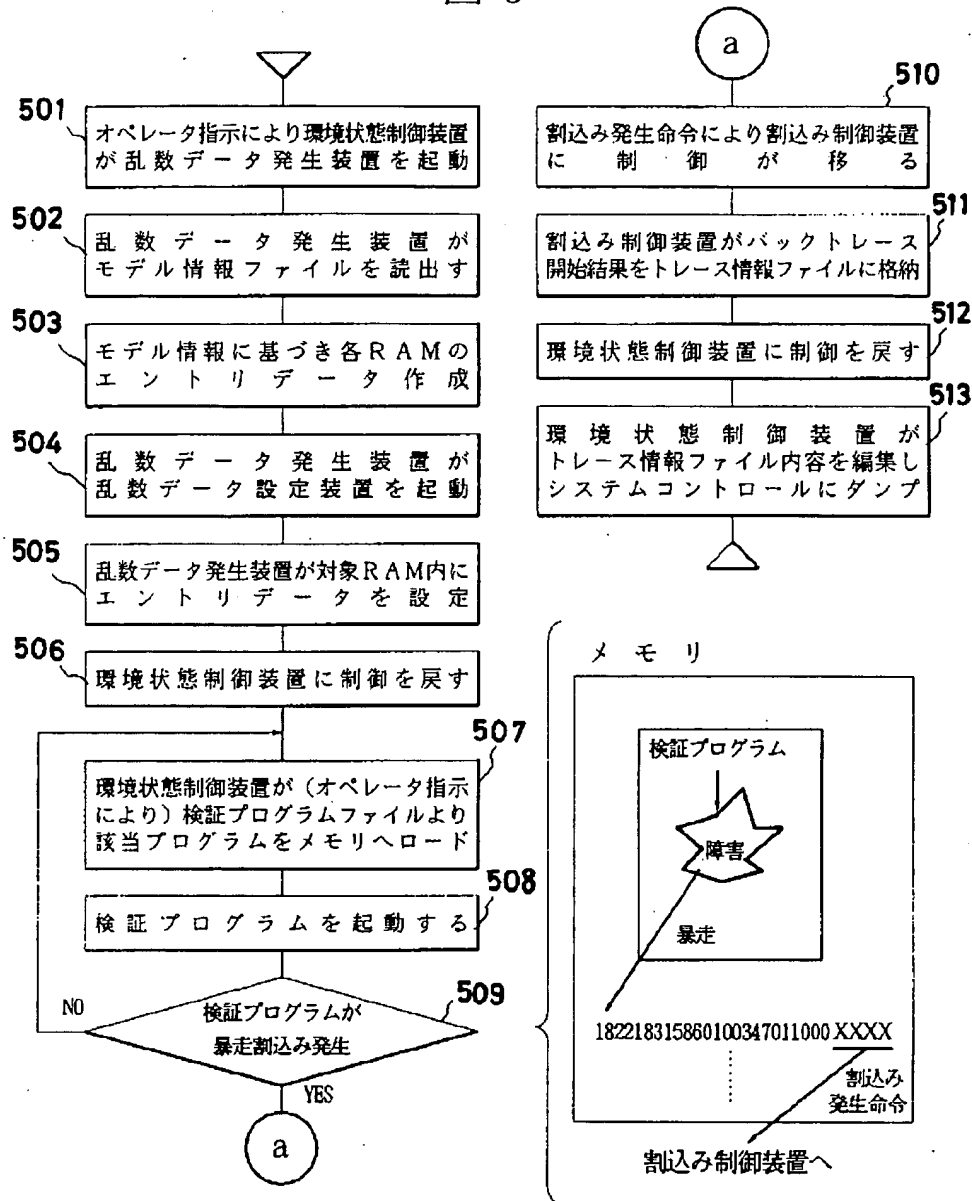
【図4】

図 4



【図5】

図 5



Index of Claims



Application/Control No.

09/725,737

Examiner

Thong H. Vu

Applicant(s)/Patent under
Reexamination

GIACOMINI ET AL.

Art Unit

2142

✓	Rejected
=	Allowed

—	(Through numeral) Cancelled
+	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim		Date						
Final	Original	6/22/05						
	1	✓						
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Search Notes

Application/Control No.

09/725,737

Examiner

Thong H. Vu

Applicant(s)/Patent under
Reexamination

GIACOMINI ET AL.

Art Unit

2142

SEARCHED

Class	Subclass	Date	Examiner
709	219,217	6/21/2005	TVU
714	728,769,8	6/21/2005	TVU
711	131,5,163	6/21/2005	TVU
707	3	6/21/2005	TVU
365	189	6/21/2005	TVU
345	419	6/21/2005	TVU

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
EAST,NPL,IEEE	6/22/2005	TVU
consulted R.Harrell	6/21/2005	TVU

	L #	Hits	Search Text
1	L1	14140	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 cach\$3 same populat\$3 and (bandwidth resource) and integer
2	L2	14037	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 cach\$3 same populat\$3 and (bandwidth resource) same integer
3	L3	14006	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 cach\$3 same populat\$3 same (bandwidth resource) same integer
4	L4	1	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 and cach\$3 same populat\$3 same (bandwidth resource) same integer
5	L5	6	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 and cach\$3 same populat\$3 and (bandwidth resource) same integer
6	L6	58	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 and cach\$3 same populat\$3 and (bandwidth resource) and integer
7	L7	2	((parallel concurrent\$2 two) near5 (request input thread task) multitask\$3 multithread multi) same cach\$3 and cach\$3 same populat\$3 and (bandwidth resource) and integer adj3 greater
8	L8	5	((parallel concurrent\$2 two) near5 (request input thread task) multitask\$3 multithread multi) and cach\$3 same populat\$3 and (bandwidth resource) and integer adj3 greater



US006434500B1

(12) **United States Patent**
Boehne et al.

(10) **Patent No.:** **US 6,434,500 B1**
(45) Date of Patent: **Aug. 13, 2002**

(54) **INTERFACE FOR MANAGING TEST DEFINITIONS**

(75) **Inventors:** **Scott D. Boehne, Savage; Todd A. Gates, Lakeville; Walt H. Sigtermans, Apple Valley; Patrick Dobrowski, Burnsville, all of MN (US)**

(73) **Assignee:** **Rosemount Inc., Eden Prairie, MN (US)**

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(22) **Filed:** **Oct. 18, 1999**

(51) **Int. Cl.⁷** **G01R 27/28; G01R 31/00; G01R 31/14**

(52) **U.S. Cl.** **702/120; 345/967**

(58) **Field of Search** **702/57-59, 67, 702/68, 108, 117, 118, 119, 120, 121, 122, 123, 182-185; 700/83, 86, 87; 345/769, 839, 846, 835, 771, 773, 967**

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* cited by examiner

Primary Examiner—John S. Hilten

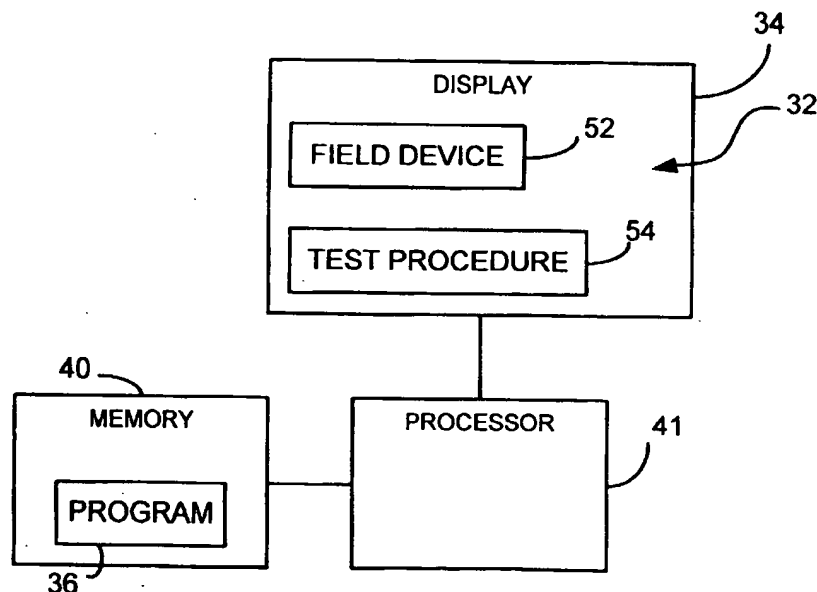
Assistant Examiner—Demetrius Pretlow

(74) *Attorney, Agent, or Firm*—Westman, Champlin & Kelly

(57) **ABSTRACT**

A method and apparatus for graphically managing test definitions of a field management system is disclosed. The method and apparatus establish a graphical user interface that is simple to use, efficient, user friendly, and displays test definition related information in an organized manner that can be easily understood by a user. The interface includes a device icon and a test procedure icon presented on a display. The device icon identifies testing data of a field device and the test procedure icon identifies a test procedure that has device testing parameters corresponding to the testing data. A test definition for the field device is created when the device icon and the test procedure icon are associated with each other.

29 Claims, 8 Drawing Sheets





US006219829B1

(12) **United States Patent**
Sivakumar et al.

(10) Patent No.: **US 6,219,829 B1**
(45) Date of Patent: **Apr. 17, 2001**

(54) **COMPUTER SOFTWARE TESTING MANAGEMENT**

- (75) Inventors: **Arunachallam Sivakumar**, Woburn;
Stephen L. Kaufer, Newton, both of
MA (US)
- (73) Assignee: **Compuware Corporation**, Farmington
Hills, MI (US)
- (*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/500,047**

(22) Filed: **Feb. 8, 2000**

Related U.S. Application Data

- (63) Continuation of application No. 08/838,090, filed on Apr.
15, 1997, now Pat. No. 6,031,990.
- (51) Int. Cl.⁷ **G06F 11/00**
- (52) U.S. Cl. **717/4; 717/8**
- (58) Field of Search **717/8, 4**

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and 11.

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Primary Examiner—Mark R. Powell

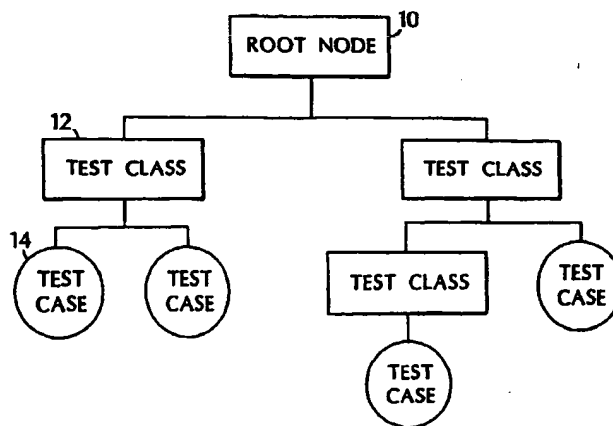
Assistant Examiner—John Q. Chavis

(74) *Attorney, Agent, or Firm*—Fish & Richardson P.C.

(57) **ABSTRACT**

A test management system is provided having high flexibility of test structuring capabilities, and fine-grained control over how tests are executed. The test management system is extensible; i.e., it can integrate with modern testing tools without requiring a modification of the system itself. More specifically, the test management system uses concepts such as encapsulation and inheritance in order to provide powerful test structuring and test execution capabilities and a framework for integrating with multiple "point tools" that create test cases or help analyze the state of a software program. As is the case with object-oriented software, the test management system is very extensible and new point tools can easily be integrated with the system. The test management system also allows reuse of "rules" specified at different levels in the test structure.

17 Claims, 8 Drawing Sheets

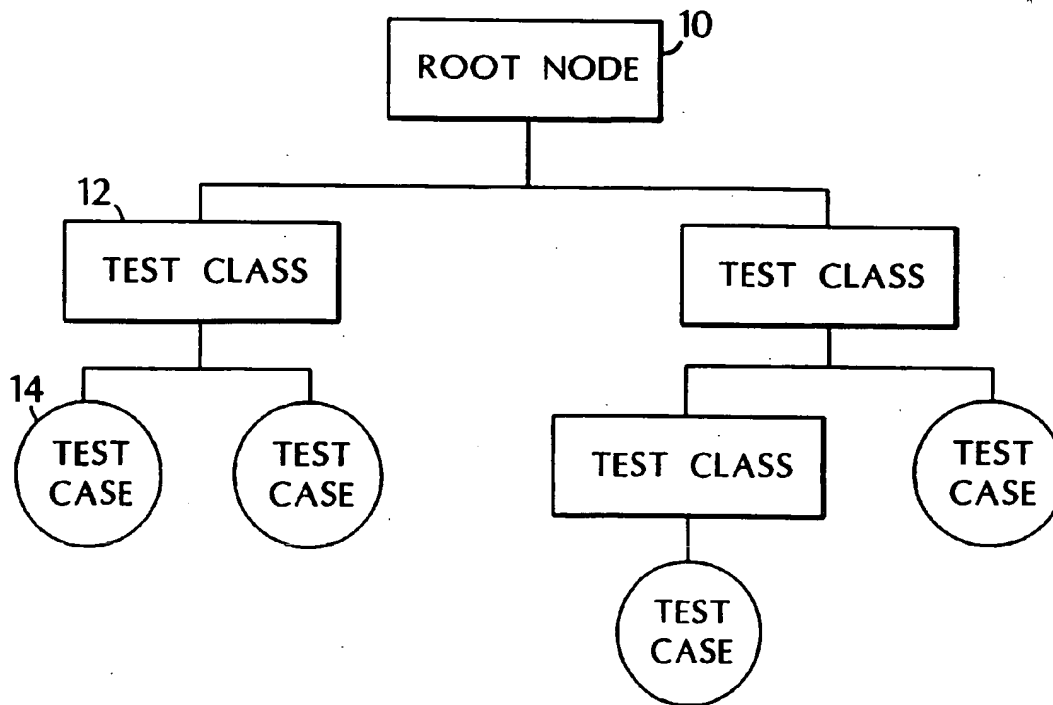




US006031990A

United States Patent [19]**Sivakumar et al.**[11] **Patent Number:** **6,031,990**[45] **Date of Patent:** **Feb. 29, 2000**[54] **COMPUTER SOFTWARE TESTING
MANAGEMENT**5,715,461 2/1998 Yoshitomi 395/710
5,794,043 8/1998 Kolb 395/704[75] **Inventors:** **Arunachallam Sivakumar**, Woburn;
Stephen L. Kaufer, Newton, both of
Mass.*Primary Examiner*—Tariq R. Hafiz
Assistant Examiner—John Q. Chavis
Attorney, Agent, or Firm—Fish & Richardson PC[73] **Assignee:** **Compuware Corporation**, Farmington
Hills, Mich.[57] **ABSTRACT**[21] **Appl. No.:** **08/838,090**[22] **Filed:** **Apr. 15, 1997**[51] **Int. Cl.⁷** **G06F 11/00**[52] **U.S. Cl.** **395/704**[58] **Field of Search** **395/704**[56] **References Cited****U.S. PATENT DOCUMENTS**5,313,616 5/1994 Cline et al. 395/704
5,357,452 10/1994 Pio-di-Savoia et al. 702/108
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A test management system is provided having high flexibility of test structuring capabilities, and fine-grained control over how tests are executed. The test management system is extensible; i.e., it can integrate with modern testing tools without requiring a modification of the system itself. More specifically, the test management system uses concepts such as encapsulation and inheritance in order to provide powerful test structuring and test execution capabilities and a framework for integrating with multiple "point tools" that create test cases or help analyze the state of a software program. As is the case with object-oriented software, the test management system is very extensible and new point tools can easily be integrated with the system. The test management system also allows reuse of "rules" specified at different levels in the test structure.

16 Claims, 8 Drawing Sheets



US005991537A

United States Patent [19]

McKeon et al.

[11] Patent Number: 5,991,537
[45] Date of Patent: Nov. 23, 1999

[54] VXI TEST EXECUTIVE

[75] Inventors: **Brian T. McKeon; Mark C. Larson,**
both of Newport; **Douglas H. Sherman,**
Cranston, all of R.I.

[73] Assignee: **The United States of America as
represented by the Secretary of the
Navy, Washington, D.C.**

[21] Appl. No.: 08/969,530

[22] Filed: Sep. 16, 1997

[51] Int. Cl.⁶ G06F 9/45

[52] U.S. Cl. 395/704; 395/704; 395/705

[58] Field of Search 395/701, 703,
395/704, 700, 705; 702/120; 345/349, 333;
706/47; 714/28

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Primary Examiner—Tariq R. Hafiz

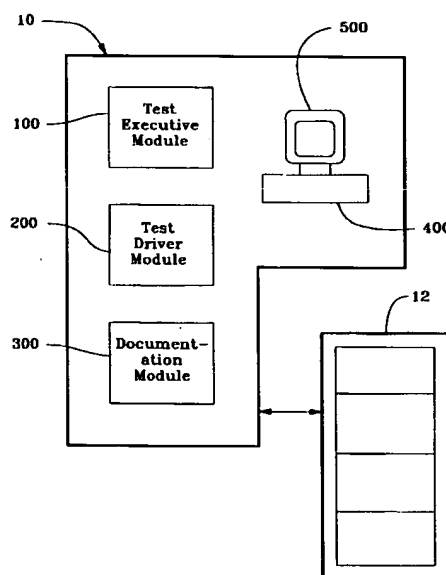
Assistant Examiner—Anil Khatri

Attorney, Agent, or Firm—Michael J. McGowan; Robert W. Gauthier; Prithvi C. Lall

[57] ABSTRACT

A system is provided for developing program test sets with test hardware conforming to well known test industry standards, such as VXI, VME and GPIB standards. The system has a computer with a display console. After initialization and password checks, the console displays a front panel from which a user chooses the instruments, switches, connections, inputs, outputs, etc. which make up the program test set. As each choice is made, the system generates test script corresponding to the choice. The system then uses the test script, or macro, to generate the graphical representation of the component and its connections on the display. The graphical displays are standardized for each functional component or operation of a program test set, as well as being standardized between program test sets. The macros further allow a program test set to be more efficiently developed by coding macros rather than by developing graphical displays. The combined macros for the entire test set provide written documentation for the program test set, allowing for easy configuration management of the program test set.

19 Claims, 2 Drawing Sheets



	L #	Hits	Search Text
1	L1	13104	(occasion\$4 random\$2 intermittent\$2) same cache
2	L2	819	(occasion\$4 random\$2 intermittent\$2) same cache.ab.
3	L3	0	(occasion\$4 random\$2 intermittent\$2) same interger same cache.ab.
4	L4	0	(occasion\$4 random\$2 intermittent\$2) same interger same cache
5	L5	2749	(occasion\$4 random\$2 intermittent\$2) same (number value interger) same cache
6	L6	154	(occasion\$4 random\$2 intermittent\$2) same (number value interger) same cache.ab.
7	L7	18	6 and (network\$3 lan wan internet isdn atm)
8	L9	2	8 and (network\$3 lan wan internet isdn atm)
9	L11	47	(occasion\$4 random\$2 intermittent\$2) same (number value interger) same cache same (resource bandwidth) same (plurality multiple two more different) adj3 (resources server database port link channel buffer queue device unit source storage memory cach\$3)
10	L12	12	11 and (network\$3 lan wan internet isdn atm)
11	L13	39	11 and (network\$3 lan wan internet isdn atm)
12	L14	39	11 and (network\$3 lan wan internet isdn atm) and (time duration delay relay elapse shcedul\$3 interval period\$6)
13	L15	10	11 and (network\$3 lan wan internet isdn atm) and (time duration delay relay elapse shcedul\$3 interval period\$6) and populat\$3
14	L16	10	11 and (network\$3 lan wan internet isdn atm) and (time duration delay relay elapse schedul\$3 interval period\$6) and populat\$3
15	L17	640	cache with populat\$3
16	L18	216	cache with populat\$3 same (value number integer)

	L #	Hits	Search Text
17	L19	162	18 and (time duration delay relay elapse schedul\$3 interval period\$6) and (network\$3 lan wan internet isdn atm)
18	L20	144	18 and (time duration delay relay elapse schedul\$3 interval period\$6) and (network\$3 lan wan internet isdn atm) and request\$3
19	L21	105	18 and (time duration delay relay elapse schedul\$3 interval period\$6) and (network\$3 lan wan internet isdn atm) and request\$3 and (based accord\$3 associate\$1 correspond\$4) with (value number integer)
20	L22	0	21 and duration and elapse and calendr\$4
21	L23	1	21 and calendr\$4
22	L24	0	21 and duration and elapse
23	L25	4	cache with populat\$3 with resource same (value number integer)
24	L26	216	cache with populat\$3 with (bandwidth channel port memory cache storage resource) same (value number integer)
25	L8	6	(occasion\$4 random\$2 intermittent\$2) same (number value interger) same cache same (resource bandwidth).ab.
26	L27	3	(occasion\$4 random\$2 intermittent\$2) same cache same (resource bandwidth).ab. and ("2000").ay.
27	L28	2	"20020103974"
28	L30	2	cache with request with resource and integer near5 (one two) and (source resource node client channel oport) adj (id identifier)
29	L31	20	cache same request same (bandwidth resource) and integer near5 (one two) and (source resource node client channel oport) adj2 (id identifier)
30	L32	20	cache same request same (bandwidth resource) and integer near5 (one two) and (source resource node client channel port) adj2 (id identifier)

	L #	Hits	Search Text
31	L33	1	cache same request same populat\$4 same (bandwidth resource) and integer near5 (one two) and (source resource node client channel port) adj2 (id identifier)
32	L34	1	cache same request same populat\$4 same (bandwidth resource) and (value number integer) near5 (one two) and (source resource node client channel port queue buffer) adj2 (id identifier)
33	L35	1	cach\$3 same request same populat\$4 same (bandwidth resource) and (value number integer) near5 (one two) and (source resource node client channel port queue buffer) adj2 (id identifier)
34	L36	2	cach\$3 same request same populat\$4 same (value number integer) near5 (one two) and (source resource node client channel port queue buffer) adj2 (id identifier)
35	L37	8	cach\$3 same request same populat\$4 same (value number integer) near5 (one two)
36	L38	384	cach\$3 same populat\$4 same (value number integer)
37	L39	24	cach\$3 same request same populat\$4 same (value number integer) with (one two)
38	L40	54	cach\$3 same request same populat\$4 same (threshold limit\$5 (value number integer) with (one two))
39	L41	3	cach\$3 with populat\$4 with request\$3 with (threshold limit\$5 (value number integer) with (one two))
40	L42	30	cach\$3 with populat\$4 with (threshold limit\$5 (value number integer) with (one two))
41	L43	72	cach\$3 with populat\$4 with (threshold limit\$5 (value number integer) with (one two) greater less number fix\$3 various)

	L #	Hits	Search Text
42	L44	19	cach\$3 with populat\$4 with ((threshold limit\$5) with(greater less number fix\$3 various) (value number integer) with (one two))

	L #	Hits	Search Text
1	L1	13104	(occasion\$4 random\$2 intermittent\$2) same cache
2	L2	819	(occasion\$4 random\$2 intermittent\$2) same cache.ab.
3	L3	0	(occasion\$4 random\$2 intermittent\$2) same interger same cache.ab.
4	L4	0	(occasion\$4 random\$2 intermittent\$2) same interger same cache
5	L5	2749	(occasion\$4 random\$2 intermittent\$2) same (number value interger) same cache
6	L6	154	(occasion\$4 random\$2 intermittent\$2) same (number value interger) same cache.ab.
7	L7	18	6 and (network\$3 lan wan internet isdn atm)
8	L8	6	(occasion\$4 random\$2 intermittent\$2) same (number value interger) same cache same (resource bandwidth).ab.
9	L9	2	8 and (network\$3 lan wan internet isdn atm)
10	L10	1	"20020103974"

2142
212



**Reply under 37 CFR 1.116 –
Expedited Procedure – Art Unit 2142**

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph
Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

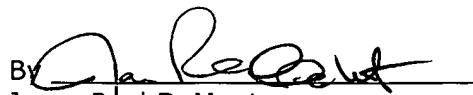
Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

1. Transmittal Letter with Certificate of Mailing – 1 Page (1x)
2. Amendment to the Claims – 4 Pages (1x)
3. Notice of Non-Compliant Amendment – 1 Page (1x)

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

Date 6/14/05

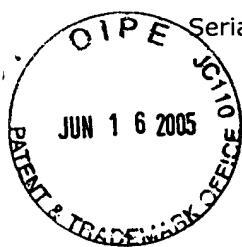
DeMont & Breyer, L.L.C.
Suite 250
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Holmdel, NJ 07733

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on 14 June 2005.

Name of person signing this certificate: Lillian Hayes.

Signature 



The following claims are presented for examination:

1. (Currently Amended) A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein **[at least occasionally]** i is an integer **and is at least occasionally** greater than one.
2. (Original) The method of claim 1 wherein the value of i is invariant.
3. (Original) The method of claim 1 wherein the value of i is based on calendrical time.
4. (Original) The method of claim 1 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .
5. (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on the value of i .
6. (Original) The method of claim 4 wherein the value of i is based on calendrical time.
7. (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.
8. (Currently Amended) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer **and is at least occasionally** greater than one.
9. (Original) The data processing system of claim 8 wherein the value of i is invariant.
10. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.
11. (Original) The data processing system of claim 8 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

12. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

13. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

14. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

15. (Currently Amended) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network; and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer **and is at least occasionally** greater than one.

16. (Original) The method of claim 15 wherein the value of i is invariant.

17. (Original) The method of claim 15 wherein the value of i is based on calendrical time.

18. (Original) The method of claim 15 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

19. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

20. (Original) The method of claim 18 wherein the value of i is based on calendrical time.

21. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

22. (Original) The method of claim 15:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;
wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

23. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

24. (Currently Amended) A first node in a computer network, said first node comprising:

a cache;

at least one receiver for receiving at least one request for a resource; and

a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;

wherein i is an integer **and is at least occasionally** greater than one.

25. (Original) The first node of claim 24 wherein the value of i is invariant.

26. (Original) The first node of claim 24 wherein the value of i is based on calendrical time.

27. (Original) The first node of claim 24 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

28. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

29. (Original) The first node of claim 27 wherein the value of i is based on calendrical time.

30. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

31. (Original) The first node of claim 24:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

32. (Original) The first node of claim 24:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.



UNITED STATES PATENT AND TRADEMARK OFFICE

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Notice of Non-Compliant Amendment (37 CFR 1.121)

The amendment document filed on 12/10/04 is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121. In order for the amendment document to be compliant, correction of the following item(s) is required. **Only the corrected section of the non-compliant amendment document must be resubmitted (in its entirety), e.g., the entire "Amendments to the claims" section of applicant's amendment document must be re-submitted.** 37 CFR 1.121(h).

THE FOLLOWING CHECKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

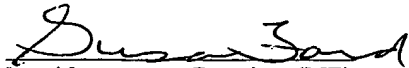
- ☐ 1. Amendments to the specification:
- ☐ A. Amended paragraph(s) do not include markings.
 - ☐ B. New paragraph(s) should not be underlined.
 - ☐ C. Other _____
- ☐ 2. Abstract:
- ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
 - ☐ B. Other _____
- ☐ 3. Amendments to the drawings: _____
- ☒ 4. Amendments to the claims:
- ☐ A. A complete listing of all of the claims is not present.
 - ☐ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
 - ☒ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following 7 status identifiers: (Original), (Currently amended), (Canceled), (Withdrawn), (Previously presented), (New) and (Not entered).
 - ☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
 - ☐ E. Other: _____

For further explanation of the amendment format required by 37 CFR 1.121, see MPEP Sec. 714 and the USPTO website at <http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/officeflyer.pdf>.

If the non-compliant amendment is a **PRELIMINARY AMENDMENT**, applicant is given **ONE MONTH** from the mail date of this letter to supply the corrected section which complies with 37 CFR 1.121. Failure to comply with 37 CFR 1.121 will result in non-entry of the preliminary amendment and examination on the merits will commence without consideration of the proposed changes in the preliminary amendment(s). This notice is not an action under 35 U.S.C. 132, and **this ONE MONTH time limit is not extendable.**

If the non-compliant amendment is a reply to a **NON-FINAL OFFICE ACTION** (including a submission for an RCE), and since the amendment appears to be a *bona fide* attempt to be a reply (37 CFR 1.135(c)), applicant is given a **TIME PERIOD** of **ONE MONTH** from the mailing of this notice within which to re-submit the corrected section which complies with 37 CFR 1.121 in order to avoid abandonment. **EXTENSIONS OF THIS TIME PERIOD ARE AVAILABLE UNDER 37 CFR 1.136(a).**

If the amendment is a reply to a **FINAL REJECTION**, this form may be an attachment to an Advisory Action. **The period for response to a final rejection continues to run from the date set in the final rejection,** and is not affected by the non-compliant status of the amendment.


Legal Instruments Examiner (LIE)
Susan K. Ford

571/272-3579
Telephone No.

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2000

Application or Docket Number

09/725237
Broad spider

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	32	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	32 minus 20 =	12
INDEPENDENT CLAIMS	4 minus 3 =	1
MULTIPLE DEPENDENT CLAIM PRESENT		☐

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	32 Minus	32	
Independent	4 Minus	4	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM			☐

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

RATE	FEE	RATE	FEE
BASIC FEE	355.00	BASIC FEE	710.00
X\$ 9=	108	X\$18=	
X40=	40	X80=	
+135=		+270=	
TOTAL	503	TOTAL	

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE	RATE	ADDITIONAL FEE
X\$ 9=		X\$18=	
X40=		X80=	
+135=		+270=	
TOTAL		TOTAL	

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE	RATE	ADDITIONAL FEE
X\$ 9=		X\$18=	
X40=		X80=	
+135=		+270=	
TOTAL		TOTAL	

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE	RATE	ADDITIONAL FEE
X\$ 9=		X\$18=	
X40=		X80=	
+135=		+270=	
TOTAL		TOTAL	

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE	RATE	ADDITIONAL FEE
X\$ 9=		X\$18=	
X40=		X80=	
+135=		+270=	
TOTAL		TOTAL	

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE	RATE	ADDITIONAL FEE
X\$ 9=		X\$18=	
X40=		X80=	
+135=		+270=	
TOTAL		TOTAL	

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE	RATE	ADDITIONAL FEE
X\$ 9=		X\$18=	
X40=		X80=	
+135=		+270=	
TOTAL		TOTAL	

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE	RATE	ADDITIONAL FEE
X\$ 9=		X\$18=	
X40=		X80=	
+135=		+270=	
TOTAL		TOTAL	

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE	RATE	ADDITIONAL FEE
X\$ 9=		X\$18=	
X40=		X80=	
+135=		+270=	
TOTAL		TOTAL	

SMALL ENTITY TYPE ☐ OR OTHER THAN SMALL ENTITY

BEST AVAILABLE COPY

BEST AVAILABLE COPY

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,737	11/29/2000	Peter Joseph Giacomini	500-002US	9624
22897	7590	05/26/2005	EXAMINER	
DEMONT & BREYER, LLC SUITE 250 100 COMMONS WAY HOLMDEL, NJ 07733			ART UNIT	PAPER NUMBER

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
P.O. Box 1450
ALEXANDRIA, VA 22313-1450
www.uspto.gov

Notice of Non-Compliant Amendment (37 CFR 1.121)

The amendment document filed on 12/10/04 is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121. In order for the amendment document to be compliant, correction of the following item(s) is required. **Only the corrected section of the non-compliant amendment document must be resubmitted (in its entirety), e.g., the entire "Amendments to the claims" section of applicant's amendment document must be re-submitted.** 37 CFR 1.121(h).

THE FOLLOWING CHECKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

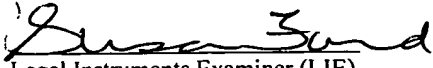
- ☐ 1. Amendments to the specification:
- ☐ A. Amended paragraph(s) do not include markings.
 - ☐ B. New paragraph(s) should not be underlined.
 - ☐ C. Other _____
- ☐ 2. Abstract:
- ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
 - ☐ B. Other _____
- ☐ 3. Amendments to the drawings: _____
- ☒ 4. Amendments to the claims:
- ☐ A. A complete listing of all of the claims is not present.
 - ☐ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
 - ☒ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following 7 status identifiers: (Original), (Currently amended), (Canceled), (Withdrawn), (Previously presented), (New) and (Not entered).
 - ☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
 - ☐ E. Other: _____

For further explanation of the amendment format required by 37 CFR 1.121, see MPEP Sec. 714 and the USPTO website at <http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/officeflyer.pdf>.

If the non-compliant amendment is a **PRELIMINARY AMENDMENT**, applicant is given **ONE MONTH** from the mail date of this letter to supply the corrected section which complies with 37 CFR 1.121. Failure to comply with 37 CFR 1.121 will result in non-entry of the preliminary amendment and examination on the merits will commence without consideration of the proposed changes in the preliminary amendment(s). This notice is not an action under 35 U.S.C. 132, and **this ONE MONTH time limit is not extendable.**

If the non-compliant amendment is a reply to a **NON-FINAL OFFICE ACTION** (including a submission for an RCE), and since the amendment appears to be a *bona fide* attempt to be a reply (37 CFR 1.135(c)), applicant is given a **TIME PERIOD** of **ONE MONTH** from the mailing of this notice within which to re-submit the corrected section which complies with 37 CFR 1.121 in order to avoid abandonment. **EXTENSIONS OF THIS TIME PERIOD ARE AVAILABLE UNDER 37 CFR 1.136(a).**

If the amendment is a reply to a **FINAL REJECTION**, this form may be an attachment to an Advisory Action. **The period for response to a final rejection continues to run from the date set in the final rejection**, and is not affected by the non-compliant status of the amendment.


Legal Instruments Examiner (LIE)

Susan K. Ford

571/272-3579
Telephone No.



RCE JW

PTO/SB/30 (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL

Address to:
Commissioner for Patents
Box RCE
Washington, DC 20231

Application Number	09/725,737
Filing Date	11/29/2000
First Named Inventor	Giacomini, Peter
Art Unit	2142
Examiner Name	Vu, Thong H
Attorney Docket Number	500-002us

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application. Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. Submission required under 37 CFR 1.114

- a. ☐ Previously submitted
- i. ☐ Consider the amendment(s)/reply under 37 CFR 1.116 previously filed on _____
(Any unentered amendment(s) referred to above will be entered).
- ii. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- iii. ☐ Other _____
- b. ☒ Enclosed
- i. ☒ Amendment/Reply
- ii. ☐ Affidavit(s)/Declaration(s)
- iii. ☐ Information Disclosure Statement (IDS)
- iv. ☐ Other _____

2. Miscellaneous

- a. ☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)
- b. ☐ Other _____

3. Fees

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

- a. ☐ The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. _____
- i. ☐ RCE fee required under 37 CFR 1.17(e) 12/13/2004 CCHAU1 00000031 09725737
- ii. ☐ Extension of time fee (37 CFR 1.136 and 1.17) 01 FC:2801 395.00 OP
- iii. ☐ Other _____
- b. ☐ Check in the amount of \$ _____ enclosed
- c. ☒ Payment by credit card (Form PTO-2038 enclosed)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

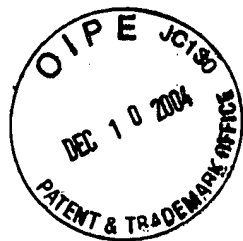
Name (Print/Type)	Jason Paul DeMont	Registration No. (Attorney/Agent)	35,793
Signature		Date	8 December 2004

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner For Patents, Box RCE, Washington, DC 20231, or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

Name (Print/Type)	Lillian Hayes	Date	8 December 2004
Signature			

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND Fees and Completed Forms to the following address: Assistant Commissioner for Patents, Box RCE, Washington, DC 20231.



**Reply under 37 CFR 1.116 –
Expedited Procedure – Art Unit 2142**

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph
Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

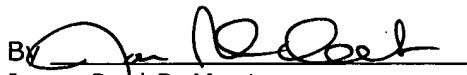
Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

1. Transmittal Letter with Certificate of Mailing – 1 Page (1x)
2. Amendment with Certificate of Mailing – 9 Pages (1x)
3. Credit Card Payment Form PTO-2038 – 1 Page (1x)
4. PTO/SB/30 Request For Continued Examination – 1 Page (1x)

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. B5793
Attorney for Applicants
732-578-0103 x11

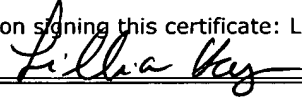
Date DECEMBER 8, 2004

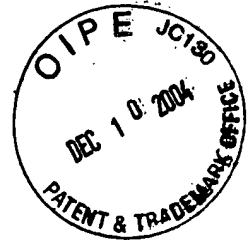
DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733

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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on 8 December 2004.

Name of person signing this certificate: Lillian Hayes.

Signature 



**Reply under 37 CFR 1.116 —
Expedited Procedure — Art Unit 2142**

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph
Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on 8 December 2004.

Name of person signing this certificate: Lillian Hayes.

Signature

A handwritten signature in cursive script, appearing to read "Lillian Hayes", written over a horizontal line.

AMENDMENT AFTER FINAL

The following claims are presented for examination:

1. (Previously Amended) A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein **[at least occasionally]** i is an integer **and is at least occasionally** greater than one.
2. (Original) The method of claim 1 wherein the value of i is invariant.
3. (Original) The method of claim 1 wherein the value of i is based on calendrical time.
4. (Original) The method of claim 1 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .
5. (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on the value of i .
6. (Original) The method of claim 4 wherein the value of i is based on calendrical time.
7. (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.
8. (Previously Amended) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer **and is at least occasionally** greater than one.
9. (Original) The data processing system of claim 8 wherein the value of i is invariant.
10. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.
11. (Original) The data processing system of claim 8 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

12. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

13. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

14. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

15. (Previously Amended) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network; and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer **and is at least occasionally** greater than one.

16. (Original) The method of claim 15 wherein the value of i is invariant.

17. (Original) The method of claim 15 wherein the value of i is based on calendrical time.

18. (Original) The method of claim 15 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

19. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

20. (Original) The method of claim 18 wherein the value of i is based on calendrical time.

21. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

22. (Original) The method of claim 15:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;
wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

23. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

24. (Previously Amended) A first node in a computer network, said first node comprising:

a cache;

at least one receiver for receiving at least one request for a resource; and

a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;

wherein i is an integer **and is at least occasionally** greater than one.

25. (Original) The first node of claim 24 wherein the value of i is invariant.

26. (Original) The first node of claim 24 wherein the value of i is based on calendrical time.

27. (Original) The first node of claim 24 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

28. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

29. (Original) The first node of claim 27 wherein the value of i is based on calendrical time.

30. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

31. (Original) The first node of claim 24:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

32. (Original) The first node of claim 24:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

REMARKS

Claims 1 through 32 were presented for examination, and were rejected.

The applicants respectfully traverse the rejections and request reconsideration in light of the following comments.

35 U.S.C. 112 Rejection of Claims 1, 8, 15, and 24

Claims 1, 8, 15, and 24 were rejected under 35 U.S.C. 112, Second Paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the applicants regard as the invention. The applicants respectfully traverse the rejection.

Claim 1 recites:

1. (Previously Amended) A method comprising:
populating a cache with a resource only when at least *i* requests for said resource have been received;
wherein *i* is an integer *and is at least occasionally* greater than one.
(*emphasis supplied*)

The Office action states "it was unclear how and when occasionally the integer is greater than one."

The applicants respectfully submit that the claim fully satisfies 35 U.S.C. 112 and that the limitation "wherein *i* is an integer *and is at least occasionally* greater than one" is perfectly clear and quite definite. It is not necessary for the claim to recite either how or when the integer is greater than one.

For example, if a claim recites "a DC voltage supply with a voltage of *V*," it is not necessary for 35 U.S.C. 112, Second Paragraph, purposes to state when the value of *V* is 5 volts or 10 volts. The language is definite and the scope of the claim is unambiguous.

Furthermore, if a claim recites "a capacitor with a capacitance of *C*," it is not necessary for 35 U.S.C. 112, Second Paragraph, purposes to state how the value of *C* is 20 microfarads. Again, the language is definite and the scope of the claim is unambiguous.

The limitation "wherein *i* is an integer *and is at least occasionally* greater than one" is fully enabled and supported by the present application, and it's scope is unequivocally clear. There is no ambiguity. The public can easily discern whether or not there is a prior art reference that teaches this limitation or not, and the public can easily discern whether or not a potentially-infringing device or method infringes this limitation.

For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claims 8, 15, and 24 recite the identical limitation, the applicants respectfully submit that the rejection of them is also traversed.

35 U.S.C. 103 Rejection of Claims 1-32

Claims 1 through 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over R.M. Craig et al., U.S. Patent 6,513,112, issued 28 January 2003 (hereinafter "Craig") in view of D. Gaskins et al., U.S. Patent 5,809,562, issued 15 September 1998 (hereinafter "Gaskins"). The applicants respectfully traverse the rejection.

Claim 1 recites:

1. (Previously Amended) A method comprising:
populating a cache with a resource only when at least *i requests for said resource have been received*;
wherein *i* is an integer *and is at least occasionally* greater than one.
(*emphasis supplied*)

Nowhere do Craig or Gaskins teach or suggest, alone or in combination, what claim 1 recites – namely that at least *i* requests for said resource have been received, wherein *i* is at least occasionally greater than one. Again, nowhere does Craig or Gaskins teach or suggest delaying the population of a cache with a resource until there have been – at least occasionally – two or more requests for that resource.

The portion of Gaskins that the Office relies on to substantiate an integer greater than 1 deals with the size of a two-dimensional array. This has nothing to do with the number of requests for a resource that are needed before the cache is populated with the resource.

For this reason, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claims 2 through 7 depend on claim 1, the applicants respectfully submit that the rejection of them is also traversed.

Claim 8 recites:

8. (Previously Amended) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when *at least i requests for said resource have been received*;

wherein i is an integer and *is at least occasionally greater than one.*
(emphasis supplied)

For the same reasons as stated with respect to claim 1 above, nowhere do Craig or Gaskins teach or suggest, alone or in combination, what claim 8 recites – namely that at least i requests for said resource have been received, wherein i is at least occasionally greater than one.

For this reason, the applicants respectfully submit that the rejection of claim 8 is traversed.

Because claims 9 through 14 depend on claim 8, the applicants respectfully submit that the rejection of them is also traversed.

Claim 15 recites:

15. (Previously Amended) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer **and is at least occasionally** greater than one.
(emphasis supplied)

For the same reasons as stated with respect to claim 1 above, nowhere do Craig or Gaskins teach or suggest, alone or in combination, what claim 15 recites – namely that at least i requests for said resource have been received, wherein i is at least occasionally greater than one.

For this reason, the applicants respectfully submit that the rejection of claim 15 is traversed.

Because claims 16 through 23 depend on claim 15, the applicants respectfully submit that the rejection of them is also traversed.

Claim 24 recites:

24. (Previously Amended) A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and

a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only *when at least i requests for said resource have been received at said first node;*

wherein i is an integer *and is at least occasionally greater than one.*

(emphasis supplied)

For the same reasons as stated with respect to claim 1 above, nowhere do Craig or Gaskins teach or suggest, alone or in combination, what claim 24 recites – namely that at least i requests for said resource have been received, wherein i is at least occasionally greater than one.

For this reason, the applicants respectfully submit that the rejection of claim 24 is traversed.

Because claims 25 through 32 depend on claim 24, the applicants respectfully submit that the rejection of them is also traversed.

Request for Reconsideration Pursuant to 37 C.F.R. 1.111

Having responded to each and every ground for objection and rejection in the Office action mailed September 1, 2004, applicants request reconsideration of the instant application pursuant to 37 CFR 1.111 and request that the Examiner allow all of the pending claims and pass the application to issue.

Should there remain unresolved issues the applicants respectfully request that Examiner telephone the applicants' attorney at 732-578-0103 x11 so that those issues can be resolved as quickly as possible.

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

Date DECEMBER 8, 2004

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2000

Application or Docket Number

09/725237
Broad spider

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	32	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	32 minus 20 =	12
INDEPENDENT CLAIMS	4 minus 3 =	1
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

7/6/04

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	32 Minus	32	=
Independent	4 Minus	4	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

SMALL ENTITY TYPE ☐ OR

OTHER THAN SMALL ENTITY

RATE	FEE	OR	RATE	FEE
BASIC FEE	355.00	OR	BASIC FEE	710.00
X\$ 9=	108	OR	X\$18=	
X40=	40	OR	X80=	
+135=		OR	+270=	
TOTAL	503.00	OR	TOTAL	

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X40=		OR	X80=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X40=		OR	X80=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X40=		OR	X80=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	32 Minus	32	=
Independent	4 Minus	4	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

12/10/04

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total			=
Independent			=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

FORM PTO-875
(Rev. 8/00)

Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,737	11/29/2000	Peter Joseph Giacomini	500-002US	9624
22897	7590	09/01/2004	EXAMINER	
DEMONT & BREYER, LLC SUITE 250 100 COMMONS WAY HOLMDEL, NJ 07733			VU, THONG H	
			ART UNIT	PAPER NUMBER
			2142	

DATE MAILED: 09/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/725,737	Applicant(s) GIACOMINI ET AL.	
	Examiner Thong H Vu	Art Unit 2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	6) ☐ Other: _____

Art Unit: 2142

1. Claims 1-32 are pending.
2. Claims 1,8,15 and 24 have been amended. The Final Action is appropriate.

Claim Rejections - 35 USC § 112

3. Claims 1,8,15,24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention (i.e.: it was unclear how and when occasionally the integer is greater than one)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-32 are rejected under 35 U.S.C. § 103 as being unpatentable over Craig et al [Craig 6,513,112 B1] in view of Gaskins et al [Gaskins 5,809,562].

4. As per claim 1, Craig-Gaskins disclose a method comprising:
populating a cache with a resource only when at least i requests for said resource have been received [Craig, populating the cache with information, col 12 lines 21-55];

wherein i is an integer [Craig, clients and servers, col 3 lines 50-59;read requests, servicing read calls, col 16 lines 42-63]

However Craig does not explicitly detail an integer is an at least occasionally greater than one. It was well-known in the populated cache art that a data array in a

Art Unit: 2142

cache memory of size $M \times N$ where M is an integer having a value greater than 1

[Gaskins, populated cache, col 7 lines 34-45; a value greater than 1 col 6 lines 27-45; col 19 lines 5-20]

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the populated cache with a value greater than 1 as taught by Gaskins into the Craig's apparatus in order to utilize the cache memory. Doing so would provide an organized cache according to space and cost and quick indexing by both physical and virtual addresses.

4. As per claims 2,9,16,25 Craig-Gaskins disclose the value of i is invariant (i.e.: configuration) [Craig, configuration time col 4 lines 33-44].

5. As per claims 3,10,17,26 Craig-Gaskins disclose the value of i is based on calendrical time [Craig, runtime and configuration time, col 4 lines 33-44].

6. As per claims 4,11,18,27 Craig-Gaskins disclose said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval [Craig runtime catalog, col 9 lines 32-44],

7. As per claims 5,12,19,28 Craig-Gaskins disclose the duration of said elapsed time interval, A_t , is based on the value of I [Craig, configuration time, col 4 lines 33-44].

8. As per claims 6,13,20,29 Craig-Gaskins disclose the value of i is based on calendrical time [Craig, runtime and configuration time, col 4 lines 33-44].

9. As per claims 7,14,21,30 Craig-Gaskins disclose the duration of said elapsed time interval, At , is based on calendrical time [Craig, runtime and configuration time, col 4 lines 33-44].

10. Claims 8,15,24 contain the similar limitations set forth of apparatus claim 1. Therefore, claims 8,15,24 are rejected for the similar rationale set forth in claim 1.

11. As per claims 22,31 Craig-Gaskins disclose said computer network is a hierarchical computer network and said first node has m filial (i.e.: all) nodes ; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$. [Gaskins, populated cache, col 7 lines 34-45; a value greater than 1 col 6 lines 27-45; col 19 lines 5-20].

12. As per claim 23,32 Craig-Gaskins disclose said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval,

Art Unit: 2142

At; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$. [Gaskins, populated cache, col 7 lines 34-45; a value greater than 1 col 6 lines 27-45; col 19 lines 5-20].

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Thong Vu, whose telephone number is (703)-305-4643.

The examiner can normally be reached on Monday-Thursday from 8:00AM- 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Jack Harvey*, can be reached at (703) 305-9705.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9700.

Any response to this action should be mailed to: Commissioner of Patent and Trademarks, Washington, D.C. 20231 or faxed to :

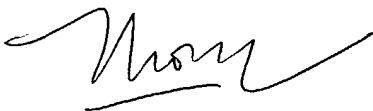
After Final (703) 746-7238

Official: (703) 746-7239

Non-Official (703) 746-7240

Hand-delivered responses should be brought to Crystal Park 11,2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Thong Vu
Patent Examiner
Art Unit 2142



Notice of References Cited	Application/Control No. 09/725,737	Applicant(s)/Patent Under Reexamination GIACOMINI ET AL.	
	Examiner Thong H Vu	Art Unit 2142	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-5,809,562 A	09-1998	Gaskins et al.	711/207
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Oracle Unleashed, 2E -- Ch 7 -- Oracle8 Server; cma.zdnet.com/book/oracle/chapters/0-672-31148-8/ch07/ch07.htm
	V	PRBAC Applications; www.anassoc.com/PRBAC%20Home/PRBACapp.html
	W	JavaScript Guide; www.wooten.net/bin/httpd/admin/html/manual/javascript/advtopic.htm
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims



Application No.

09/725,737

Examiner

Thong H Vu

Applicant(s)

GIACOMINI ET AL.

Art Unit

2142

✓	Rejected
=	Allowed

—	(Through numeral) Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim		Date											
Final	Original												
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Search Notes

Application No.

09/725,737

Examiner

Thong H Vu

Applicant(s)

GIACOMINI ET AL.

Art Unit

2142

SEARCHED

Class	Subclass	Date	Examiner
709	216	8/23/2004	TVU
711	207		

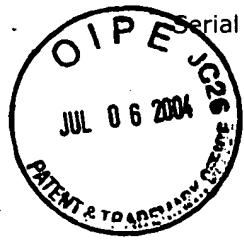
INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
EAST,NPL,IEEE	8/23/2004	TVU

	Hits	Search Text
1	2119	populat\$3 with (memory buffer queu\$4 cach\$3)
2	212	populat\$3 with (cach\$3)
3	35	45 and integer
4	5	45 and integer with (great\$3 less least\$3 equal\$3)



Serial No. 09/725737

Attorney Docket: 500-002US

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph
Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on 1 July 2004.

Name of person signing this certificate: Kelly Kline.

Signature

RECEIVED

JUL 13 2004

Technology Center 2100

AMENDMENT

The following claims are presented for examination:

1. (Amended) A method comprising:
populating a cache with a resource only when at least i requests for said resource have been received;
wherein **[at least occasionally]** i is an integer **and is at least occasionally** greater than one.
2. (Original) The method of claim 1 wherein the value of i is invariant.
3. (Original) The method of claim 1 wherein the value of i is based on calendrical time.
4. (Original) The method of claim 1 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .
5. (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on the value of i .
6. (Original) The method of claim 4 wherein the value of i is based on calendrical time.
7. (Original) The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.
8. (Amended) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least i requests for said resource have been received;
wherein i is an integer **and is at least occasionally** greater than one.
9. (Original) The data processing system of claim 8 wherein the value of i is invariant.
10. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.
11. (Original) The data processing system of claim 8 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

12. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

13. (Original) The data processing system of claim 8 wherein the value of i is based on calendrical time.

14. (Original) The data processing system of claim 8 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

15. (Amended) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network; and
populating a cache in said first node with said resource only when at least i requests for said resource have been received at said first node;
wherein i is an integer **and is at least occasionally** greater than one.

16. (Original) The method of claim 15 wherein the value of i is invariant.

17. (Original) The method of claim 15 wherein the value of i is based on calendrical time.

18. (Original) The method of claim 15 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

19. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

20. (Original) The method of claim 18 wherein the value of i is based on calendrical time.

21. (Original) The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

22. (Original) The method of claim 15:
wherein said computer network is a hierarchical computer network and said first node has m filial nodes;
wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and
wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

23. (Original) The method of claim 15:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

24. (Amended) A first node in a computer network, said first node comprising:
a cache;

at least one receiver for receiving at least one request for a resource; and

a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least i requests for said resource have been received at said first node;

wherein i is an integer **and is at least occasionally** greater than one.

25. (Original) The first node of claim 24 wherein the value of i is invariant.

26. (Original) The first node of claim 24 wherein the value of i is based on calendrical time.

27. (Original) The first node of claim 24 wherein said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval, Δt .

28. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on the value of i .

29. (Original) The first node of claim 27 wherein the value of i is based on calendrical time.

30. (Original) The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based on calendrical time.

31. (Original) The first node of claim 24:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

32. (Original) The first node of claim 24:

wherein said computer network is a hierarchical computer network and said first node has m filial nodes;

wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ; and

wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

Please amend the Specification as follows:

Please change the first full paragraph under the heading "Reference to Related Applications" to:

This application is related to U.S. patent application Serial No. 09/725,737, entitled "Method and Apparatus for Economical Cache Population," (Attorney Docket "500-002us") filed on 29 November 2000, which is incorporated by reference.

This application is related to U.S. patent application Serial No. 09/725732, entitled "Distributed Caching Architecture For Computer Networks," (Attorney Docket "Broadspider 2") filed on 29 November 2000, which is incorporated by reference.

Please change the Attorney Docket No. in PALM from "Broadspider 2" to "500-002us".

REMARKS

Claims 1 through 22 were presented for examination and were rejected. Claim 1 has been amended solely to improve its readability and no change in its scope is intended or desired. Independent claims 8, 15, and 24 have been amended to harmonize the scope of the variable *i* with claim 1. None of the amendments have been made to overcome any prior art, and the applicants respectfully reserve the right to re-introduce the claims as filed in this or another application.

The specification has been amended to fill-in the serial number and filing date of the co-pending application and to change the Attorney's Docket No. for the case.

The applicants appreciate having the Office change the Attorney Docket No. for this case in the PALM system.

The applicants respectfully traverse the rejection and request reconsideration in light of the following remarks.

Information Disclosure Statement

The applicants filed a properly-formatted information disclosure statement with the original filing of this case, but did not receive the initialed Form PTO-1449 to evince that the Office has considered the cited reference. The applicants would appreciate it if the Office would make sure that it has thoroughly considered the cited reference and forward the initialed Form PTO-1449 with the next communication from the Office.

35 U.S.C. 102 Rejection of Claims 1-32

Claims 1 through 32 were rejected under 35 U.S.C. 102(e) as being anticipated by R.M. Craig et al., U.S. Patent 6,513,112 B1, issued 28 January 2003 (hereinafter Craig"). The applicants respectfully traverse the rejection.

Claim 1, as amended, recites:

1. (Amended) A method comprising:
populating a cache with a resource only when *at least i* requests for said resource have been received;
wherein *i* is an integer and is at least occasionally greater than one.
(*emphasis supplied*)

Nowhere does Craig teach or suggest, alone or in combination with the other references, what claim 1 recites – namely waiting to populate a cache with a resource until –

at least occasionally – two or more requests for that resource have been received. Craig does in fact teach populating a cache – which is well-known in the art – but nowhere teaches or suggests delaying to populate the cache with a resource until two or more requests for that resource have been received.

A careful reading of Craig supports the applicants' contention. The Office action cites Craig at column 12, lines 21-55 as reading on claim 1's limitation "populating a cache with a resource only when *at least i* requests for said resource have been received." Craig states:

The catalog server interaction module or code 506 receives commands from the caller 512 and executes related interface commands during interaction with the catalog server object 502. The caller 512 requests that the client table object 500 execute specific commands related to specific catalog server objects. In other words, when the caller 512 sends a command to the client table object requesting a communication such as a read or a write from or to a catalog server object, the caller preferably provides the client table object 500 with information related to which catalog server object is to be contacted. The catalog server interaction code 506 translates the particular commands from the caller into proper format and conducts the request to the particular catalog server object 502. The code 506 causes a transaction or communication with a catalog server object only when populating the cache with information from a datastore, updating the datastore, or requiring some other control-type transaction. All work on the configuration information is conducted on the local cache 504 and thus, fewer round-trip calls are required than in the case where information is not stored in a cache 504.

The catalog server interaction code 506 interacts with the catalog server object 502 to both populate the cache 504 and update the information in the datastores. That is, the code 506 receives commands from the caller requesting that the cache be populated with a portion of data managed by the catalog server object 502 and based on a supplied query. Code 506 generates and conducts an interaction command to the catalog server object implementing the populate request to populate the cache 504 with the requested information. That is, the catalog server interaction code 506 translates the query into the proper format and requests the information based on the query. The query may be related to the type of information, as opposed to requests that simply identify specific data.

Craig at Col. 12, lines 21-55 (*emphasis added*)

It's clear that this passage does not read on claim 1's limitation "populating a cache with a resource only when *at least i* requests for said resource have been received." In paraphrasing and simplifying the emphasized portion of Craig, Craig teaches that an event (a "transaction" or "communication") occurs only when the cache is populated. This is clearly not the same thing as waiting to populate the cache until an event occurs, which has a different causality, and is even more different than what claim 1 recites, which is waiting

to populate a cache with a resource until two or more requests have been received for that resource.

The remaining portion of Craig fails to cure this deficiency, and, therefore, the applicants respectfully submit that the rejection of claim 1 is overcome.

Because claims 2 through 7 depend on claim 1, the applicants respectfully submit that the rejection of them is also overcome.

Claim 8 recites:

8. (Original) A data processing system comprising:
a cache for storing a resource; and
a processor for populating said cache with said resource only when at least *i* requests for said resource have been received;
wherein *i* is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the reasons given above, nowhere does Craig teach or suggest, alone or in combination with the other references, what claim 1 recites – namely waiting to populate a cache with a resource until – at least occasionally – two or more requests for that resource have been received. For this reason, the applicants respectfully submit that the rejection of claim 8 is overcome.

Because claims 9 through 14 depend on claim 8, the applicants respectfully submit that the rejection of them is also overcome.

Claim 15 recites:

15. (Original) A method comprising:
receiving at a first node in a computer network at least one request for a resource;
retrieving said resource from a second node in said computer network;
and
populating a cache in said first node with said resource only when at least *i* requests for said resource have been received at said first node;
wherein *i* is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the reasons given above, nowhere does Craig teach or suggest, alone or in combination with the other references, what claim 15 recites – namely waiting to populate a cache with a resource until – at least occasionally – two or more requests for that resource

have been received. For this reason, the applicants respectfully submit that the rejection of claim 15 is overcome.

Because claims 16 through 23 depend on claim 15, the applicants respectfully submit that the rejection of them is also overcome.

Claim 24 recites:

24. (Original) A first node in a computer network, said first node comprising:
a cache;
at least one receiver for receiving at least one request for a resource;
and
a processor for retrieving said resource from a second node in said computer network, and for populating said cache in said first node with said resource only when at least *i* requests for said resource have been received at said first node;
wherein *i* is an integer and is at least occasionally greater than one.
(emphasis supplied)

For the reasons given above, nowhere does Craig teach or suggest, alone or in combination with the other references, what claim 24 recites – namely waiting to populate a cache with a resource until – at least occasionally – two or more requests for that resource have been received. For this reason, the applicants respectfully submit that the rejection of claim 24 is overcome.

Because claims 25 through 32 depend on claim 24, the applicants respectfully submit that the rejection of them is also overcome.

Request for Reconsideration Pursuant to 37 C.F.R. 1.111

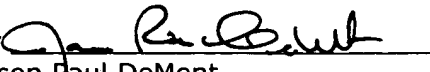
Having responded to each and every ground for objection and rejection in the Office action mailed 15 March 2004, applicants request reconsideration of the instant application pursuant to 37 CFR 1.111 and request that the Examiner allow all of the pending claims and pass the application to issue.

Should there remain unresolved issues the applicants respectfully request that Examiner telephone the applicants' attorney at 732-578-0103 x11 so that those issues can be resolved as quickly as possible.

Serial No. 09/725737

Attorney Docket: 500-002US

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

Date 30 June 2004

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

Serial No. 09/725737

Attorney Docket: 500-002US



**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

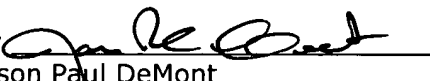
Dear Sir:

Enclosed are the following papers related to the above-identified patent application:

1. Transmittal Letter with Certificate of Mailing - 1 Page (1x)
2. Amendment with Certificate of Mailing - 12 Pages (1x)
3. Credit Card Payment Form PTO-2038 - 1 Page (1x)
4. Petition for Extension of Time with Certificate of Mailing - 1 Page (1x)

Pursuant to 37 CFR 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

Date 7/1/04

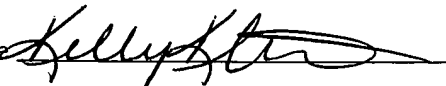
DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on 1 July 2004.

Name of person signing this certificate: Kelly Kline

Signature



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JUL 13 2004

Technology Center 2100



Serial No. 09/725737

Docket: 500-002US

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

Patent Application

Inventors: Peter Joseph Giacomini et al.

Serial No.: 09/725737

Filing Date: 11/29/2000

Art Unit: 2142

Examiner: Thong H Vu

Docket No.: 500-002US

Title: Method and Apparatus For Economical Cache Population

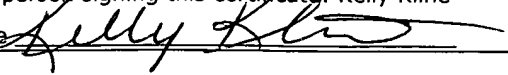
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450 on 1 July 2004.

Name of person signing this certificate: Kelly Kline

Signature 

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JUL 13 2004

Technology Center 2100

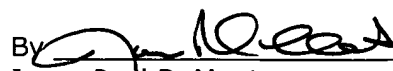
PETITION FOR EXTENSION OF TIME

Applicants respectfully petitions the Commissioner of Patents and Trademarks to extend the time for response for the Office action dated 3/15/2004 for three (1) month from June 15, 2004 to July 15, 2004.

Please find Credit Card Payment Form PTO-2038 to cover the cost of the extension.

Pursuant to 37 C.F.R. 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,
DeMont & Breyer, LLC

By 
Jason Paul DeMont
Reg. No. 35793
Attorney for Applicants
732-578-0103 x11

Date 7/1/04

DeMont & Breyer, L.L.C.
Suite 250
100 Commons Way
Holmdel, NJ 07733
United States of America

07/09/2004 DENMANU1 00000041 09725737

01 FC:2251

55.00 OP

- 1 of 1 -

Globus Medical, Inc.

IPR2015-00111 Exhibit 1017, p. 391

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 2000

Application or Docket Number

09/725237
Broad spider

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	32	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	32 minus 20 =	12
INDEPENDENT CLAIMS	4 minus 3 =	1
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	32 Minus	32	=
Independent	4 Minus	4	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	Minus		=
Independent	Minus		=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	Minus		=
Independent	Minus		=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

- * If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 - ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
 - *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
- The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SMALL ENTITY TYPE ☐

RATE	FEE
BASIC FEE	355.00
X\$ 9=	108
X40=	40
+135=	
TOTAL	503.00

OR OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	710.00
X\$18=	
X80=	
+270=	
TOTAL	

SMALL ENTITY OR

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL ADDIT. FEE	



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,737	11/29/2000	Peter Joseph Giacomini	Broadspider 2	9624

22897 7590 03/15/2004

DEMONT & BREYER, LLC
SUITE 250
100 COMMONS WAY
HOLMDEL, NJ 07733

EXAMINER

VU, THONG H

ART UNIT PAPER NUMBER

2142

DATE MAILED: 03/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/725,737

Applicant(s)

GIACOMINI ET AL.

Examiner

Thong H Vu

Art Unit

2142

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

1. Claims 1-32 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-32 are rejected under 35 U.S.C. § 102(e) as being anticipated by Craig et al [Craig 6,513,112 B1]
3. As per claim 1, Craig discloses a method comprising:

populating a cache with a resource only when at least i requests for said resource have been received [Craig, populating the cache with information, col 12 lines 21-55];

wherein at least occasionally i is an integer greater than one [Craig, clients and servers, col 3 lines 50-59; read requests, servicing read calls, col 16 lines 42-63]
4. As per claims 2,9,16,25 Craig discloses the value of i is invariant (i.e.: configuration) [Craig, configuration time col 4 lines 33-44].

Art Unit: 2142

5. As per claims 3,10,17,26 Craig discloses the value of i is based on calendrical time [Craig, runtime and configuration time, col 4 lines 33-44].

6. As per claims 4,11,18,27 Craig discloses said cache is populated with said resource only when at least i requests for said resource have been received within an elapsed time interval [Craig runtime catalog, col 9 lines 32-44],

7. As per claims 5,12,19,28 Craig discloses the duration of said elapsed time interval, At , is based on the value of l [Craig, configuration time col 4 lines 33-44].

8. As per claims 6,13,20,29 Craig discloses the value of i is based on calendrical time [Craig, runtime and configuration time, col 4 lines 33-44].

9. As per claims 7,14,21,30 Craig discloses the duration of said elapsed time interval, At , is based on calendrical time [Craig, runtime and configuration time, col 4 lines 33-44].

10. Claims 8,15,24 contain the similar limitations set forth of apparatus claim 1. Therefore, claims 8,15,24 are rejected for the similar rationale set forth in claim 1.

11. As per claims 22,31 Craig discloses said computer network is a hierarchical computer network and said first node has m filial (i.e.: all) nodes ; wherein said cache is

Art Unit: 2142

populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$. It was clearly the servers handle the plurality request from clients via network.

12. As per claim 23,32 Craig discloses said computer network is a hierarchical computer network and said first node has m filial nodes; wherein said cache is populated with said resource only when at least one request for said resource has been received from at least n of said m filial nodes within an elapsed time interval, At ; and wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$. It was clearly the servers handle the plurality request from clients via network, wherein the elapsed time interval or runtime as a design choice.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Thong Vu, whose telephone number is (703)-305-4643. The examiner can normally be reached on Monday-Thursday from 8:00AM- 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Jack Harvey*, can be reached at (703) 305-9705.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9700.

Any response to this action should be mailed to: Commissioner of Patent and Trademarks, Washington, D.C. 20231 or faxed to :

After Final (703) 746-7238

Official: (703) 746-7239

Non-Official (703) 746-7240

Hand-delivered responses should be brought to Crystal Park 11,2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Thong Vu
Patent Examiner
Art Unit 2142



Notice of References Cited

Application/Control No.

09/725,737

Applicant(s)/Patent Under

Reexamination

GIACOMINI ET AL.

Examiner

Thong H Vu

Art Unit

2142

Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,513,112 B1	01-2003	Craig et al.	713/1
	B	US-6,205,481 B1	03-2001	Heddaya et al.	709/226
	C	US-6,047,280 A	04-2000	Ashby et al.	707/2
	D	US-6,185,598 B1	02-2001	Farber et al.	709/200
	E	US-6,061,504 A	05-2000	Tzelnic et al.	709/219
	F	US-6,578,113 B2	06-2003	Krishnamurthy et al.	711/141
	G	US-4,426,681 A	01-1984	Bacot et al.	711/130
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)				
	U	A Web-based evolutionary model for Internet data caching; Vakali, A.; Database and Expert Systems Applications, 1999. Proceedings. Tenth International Workshop on , 1-3 Sept. 1999				
	V	Distributed Data Management Support for Collaborative Computing - Olesen Chodrow (1997) ; ccf.mathcs.emory.edu/ccf/Papers/hpcn97.ps				
	W	Timing Predictions for Multi-Level Caches - Mueller (1997) ; www.informatik.hu-berlin.de/~mueller/ftp/pub/mueller/papers/lctrts97.ps.gz				
	X					

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

	L #	Hits	Search Text
1	L10	14	cach\$3 with request\$3 with resource with (discover\$3 detect\$4 calculat\$3 measur\$3 identifi\$4 select\$4 filter\$3) with (one two three)
2	L11	158074	based with (time timing priod\$6 schedul\$3 calend\$5)
3	L12	1	10 and 11
4	L13	250	cach\$3 with request\$3 with resource and (one two three more plurality mulitple different) adj3 request\$3
5	L14	95	13 and 11
6	L15	27	13 and 11 and topology
7	L16	10	15 and (time timing date day\$4) near10 (priod\$6 schedul\$3 calend\$5)
8	L17	166	cach\$3 with request\$3 with resource and (two three more plurality mulitple different) adj3 request\$3 and request\$3 near3 (id identifi\$3 valude code number)
9	L18	1	17 and based with (time timing date day\$4) with (priod\$6 schedul\$3 calend\$5)
10	L19	206	cach\$3 with request\$3 and resource adj3 (id identifier nubmer value indicator pointer)
11	L21	27	(parallel\$3 concurrent\$2) near3 request\$3 and 19
12	L22	10	21 and (tree topology)
13	L23	41	cach\$3 with request\$3 and (resource adj3 (id identifier nubmer value indicator pointer) url) and (parallel\$3 concurrent\$2) near3 request\$3 and (hierarch\$4 tree directory topology)
14	L24	10	23 and (time near3 day (time timing date day\$4) near10 (priod\$6 schedul\$3 calend\$5))
15	L25	78	cach\$3 with only with receiv\$3 near request\$3
16	L27	2	26 and (resource adj3 (id identifier nubmer value indicator pointer) url) and (parallel\$3 concurrent\$2) near3 request\$3 and (hierarch\$4 tree directory topology)
17	L28	1352	cach\$3 near5 only with (receiv\$3 "as-needed" necessar\$3 request\$3)
18	L29	6	(porvid\$3 populat\$3 suppl\$4) adj3 cach\$3 near5 only with (receiv\$3 "as-needed" necessary requir\$4 acquir\$4 request\$3)
19	L26	16	(parallel\$3 concurrent\$2) near3 request\$3 and 25

	L #	Hits	Search Text
1	L1	0	cach\$3 with resource with request\$3 with integer
2	L2	1	cach\$3 with resource with request\$3 same integer



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

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CHANGE OF ADDRESS/POWER OF ATTORNEY

JAN 27 2003

Technology Center 2100

FILE LOCATION 21C1 SERIAL NUMBER 09725737 PATENT NUMBER

THE PRACTITIONERS OF RECORD HAVE BEEN CHANGED TO CUSTOMER # 22897

THE FEE ADDRESS HAS BEEN CHANGED TO CUSTOMER # 22897

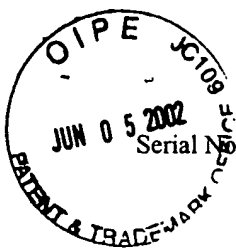
ON 12/17/02 THE ADDRESS OF RECORD FOR CUSTOMER NUMBER 22897 IS:

DEMONT & BREYER, LLC
PO BOX 7490
SHREWSBURY NJ 07702

AND THE PRACTITIONERS OF RECORD FOR CUSTOMER NUMBER 22897 ARE:

25830 35557 35793 38089 42783

PTO INSTRUCTIONS: PLEASE TAKE THE FOLLOWING ACTION WHEN THE CORRESPONDENCE ADDRESS HAS BEEN CHANGED TO CUSTOMER NUMBER: RECORD, ON THE NEXT AVAILABLE CONTENTS LINE OF THE FILE JACKET, 'ADDRESS CHANGE TO CUSTOMER NUMBER'. LINE THROUGH THE OLD ADDRESS ON THE FILE JACKET LABEL AND ENTER ONLY THE 'CUSTOMER NUMBER' AS THE NEW ADDRESS. FILE THIS LETTER IN THE FILE JACKET. WHEN ABOVE CHANGES ARE ONLY TO FEE ADDRESS AND/OR PRACTITIONERS OF RECORD, FILE LETTER IN THE FILE JACKET. THIS FILE IS ASSIGNED TO GAU 2153.



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2185

Docket: 500-002us

Serial No. 09/725,737

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Patent Application

Inventors: Peter Joseph Giacomini
Walter Michael Pitio
Hector Francisco Rodriguez
Donald David Shugard

Case: Broadspider 1

Serial No.: 09/725,737

Filing Date: 29 November 2000

Examiner: Not Yet Assigned

Group Art Unit: 2185

Title: Method and Apparatus for Economical Cache Population

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

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Signature Kenneth Ottesen

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Technology Center 2100

DISCLOSURE DOCUMENT REFERENCE PURSUANT TO MPEP 1706

Pursuant to MPEP § 1706, applicants respectfully request that Disclosure Documents:

1. No. 474,502, filed 22 May 2000, and entitled "Digital Subscriber Loop Architecture,"
2. No. 476,286, filed 28 June 2000, and entitled "Digital Subscriber Loop Architecture,"
3. No. 476,169, filed 28 June 2000, and entitled "Digital Subscriber Loop Architecture,"
4. No. 476,288, filed 28 June 2000, and entitled "Digital Subscriber Loop Architecture,"
5. No. 479,799, filed 13 September 2000, and entitled "BAM Architecture," and
6. No. 478,812, filed 17 August 2000, and entitled "BAM Quality of Service and Multicasting"

be preserved for use in the prosecution, assertion, and litigation of the above-identified patent application, and its progeny, if any.

Respectfully,

By Jason Paul DeMont
Jason Paul DeMont
Reg. No. 35,793
732-578-0102

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11-30-00

14

11/29/00



JC957 U.S. PTO

Broadspider

JC921 U.S. PTO
09/725737



IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

INVENTOR Peter Joseph Giacomini
Walter Michael Pitio
Hector Francisco Rodriguez
Donald David Shugard

"Express Mail" mailing label number EL025877142US;
Date of Deposit: November 29, 2000.

I hereby certify that this application is being deposited with the
United States Postal Service "Express Mail Post Office to
Addressee" service under 37 CFR 1.10 on the date indicated
above and is addressed to "Box PATENT APPLICATION,
Assistant Director of Patents, Washington, D.C. 20231".
Jason Paul DeMont

CASE Broadspider 2

TITLE Method And Apparatus For
Economical Cache Population

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Enclosed are the following papers relating to the above-named application for patent:

1. Transmittal Letter — 2 Pages (3x)
2. Check for \$492.00 to cover the Filing Fee
3. Check for \$40.00 for the Assignment Recordation Fee
4. Specification — 16 Pages (1x)
5. Formal Drawings — 5 Sheets (1x)
6. Executed Declaration and Power of Attorney — 3 Pages (1x)
7. Assignment Recordation Cover Sheet — 3 Pages (1x)
8. Executed and Notarized Assignment and Agreement — 5 Pages (1x)
9. Information Disclosure Statement Cover Sheet — 1 Page (1x)
10. Information Disclosure Statement PTO-1449 Substitute with 1 Reference — 1 Pages (1x)

The applicants claim small entity status.

CLAIMS AS FILED				
	NO. FILED	NO. EXTRA	RATE	CALCULATIONS
Total Claims	32 - 20 =	12	x \$9 =	108
Independent Claims	4 - 3 =	1	x \$39 =	39
Multiple Dependent Claim(s), if applicable			x \$270 =	0
Basic Fee				\$345
			TOTAL FEE:	\$492

Please file the application and find a check enclosed to cover the filing fee in the amount of \$492, to cover the filing fee. Duplicate copies of this letter are enclosed. In the event of non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit Jason Paul DeMont **Deposit Account No. 10-1045** as required to correct the error.

Pursuant to 35 U.S.C. 122(b), the applicants request publication of this application after the expiration of a period of 18 months from the earliest filing date of this application.

Please address all correspondence to:

Customer Number 22897

Pursuant to 37 C.F.R. 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,



22897

PATENT TRADEMARK OFFICE

By Jason Paul DeMont

Jason Paul DeMont

Attorney for Applicants

Reg. No. 35,793

908-903-1255

Date: 11/29/00

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METHOD AND APPARATUS FOR ECONOMICAL CACHE POPULATION

Reference to Related Applications

This application is related to U.S. patent application Serial No. 09/_____, entitled "Distributed Caching Architecture For Computer Networks," (Attorney Docket "Broadspider 1") filed on the same date as this application, which is incorporated by reference.

Field of the Invention

The present invention relates to data processing systems and computer networks in general, and, more particularly, to techniques for caching resources in cache.

Background of the Invention

When a user of the World Wide Web requests a Web page, the user must wait until the page is available on his or her data processing system (*e.g.*, computer, *etc.*) for viewing. In general, this wait occurs because the request for the Web page must traverse the Internet from the user's data processing system to the data processing system that is the source of the page, the request must be fulfilled, and the requested page must travel back to the user's system. If the Internet is congested or the data processing system that is the source of the page is overwhelmed with many concurrent requests for pages, the wait can be considerably long.

To shorten this wait, special data processing systems are deployed throughout the Internet that expedite the delivery of some Web pages. Some of these data processing systems expedite the delivery of Web pages by functioning as cache memories, which are also known as "caches." For the purpose of this specification, a "**cache**" is defined as a cache memory. For example, a cache stores commonly requested Web pages and thereafter enables requests for those pages to be intercepted and fulfilled from the cache without retrieval from the principal memory. This expedites the delivery of the Web page in two ways. First, a cache eliminates the need for the request to travel all of the way to the system that is the ultimate source of the page, and, therefore, eliminates some of the wait associated with the transit. Second, a cache also reduces the number of Web page requests that must be fulfilled by the system that is the ultimate source of the page, and, therefore, the wait associated with contention for the system is eliminated.

FIG. 1 depicts a block diagram of a computer network in the prior art in which one of the network's nodes acts as a cache for another of the nodes. Computer network 100 comprises three nodes that are interconnected *logically* as shown. The salient characteristic of the topology of

computer network 100 is that node 121 communicates with node 101 only through node 111, and, therefore, node 111 is capable of intercepting and fulfilling requests from node 121 for node 101. In other words, although there might be more than one physical telecommunication path between node 101 and node 111 (not shown in FIG. 1) and more than one physical telecommunication path between node 111 and node 121 (also not shown in FIG. 1), and even a direct physical telecommunication path between node 101 and 121, node 111 is *logically* in the path between node 101 and node 121.

From the perspective of node 121 and node 111, node 101 actually or apparently comprises a vast amount of information arranged in bundles, called "resources." For the purposes of this specification, a "**resource**" is defined as an individually addressable bundle of information that can be requested by a node. For example, a resource might be an individual computer file (*e.g.*, a World Wide Web page, a .gif file, a Java script, *etc.*) or a database record, *etc.* Although node 101 can actually comprise a vast amount of information if, for example, it is a disk farm, it can also apparently comprise the information if it acts as a gateway to a data network, such as the Internet.

When node 101 is bombarded with a large number of concurrent requests for resources from node 121, node 101 might not be able to instantaneously respond to all of the requests. Therefore, to reduce the average delay between when node 121 requests a resource from node 101 and when it receives the resource, node 111 functions as a cache for node 101.

FIG. 2 depicts a block diagram of the salient components of node 111 in accordance with the prior art. Node 111 comprises: processor 201, memory 202, receiver 210, transmitter 211, transmitter 213, and receiver 214. Processor 201 is typically a general-purpose processor or a special-purpose processor that performs the functionality described herein with respect to FIG. 3. Memory 202 holds programs and data for processor 201 and comprises cache 203, which holds the cached resources for node 101. Node 111 uses receiver 210 for receiving data from node 121, transmitter 211 for transmitting to node 121, transmitter 213 for transmitting to node 101, and receiver 214 for receiving from node 121.

FIG. 3 depicts a flowchart of the operations performed by node 121 and node 111 when node 121 requests a resource from node 101 and node 111 intercepts the request, acts a cache for node 101, and fulfills the request, if possible, or passes the request on to node 101, if necessary.

At step 301, node 121 receives a resource identifier and a request for the resource. This request and resource identifier might, for example, originate with a user of node 121 as part of a World Wide Web browsing session (*e.g.*, <http://www.amazon.com/mccullers.htm>, *etc.*).

At step 302, node 121 transmits: (i) the resource identifier, and (ii) a request for the resource to node 111, and at step 303, node 111 receives: (i) the resource identifier, and (ii) a request for the resource.

At step 305, node 111 determines if, in fact, the requested resource is in its cache data structure. If it is (*i.e.*, a cache "hit"), then control passes to step 309; otherwise (*i.e.*, a cache "miss") control passes to step 306.

At step 306, node 111 transmits the resource identifier and request for the resource identifier to node 101, and at step 307 node 111 receives the requested resource.

At step 308, node 111 populates its cache with the received resource so that the next time the resource is requested, node 111 can fulfill the request itself. If the cache does not have enough empty storage available for the resource, node 111 can delete other resources in the cache, in accordance with any of many well-known cache replacement algorithms, to make room for the most recently requested resource.

At step 309, node 111 transmits the resource to node 121, as requested, whether the requested resource was in node 111's cache data structure or not.

The increasing size and complexity of the Internet, and its increasing use for transmitting multimedia resources has created the need for improved caching techniques.

Summary of the Invention

The present invention is a technique for efficiently populating a cache with resources that avoids some of the costs and disadvantages associated with caching techniques in the prior art. In particular, a node in accordance with the illustrative embodiment of the present invention defers, at least occasionally, populating its cache with a resource until at least two requests for the resource have been received. This is advantageous because it prevents the cache from being populated with infrequently requested resources.

Furthermore, the illustrative embodiment of the present invention populates a cache with a resource only when:

1. at least i requests for the resource have been received at a given node within an elapsed time interval, Δt , wherein i is an integer greater than one; and
2. at least one request for the resource has been received from at least n of the m filial nodes of the given node within an elapsed time interval, Δt , wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

Embodiments of the present invention are particularly advantageous in computer networks that comprise a *logical* hierarchical topology, but are useful in any computer network, and in individual data processing systems and routers that comprise a cache memory.

The illustrative embodiment of the present invention comprises populating a cache with a resource only when at least i requests for said resource have been received, wherein i is an integer greater than one.

Brief Description of the Drawings

FIG. 1 depicts a block diagram of a computer network in the prior art.

FIG. 2 depicts a block diagram of the salient components of one of the nodes depicted in

FIG. 1.

FIG. 3 depicts a flowchart of the operations performed by two of the nodes depicted in FIG. 1.

FIG. 4 depicts a block diagram of the illustrative embodiment of the present invention.

FIG. 5 depicts a block diagram of the salient components of a data processing node in accordance with the illustrative embodiment of the present invention.

FIG. 6 depicts a flowchart of the illustrative embodiment of the present invention.

FIG. 7 depicts a graph of the average latency as a function of i , in accordance with the illustrative embodiment of the present invention.

FIG. 8 depicts a graph of the cache storage needs as a function of i , in accordance with the illustrative embodiment of the present invention.

Detailed Description

FIG. 4 depicts a block diagram of the illustrative embodiment of the present invention, which comprises 12 nodes (*i.e.*, data processing systems) that are interconnected in a computer network with a *logical* hierarchical topology. In other words, although there might be one or more physical telecommunication links (not shown) between *any* two nodes depicted in FIG. 4, the nodes are interrelated in a *logical* hierarchy. This point is worth reiterating; the depicted paths between the nodes in FIG. 4 represent the logical hierarchical relationship of the nodes and not the physical telecommunication links that the nodes use to communicate with each other. Therefore, the illustrative embodiment is well-suited for networks with dynamic routing (*e.g.*, Internet Protocol networks, *etc.*).

Although the illustrative embodiment comprises 12 data processing nodes in one particular hierarchy, it will be clear to those skilled in the art how to make and use embodiments of the present

invention that comprise any number of nodes that are interconnected in any hierarchy. Furthermore, it will be clear to those skilled in the art how the inventions described herein are useful in any computer network with any logical topology — including those that are not hierarchical — and also to individual data processing systems and routers that comprise a cache memory.

5 In accordance with the illustrative embodiment of the present invention, each pair of interconnected nodes communicate with each other, either directly or indirectly, via one or more physical wireline or wireless telecommunications links or both (not shown in FIG. 4). It will be clear to those skilled in the art how to make and use such telecommunications links. For the purposes of this specification, the term "**path**" refers to the logical communication between the nodes and not to
10 the physical telecommunications links between the nodes.

Because the illustrative embodiment has a hierarchical topology, several terms relating to hierarchies are defined so as to facilitate an unambiguous description of the illustrative embodiment. Therefore, for the purpose of this specification:

- 15 • a "**hierarchical computer network**" is defined as a computer network in which there is only one logical communication path between any two nodes in the network, and one of the nodes in the network is designated as the "root."
- a "**given node**" is any node in a computer network.
- the "**ancestral nodes**" of a given node are defined as *all* of the nodes, if any, logically between the given node and the root, including the root. For example, the ancestral nodes
20 of node 423 are nodes 411 and 401. One corollary of this definition is that the root has no ancestral nodes, but all other nodes have at least one ancestral node (the root).
- the "**parental node**" of a given node is defined as only that node, if any, adjacent to the given node and in the logical path between the given node and the root. For example, the parental node of node 423 is node 411 and the parental node of node 411 is node 401.
25 One corollary of this definition is that the root has no parental node. A second corollary is that all of the nodes in the hierarchy except the root have exactly one parental node. A third corollary of this definition is that a parental node of a given node is also an ancestral node of the given node, but an ancestral node of a given node might be, but is not necessarily a parental node of the given node.
- 30 • the "**grandparental node**" of a given node is defined as only that node, if any, adjacent to the parental node of the given node and in the logical path between the given node and

the root. For example, the grandparental node of node 432 is node 411, and the grandparental node of node 425 is node 401.

- the "**lineal nodes**" of a given node are defined as *all* of the nodes, if any, that must communicate through the given node to communicate with the root. For example, the lineal nodes of node 411 are nodes 421, 422, 423, 424, 431, 432, and 433. One corollary of this definition is that all of the nodes other than the root are lineal nodes of the root.
- the "**filial nodes**" of a given node are defined as *all* of the nodes, if any, that must communicate through the given node to communicate with the root and that are adjacent to the given node. For example, the filial nodes of node 411 are nodes 421, 422, 423, and 424. One corollary to this definition is that a filial node of a given node is also a lineal node of the given node, but a lineal of a given node might be, but is not necessarily a filial node of the given node.
- the "**leaves**" of a hierarchy are defines as those nodes that do not have any filial nodes. For example, the leaves in the illustrative embodiment are nodes 412, 422, 424, 425, 431, 432, and 433.

In accordance with the illustrative embodiment, root node 401 actually or apparently comprises a vast amount of information, arranged in bundles called "resources," that are individually addressable and that can be individually requested by some or all of the nodes in hierarchical network 400. For example, root node 401 can be a disk farm or a gateway to a data network (not shown in FIG. 4), such as the Internet, that itself comprises some or all of the resources. In accordance with the illustrative embodiment, each resource is a file (*e.g.*, a World Wide Web page, a .gif file, a Java script, *etc.*). It will be clear to those skilled in the art how to make and use embodiments of the present invention in which a resource is something other than a file.

For the purposes of this specification, a "**resource identifier**" is defined as the indicium of a resource. In accordance with the illustrative embodiment, each resource identifier is a uniform resource locator (*e.g.*, www.amazon.com/books/102-8956393, *etc.*), which is commonly called a "URL." It will be clear to those skilled in the art how to make and use embodiments of the present invention in which a resource identifier is something other than a URL.

In accordance with the illustrative embodiment of the present invention, some or all of the nodes in the illustrative embodiment generate requests for resources that are originally available via root node 401. Some of these requests might be instigated by a user associated with a node and some of the requests might be instigated by a node itself. Typically, the leaf nodes are the nodes that

originally generate the requests because the leaf nodes are typically those that interact most often with end-users.

Because root node 401 might be bombarded with many concurrent requests for resources, it is typically not able to instantaneously provide a requested resource. And because any delay between the time when a node requests a resource and when the node receives the resource is generally undesirable, the illustrative embodiment advantageously incorporates caches for reducing the average delay. In accordance with the illustrative embodiment of the present invention, each node advantageously acts as a cache for its lineal nodes.

FIG. 5 depicts a block diagram of the salient components of a data processing node in accordance with the illustrative embodiment of the present invention. Each data processing node comprises: processor 501, memory 502, cache 503, transmitter 513, receiver 514, receivers 510-1 through 510- n , and transmitters 511-1 through 511- n .

Processor 501 is advantageously a general-purpose processor or a special-purpose processor that performs the functionality described herein and with respect to FIG. 6. Memory 502 holds programs and data for processor 501, and cache 503. It will be clear to those skilled in the art that memory 502 can utilize any storage technology (*e.g.*, semiconductor RAM, magnetic hard disk, optical disk, *etc.*) or combination of storage technologies, and it will also be clear to those skilled in the art that memory 502 can comprise a plurality of memories, each of which has different memory spaces.

All nodes, including root node 401 if it is a gateway to a data network, comprise: transmitter 513 for transmitting data to its parental node (or to the data network in the case of the root node) and receiver 514 for receiving data from its parental node (or from the data network in the case of the root node). It will be clear to those skilled in the art how to make and use transmitter 513 and receiver 514.

All nodes, except the leaves, comprise: one or more receivers 510- i and one or more transmitters 511- i for communicating with each of the node's n filial nodes, where $i = 1$ to n . It will be clear to those skilled in the art how to make and use receivers 510-1 through 510- n and transmitters 511-1 through 511- n .

FIG. 6 depicts a flowchart of the operation of the illustrative embodiment of the present invention, in which a given node, hereinafter called the "*Given Node*," requests a resource from its parental node, hereinafter called the "*Parental Node*," which resource might be in the Parental Node's cache or if not will need to be requested and received from the parental node of the *Parental Node*, which is called the "*Grandparental Node*."

At step 601, the *Given Node* receives a resource identifier and a request for the resource. This request and resource identifier might, for example, originate with a user of the *Given Node* as part of a World Wide Web browsing session (e.g., <http://www.amazon.com/mccullers.htm>, etc.). As another example, the request and resource identifier can originate with a lineal node of the *Given Node*, in which case the *Given Node* might retrieve the resource and store it and its resource identifier in its own cache.

At step 602, the *Given Node* transmits:

- i. the resource identifier, and
- ii. a request for the resource

to the *Parental Node*.

At step 603, the *Parental Node* receives:

- i. the resource identifier, and
- ii. a request for the resource

from the *Given Node*. It should be understood that the request for the resource can be either explicit or implicit. For example, an explicit request might comprise a command code that accompanies the resource identifier and that is to be interpreted as a request for the resource associated with the resource identifier. Alternatively, an implicit request might be assumed whenever the *Parental Node* merely receives a resource identifier from the *Given Node*.

At step 604, the *Parental Node* uses the resource identifier as an index into cache 503 to determine if the resource is contained in the *Parental Node's* cache. Alternatively, as taught in applicants' co-pending U.S. patent application Serial No. 09/_____, entitled "Distributed Caching Architecture For Computer Networks," the *Parental Node* can use a hashed function of the resource identifier as the index into cache 503. In either case, if the requested resource is in cache 503 (i.e., a cache hit), then control passes to step 610; otherwise (i.e., a cache "miss") control passes to step 605.

At step 605, the *Parental Node* begins the process, which is completed in step 606, of retrieving the requested resource from its parental node, the *Grandparental Node*. Advantageously, the *Parental Node* retrieves the requested resource from its parental node in the same manner that the *Given Node* did from the *Parental Node*. In other words, step 605 for the *Parental Node* is identical to step 602 for the *Given Node* in that the *Parental Node* advantageously transmits:

- i. the resource identifier,
- ii. a request for the resource

to the *Grandparental Node*. In this way, steps 602 through 611 in FIG. 6 are recursive up through the hierarchy until the requested resource is found.

At step 606, the *Parental Node* receives the requested resource from the *Grandparental Node*.

At step 607 the *Parental Node* records:

- i. the instance of the request from the *Given Node* for the resource,
- ii. the identity of the *Given Node* to distinguish it from the *Parental Node's* other filial nodes, and
- iii. the time of the instance of the request from the *Given Node*,

in a data structure, such as that shown in Table 1.

Resource Identifier	Requesting Node ID	Time Stamp
...	...	...
www.amazon.com/mccullers.htm	Node #34	10:34 GMT Aug. 24, 2000
www.amazon.com/books.htm	Node #238	21:11 GMT Aug. 15, 2000
www.amazon.com/sales.htm	Node #238	11:06 GMT Aug. 23, 2000
...	...	...

Table 1 — Illustrative Data Structure For Maintaining A Record of Each Request

The purpose of recording this information is to enable the *Parental Node*, at step 608, to determine when and if the resource received in step 606 should be stored in cache 503.

At step 608, the *Parental Node* determines whether the resource received in step 606, which is not currently in the *Parental Node's* cache, should be stored in cache 503. There are several factors that the *Parental Node* considers.

First, the *Parental Node* only populates cache 503 with the resource when at least i requests for the resource have been received, wherein i is a positive integer. In other words, the illustrative embodiment won't store the resource in the *Parental Node's* cache unless at least i requests for the resource have been received within an elapsed time interval, Δt . In some cases, the value of i is one, and in other cases the value of i is an integer greater than one.

In some cases, the value of i is invariant (*i.e.*, it does not change over time or as a function of circumstance). Alternatively, the value of i varies and is based on:

- i. the calendrical time, or
- ii. the elapsed time interval, Δt , or
- iii. the number, m , of filial nodes of the *Parental Node*, or
- iv. any combination of i, ii, and iii.

For the purposes of this specification, the phrase "**calendrical time**" is defined as the time with respect to the calendar. For example, the value of i can vary with the time of day, the day of the week, the day of the month, the day of the year, the month of the year, the season of the year, the year itself, *etc.*

Table 2 depicts an illustrative embodiment of the present invention in which the value of i varies as a function of the day of the week.

Day of the Week	i
Sunday	2
Monday	3
Tuesday	1
Wednesday	4
Thursday	3
Friday	1
Saturday	2

Table 2 — Illustrative Embodiment in Which i is a Function of the Day of the Week

The *Parental Node* can determine how many total requests there have been for a resource by using the data the *Parental Node* stored in step 607. As will be clear to those skilled in the art, varying the value of i as a function of the calendrical time has several effects on the operation of the illustrative embodiment. First, as shown in FIG. 7, the average amount of time that a given node must wait for a requested resource increases as i increases, but, as shown in FIG. 8, the storage requirements for cache 503 in the *Parental Node* decrease as i increases. Therefore, varying the value of i as a function of the calendrical time provides a parameter for controlling the operation of some embodiments of the present invention.

Second, the *Parental Node* only populates cache 503 with the resource when at least i requests for the resource have been received within an elapsed time interval, Δt . In other words, the illustrative embodiment won't store the resource in the *Parental Node's* cache unless at least a plurality of requests for the resource have been received within some time interval, Δt . In some cases, the value of Δt can be invariant.

Alternatively, the value of Δt can vary and can be based on:

- i. the value of i , or
- ii. the calendrical time, or
- iii. the number, m , of filial nodes of the *Parental Node*, or
- iv. any combination of i, ii, and iii.

Table 3 depicts an illustrative embodiment of the present invention in which the value Δt varies as a function of the value of i .

i	Δt
2	24 minutes
3	150 minutes
4	350 minutes
5	1000 minutes
6	2400 minutes
≥ 7	6000 minutes

Table 3 — The Value of Δt Varies Based On The Value of i

Furthermore, both i and Δt can vary and can be based on the calendrical time. Table 4 depicts an illustrative embodiment of the present invention in which the values of i and Δt vary as a function of the time of day.

Time of Day	i	Δt
Midnight to 5:30 AM	2	300 minutes
5:30 AM to 9:00 AM	3	150 minutes
9:00 AM to 4:30 PM	3	75 minutes
4:30 PM to Midnight	4	100 minutes

Table 4 — The Value of i and Δt Vary Based On Calendrical Time

The *Parental Node* can determine when each request for a resource have been made, and therefore if the requisite number of requests have been made in the elapsed time interval, Δt , by using the using the data the *Parental Node* has stored in step 607.

Third, the *Parental Node* only populates cache 503 with the resource when at least one request for the resource has been received from at least n of the *Parental Node's* m filial nodes. This is advantageous because it prevents the cache from being populated with resources that are only being used by a few of the *Parental Node's* filial nodes. In some cases, the value of n can be invariant.

Alternatively, the value of n can vary based on:

- i. the value of m , or
- ii. the value of i , or
- iii. the elapsed time interval, Δt , or
- iv. the calendrical time,
- v. any combination of i, ii, iii, and iv.

The *Parental Node* can determine how many of the *Parental Node's* m filial nodes have requested the resource by using the using the data the *Parental Node* has stored in step 607.

As part of step 608, if the *Parental Node* determines that the resource should be stored in cache 503, then control passes to step 609; otherwise, control passes to step 610.

At step 609, the *Parental Node* populates its cache with the resource with the resource identifier (or a hash function of the resource identifier) as the index.

5 At step 610, the *Parental Node* transmits the resource to the *Given Node*, and at step 611, the *Given Node* receives the resource.

It is to be understood that the above-described embodiments are merely illustrative of the present invention and that many variations of the above-described embodiments can be devised by those skilled in the art without departing from the scope of the invention. It is therefore intended that
10 such variations be included within the scope of the following claims and their equivalents.

What is claimed is:

1 **1.** A method comprising:
 2 populating a cache with a resource only when at least i requests for said resource have been
 3 received;
 4 wherein at least occasionally i is an integer greater than one.

1 **2.** The method of claim 1 wherein the value of i is invariant.

1 **3.** The method of claim 1 wherein the value of i is based on calendrical time.

1 **4.** The method of claim 1 wherein said cache is populated with said resource only when at
 2 least i requests for said resource have been received within an elapsed time interval, Δt .

1 **5.** The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on
 2 the value of i .

1 **6.** The method of claim 4 wherein the value of i is based on calendrical time.

1 **7.** The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on
 2 calendrical time.

1 **8.** A data processing system comprising:
 2 a cache for storing a resource; and
 3 a processor for populating said cache with said resource only when at least i requests for said
 4 resource have been received;
 5 wherein i is an integer greater than one.

1 **9.** The data processing system of claim 8 wherein the value of i is invariant.

1 **10.** The data processing system of claim 8 wherein the value of i is based on calendrical time.

1 **11.** The data processing system of claim 8 wherein said cache is populated with said resource
 2 only when at least i requests for said resource have been received within an elapsed time interval, Δt .

1 **12.** The data processing system of claim 8 wherein the duration of said elapsed time interval,
 2 Δt , is based on the value of i .

1 **13.** The data processing system of claim 8 wherein the value of i is based on calendrical time.

1 **14.** The data processing system of claim 8 wherein the duration of said elapsed time interval,
 2 Δt , is based on calendrical time.

1 **15.** A method comprising:
 2 receiving at a first node in a computer network at least one request for a resource;
 3 retrieving said resource from a second node in said computer network; and
 4 populating a cache in said first node with said resource only when at least i requests for said
 5 resource have been received at said first node;
 6 wherein i is an integer greater than one.

1 **16.** The method of claim 15 wherein the value of i is invariant.

1 **17.** The method of claim 15 wherein the value of i is based on calendrical time.

1 **18.** The method of claim 15 wherein said cache is populated with said resource only when at
 2 least i requests for said resource have been received within an elapsed time interval, Δt .

1 **19.** The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on
 2 the value of i .

1 **20.** The method of claim 18 wherein the value of i is based on calendrical time.

1 **21.** The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on
 2 calendrical time.

1 **22.** The method of claim 15:
 2 wherein said computer network is a hierarchical computer network and said first node has m
 3 filial nodes;
 4 wherein said cache is populated with said resource only when at least one request for said
 5 resource has been received from at least n of said m filial nodes; and
 6 wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

1 **23.** The method of claim 15:
 2 wherein said computer network is a hierarchical computer network and said first node has m
 3 filial nodes;
 4 wherein said cache is populated with said resource only when at least one request for said
 5 resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ;
 6 and
 7 wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

1 **24.** A first node in a computer network, said first node comprising:
 2 a cache;
 3 at least one receiver for receiving at least one request for a resource; and
 4 a processor for retrieving said resource from a second node in said computer network, and for
 5 populating said cache in said first node with said resource only when at least i requests for said
 6 resource have been received at said first node;
 7 wherein i is an integer greater than one.

1 **25.** The first node of claim 24 wherein the value of i is invariant.

1 **26.** The first node of claim 24 wherein the value of i is based on calendrical time.

1 **27.** The first node of claim 24 wherein said cache is populated with said resource only when
 2 at least i requests for said resource have been received within an elapsed time interval, Δt .

1 **28.** The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based
 2 on the value of i .

1 **29.** The first node of claim 27 wherein the value of i is based on calendrical time.

1 **30.** The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based
 2 on calendrical time.

1 **31.** The first node of claim 24:
 2 wherein said computer network is a hierarchical computer network and said first node has m
 3 filial nodes;
 4 wherein said cache is populated with said resource only when at least one request for said
 5 resource has been received from at least n of said m filial nodes; and
 6 wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

1 **32.** The first node of claim 24:
 2 wherein said computer network is a hierarchical computer network and said first node has m
 3 filial nodes;
 4 wherein said cache is populated with said resource only when at least one request for said
 5 resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ;
 6 and
 7 wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

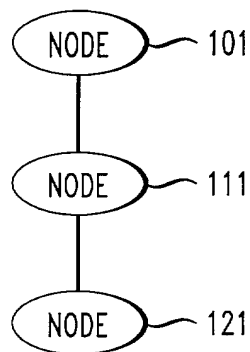
Abstract

1 A technique for efficiently populating a cache in a data processing system with resources is
2 disclosed. In particular, a node in accordance with the illustrative embodiment of the present
3 invention defers populating its cache with a resource until at least two requests for the resource have
4 been received. This is advantageous because it prevents the cache from being populated with
5 infrequently requested resources. Furthermore, the illustrative embodiment of the present invention
6 populates a cache with a resource only when: at least i requests for the resource have been received at
7 a given node within an elapsed time interval, Δt , wherein i is an integer greater than one; and at least
8 one request for the resource has been received from at least n of the m filial nodes of the given node
9 within an elapsed time interval, Δt , wherein m is an integer greater than one, n is an integer greater
10 than one, and $m \geq n$. Embodiments of the present invention are particularly advantageous in computer
11 networks that comprise a *logical* hierarchical topology, but are useful in any computer network, and in
12 individual data processing systems and routers that comprise a cache memory.

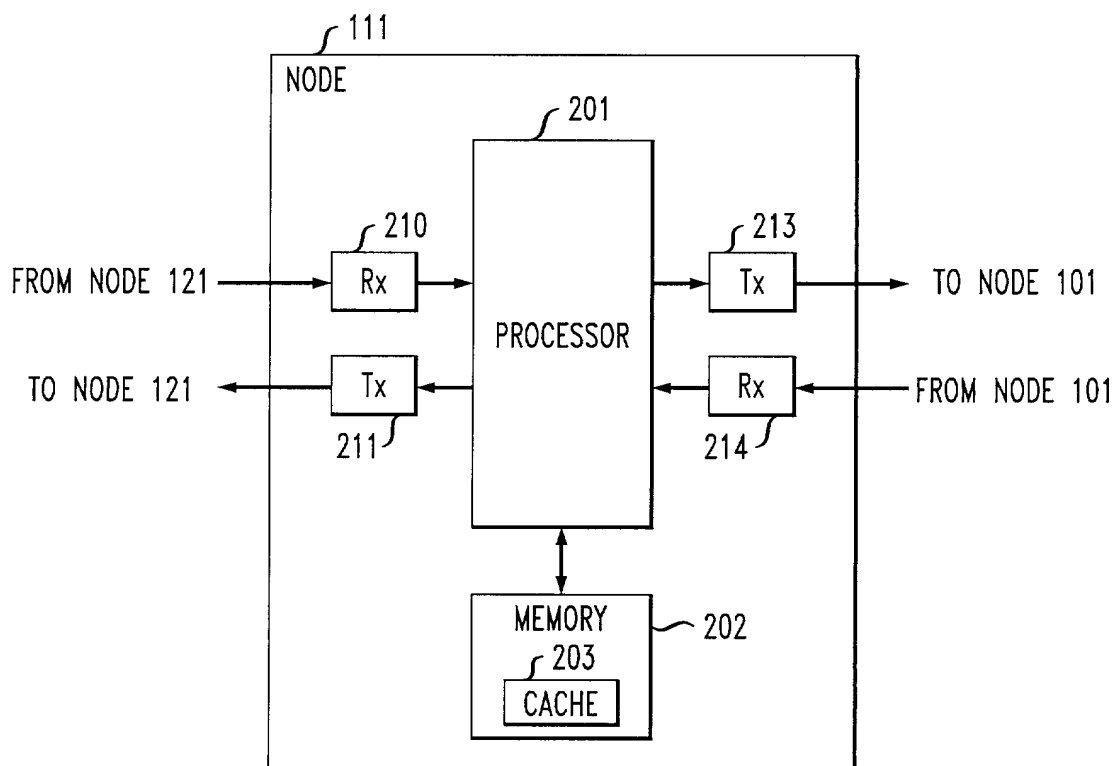
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FIG. 1

PRIOR ART

100*FIG. 2*

PRIOR ART



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FIG. 3

PRIOR ART

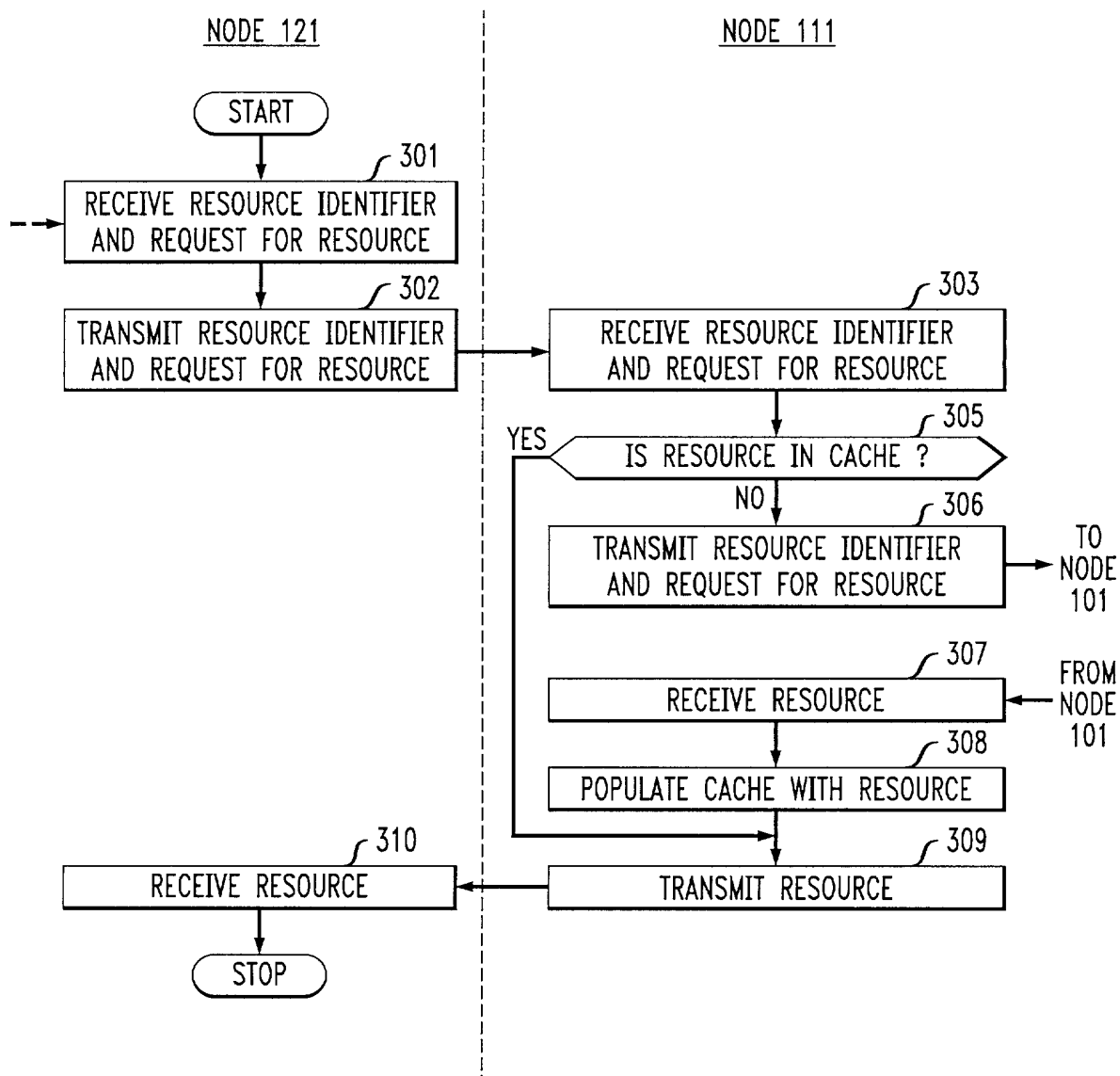


FIG. 4

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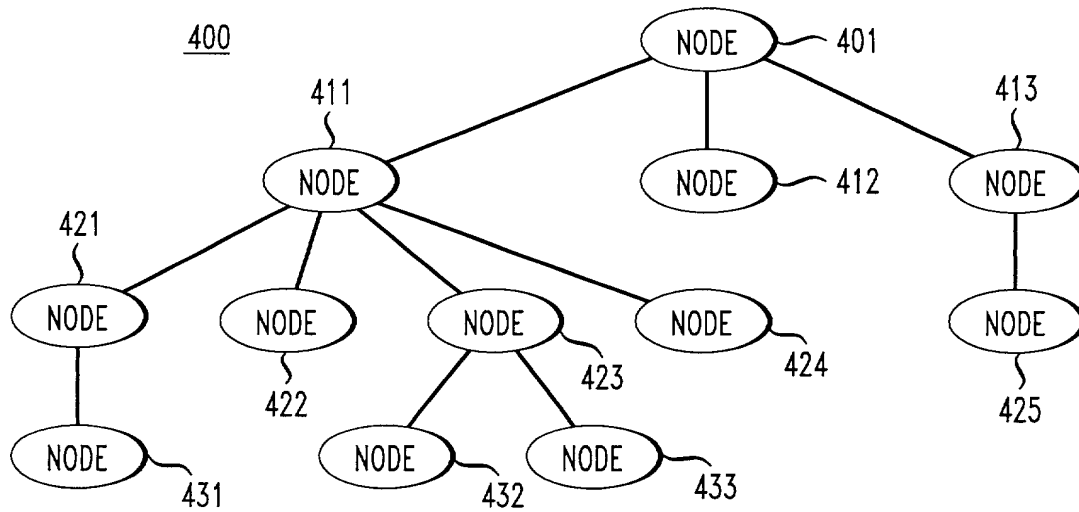
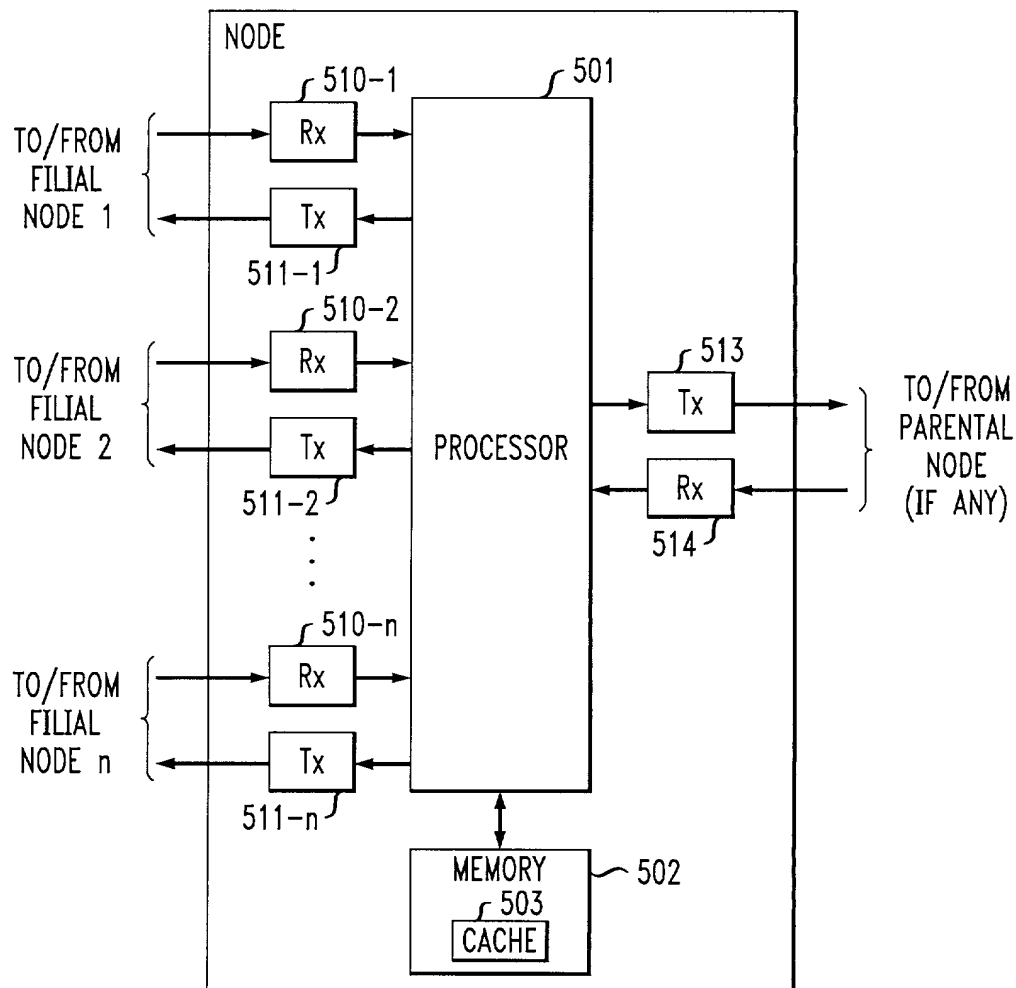


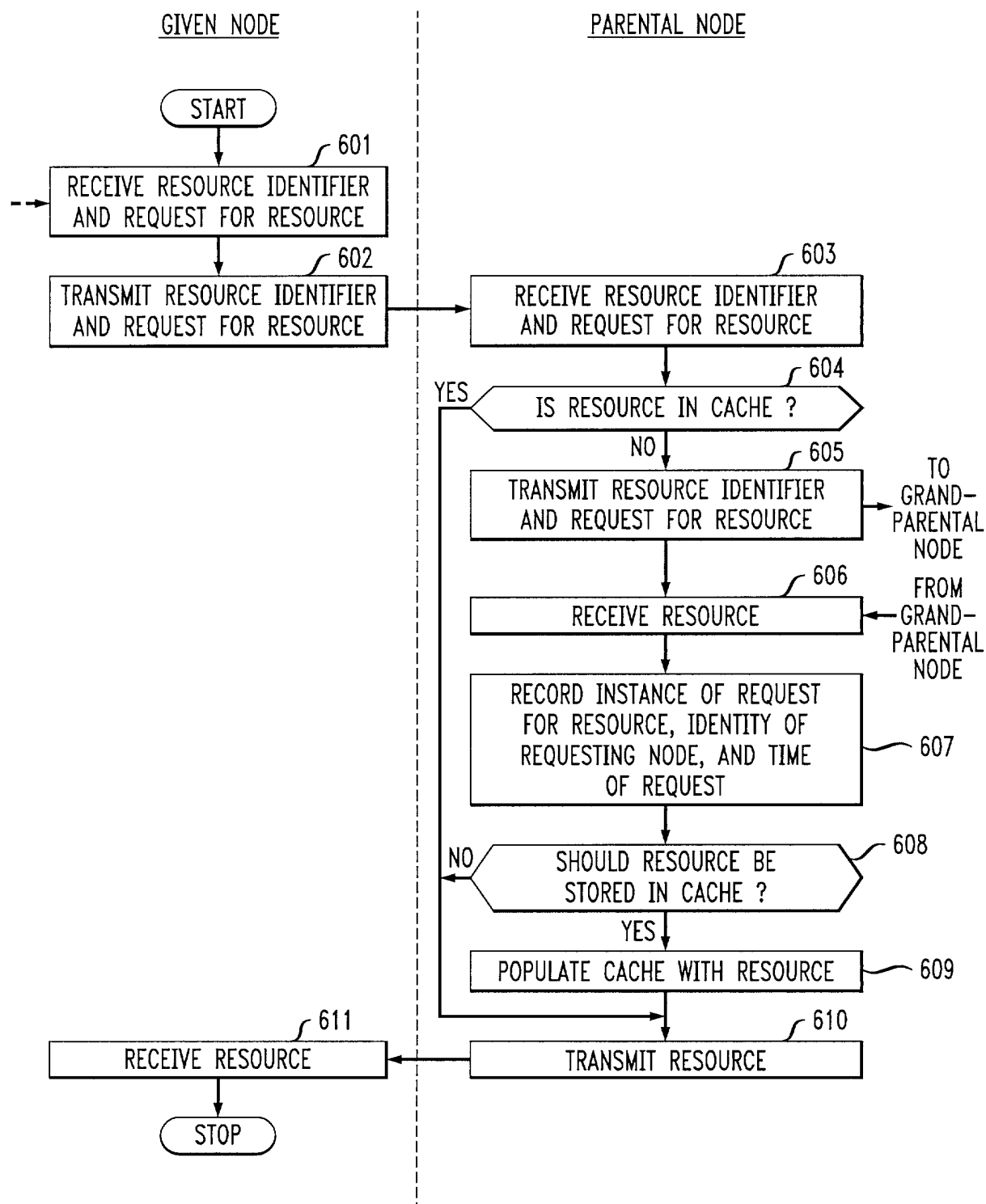
FIG. 5

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FIG. 6



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FIG. 7

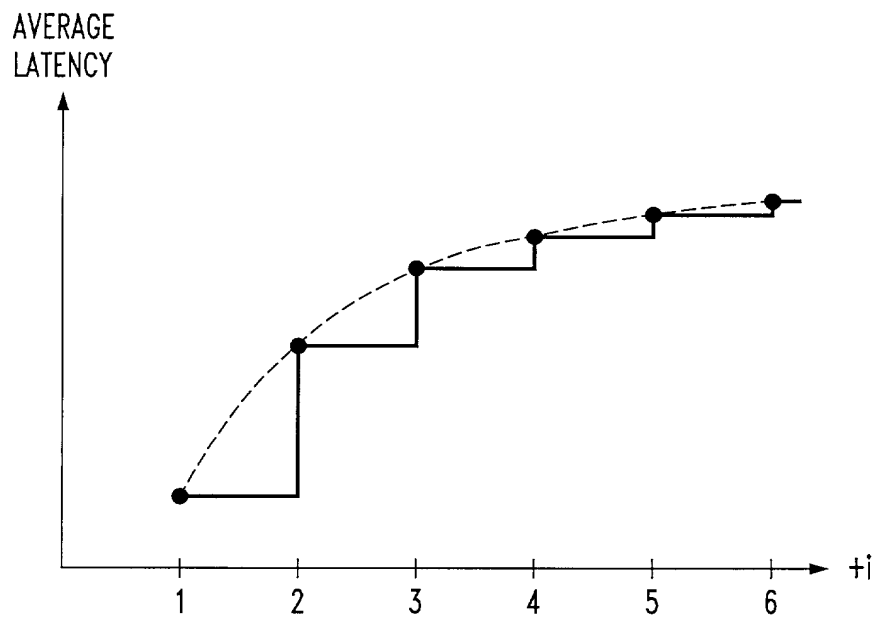
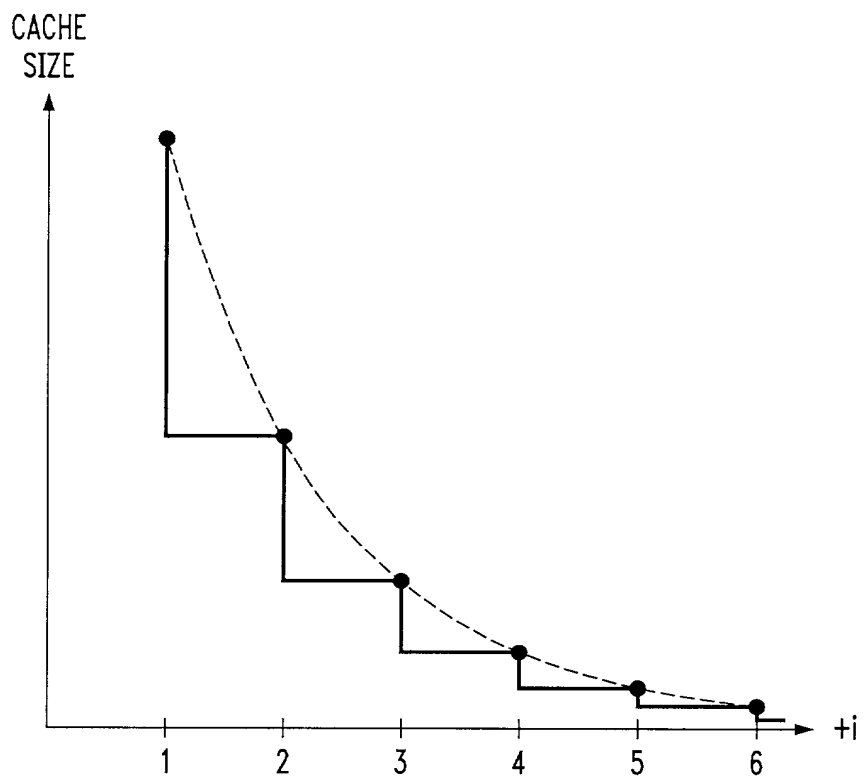


FIG. 8



IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Declaration and Power of Attorney

As the below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **METHOD AND APPARATUS FOR ECONOMICAL CACHE POPULATION**, the specification of which is attached hereto.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by an amendment, if any, specifically referred to in this oath or declaration.

I acknowledge the duty to disclose all information known to me which is material to patentability as defined in Title 37, Code of Federal Regulations, 1.56.

I hereby claim the benefit under Title 35, United States Code, 119(e) of any United States provisional application(s) identified below:

None

I hereby claim foreign priority benefits under Title 35, United States Code, 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

None

I hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

None

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorney(s) with full power of substitution and revocation, to prosecute said application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith:

Jason Paul DeMont
Wayne S. Breyer

(Reg. No. 35,793)
(Reg. No. 38,089)

Full name of first inventor: Peter Joseph Giacomini

Inventor's signature Peter J. Giacomini Date 11/27/00

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Citizenship: United States of America

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Full name of second inventor: Walter Michael Pitio

Inventor's signature Walter Michael Pitio Date 11/27/2000

Residence: Morganville, Monmouth County, New Jersey

Citizenship: United States of America

Post Office Address: 28 Berkley Court
Morganville, NJ 07751

Full name of second inventor: Hector Francisco Rodriguez

Inventor's signature Hector Francisco Rodriguez Date 11/27/2000

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Inventor's signature Donald David Shugard Date 11/27/2000

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Customer Number 22897

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DeMont & Breyer, L.L.C.
P.O. Box 437
Basking Ridge, NJ 07920-0437

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E. 101

ISSUE CLASSIFICATION	
Class	Subclass

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 SCANNED 603 G.A. G.H.
PATENT DATE

APPLICATION NO. 09/725737	CONT/PRIOR	CLASS 211 709	SUBCLASS 216	ART UNIT 2153 ~~2155~~ 2153	EXAMINER Gurgess JUL 16 2009

THONG VU

Method and apparatus for economical cache population

TITLE

See you 225.72 vclite PTO-2040
12/89

ISSUING CLASSIFICATION															
ORIGINAL				CROSS REFERENCE(S)											
CLASS		SUBCLASS		CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)										
INTERNATIONAL CLASSIFICATION															

☐ Continued on Issue Slip Inside File Jacket.

☐ TERMINAL DISCLAIMER	DRAWINGS		CLAIMS ALLOWED	
	Sheets Drwg.	Figs. Drwg.	Print Fig.	Total Claims
☐ The term of this patent subsequent to _____ (date) has been disclaimed. ☐ The term of this patent shall not extend beyond the expiration date of U.S Patent. No. _____ _____ _____	_____ (Assistant Examiner) (Date)		NOTICE OF ALLOWANCE MAILED 	
	_____ (Primary Examiner) (Date)			
	_____ (Legal Instruments Examiner) (Date)		ISSUE FEE Amount Due Date Paid	
☐ The terminal ____months of this patent have been disclaimed.			ISSUE BATCH NUMBER	

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713	1		
711	141,130		

INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.

SEARCH NOTES (INCLUDING SEARCH STRATEGY)

	Date	Exmr.

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Globus Medical, Inc.

11-12-2013 00:11:11 Exhibit 10-17, p. 150

ISSUE SLIP STAPLE AREA (for additional cross references)

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FEE DETERMINATION			
O.I.P.E. CLASSIFIER			12/25
FORMALITY REVIEW	Sm	879	01-04-01
RESPONSE FORMALITY REVIEW			

INDEX OF CLAIMS

✓	Rejected	N	Non-elected
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- (Through numeral)	Canceled	A	Appeal
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Claim	Date
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Globus Medical, Inc.

11.30.00

JC921 U.S. #10
09/725737

11/29/00

"Express Mail" mailing label number EL025877142US;
Date of Deposit: November 29, 2000.

I hereby certify that this application is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to "Box PATENT APPLICATION, Assistant Director of Patents, Washington, D.C. 20231".

Jason Paul DeMont

Paul DeMont

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

Enclosed are the following papers relating to the above-named application for patent:

1. Transmittal Letter — 2 Pages (3x)
2. Check for \$492.00 to cover the Filing Fee
3. Check for \$40.00 for the Assignment Recordation Fee
4. Specification — 16 Pages (1x)
5. Formal Drawings — 5 Sheets (1x)
6. Executed Declaration and Power of Attorney — 3 Pages (1x)
7. Assignment Recordation Cover Sheet — 3 Pages (1x)
8. Executed and Notarized Assignment and Agreement — 5 Pages (1x)
9. Information Disclosure Statement Cover Sheet — 1 Page (1x)
10. Information Disclosure Statement PTO-1449 Substitute with 1 Reference — 1 Pages (1x)

The applicants claim small entity status.

CLAIMS AS FILED				
	NO. FILED	NO. EXTRA	RATE	CALCULATIONS
Total Claims	32 - 20 =	12	x \$9 =	108
Independent Claims	4 - 3 =	1	x \$39 =	39
Multiple Dependent Claim(s), if applicable			x \$270 =	0
Basic Fee				\$345
			TOTAL FEE:	\$492

Please file the application and find a check enclosed to cover the filing fee in the amount of \$492, to cover the filing fee. Duplicate copies of this letter are enclosed. In the event of non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit Jason Paul DeMont **Deposit Account No. 10-1045** as required to correct the error.

Pursuant to 35 U.S.C. 122(b), the applicants request publication of this application after the expiration of a period of 18 months from the earliest filing date of this application.

Please address all correspondence to:

Customer Number 22897

Pursuant to 37 C.F.R. 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,

By Jason Paul DeMont
Jason Paul DeMont
Attorney for Applicants
Reg. No. 35,793
908-903-1255



22897

PATENT TRADEMARK OFFICE

Date: 11/22/00
DeMont & Breyer, L.L.C.
P.O. Box 437
Basking Ridge, NJ 07920-0437

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FIG. 1

PRIOR ART

100

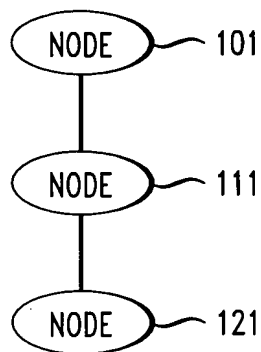


FIG. 2

PRIOR ART

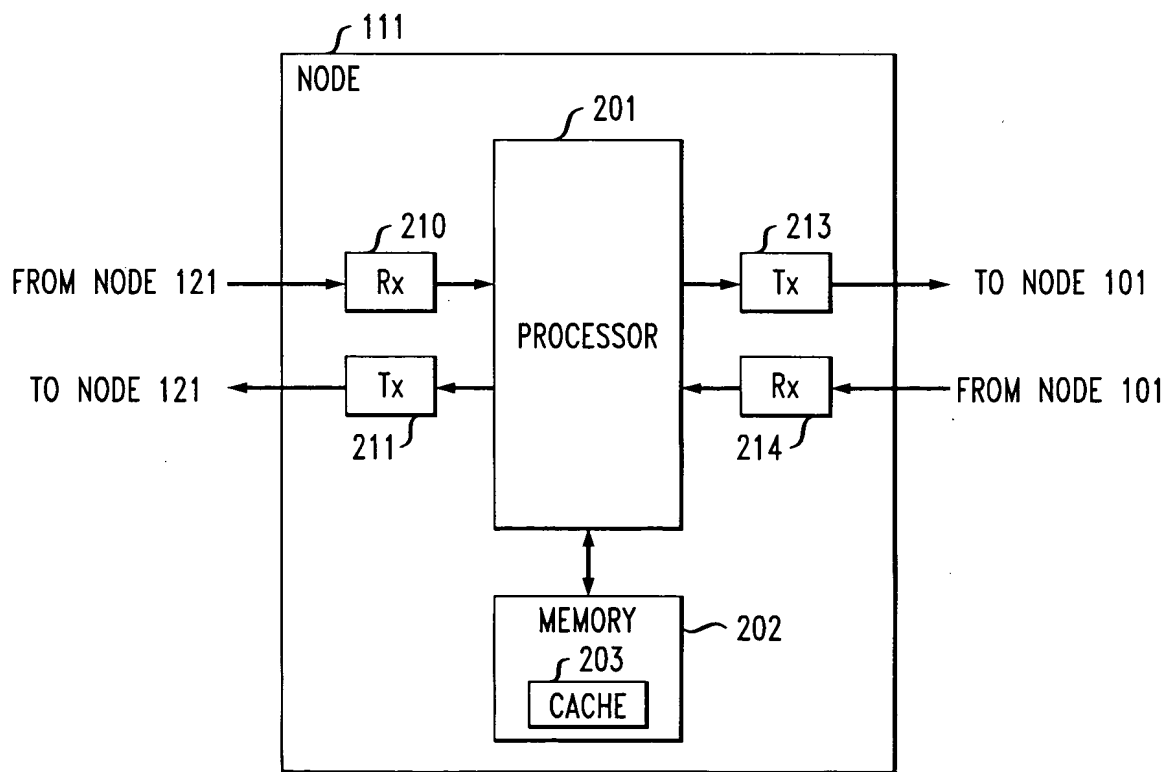
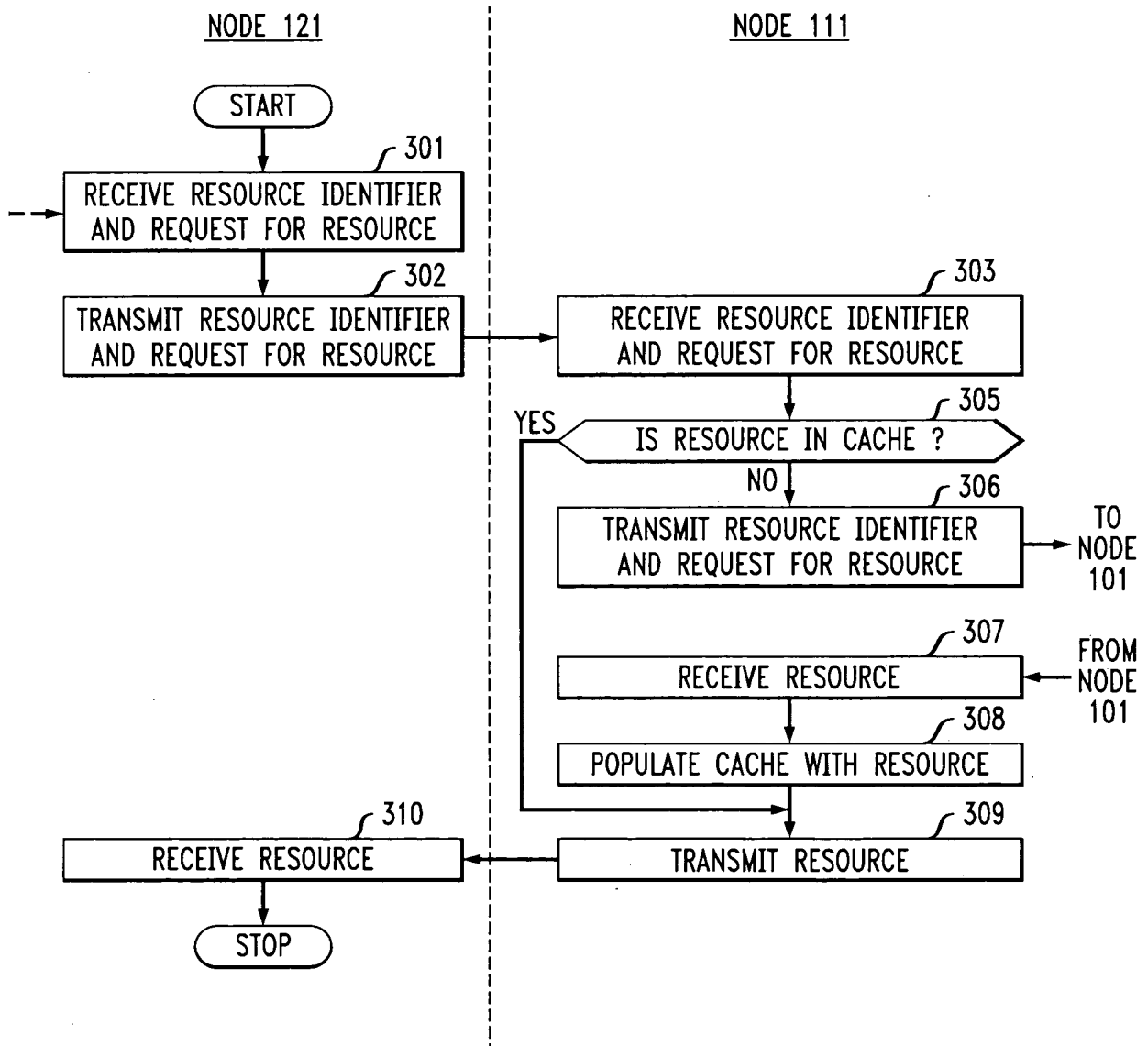


FIG. 3
PRIOR ART



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FIG. 4

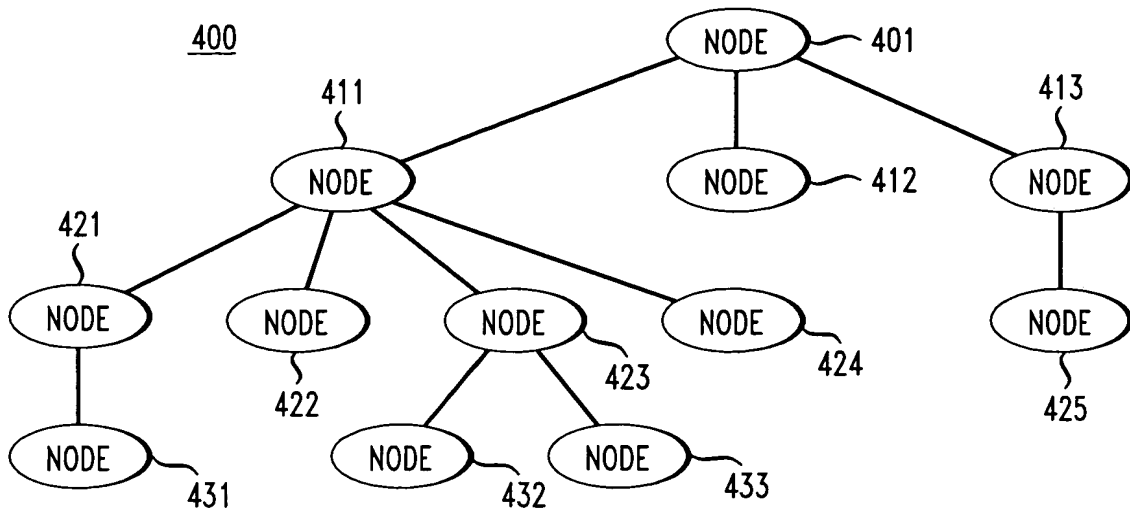
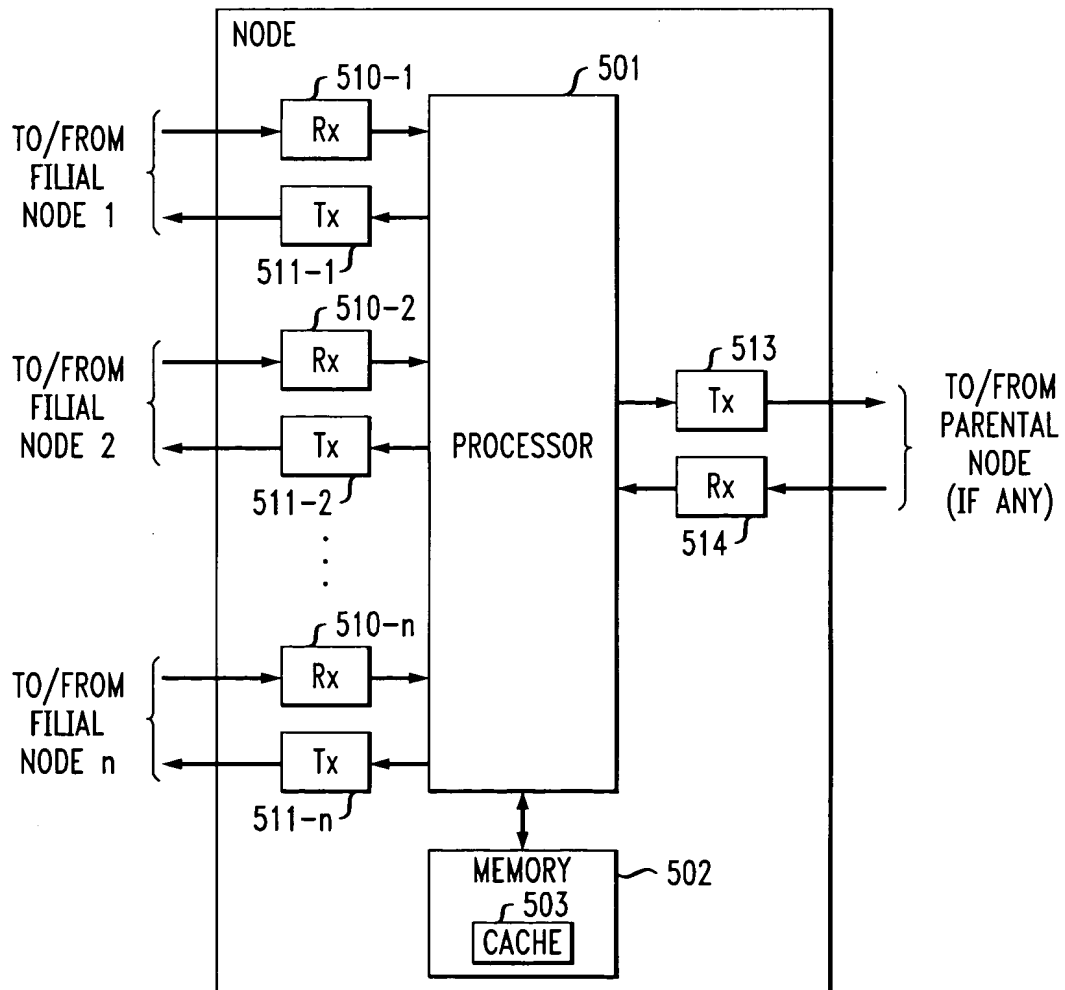


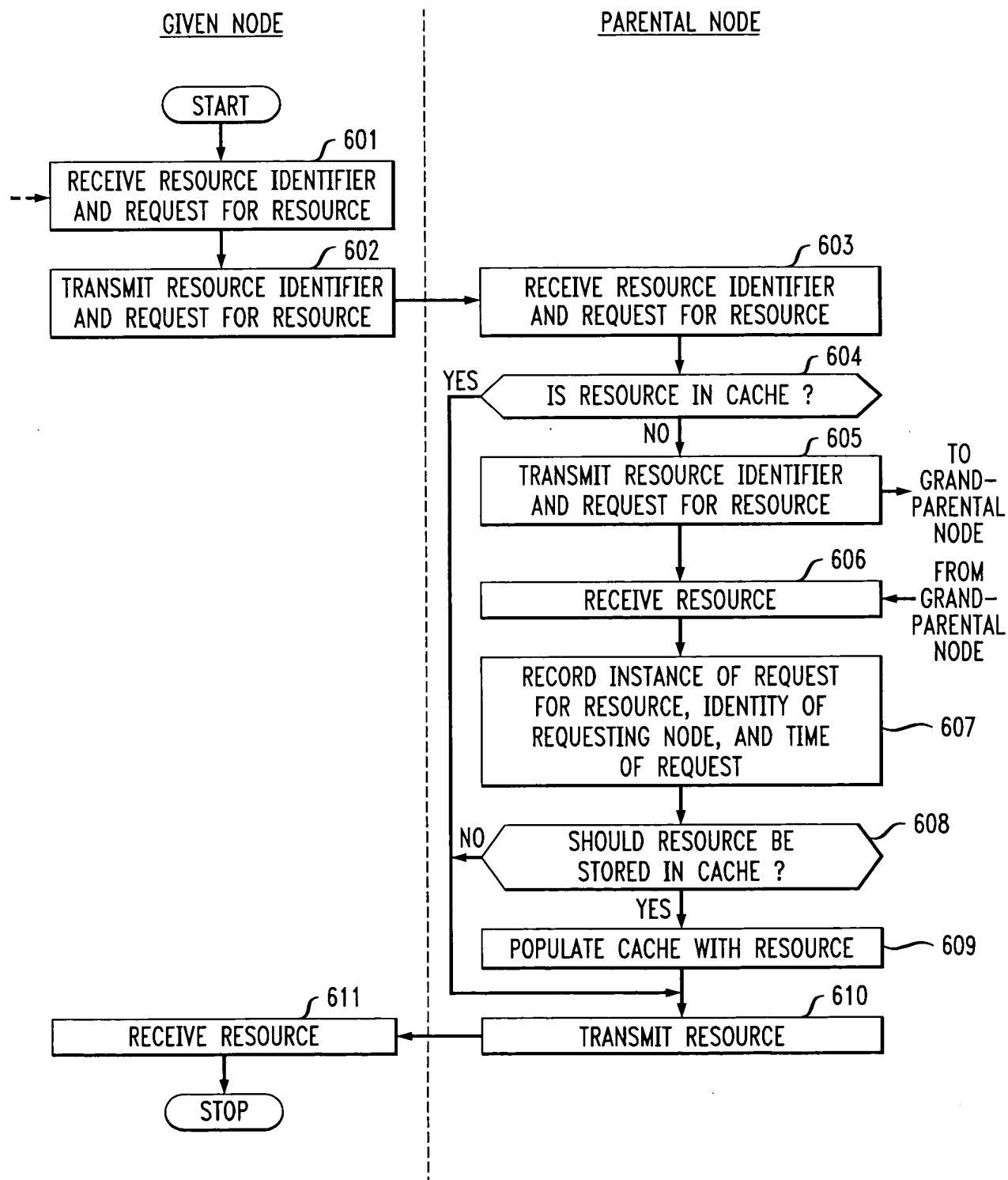
FIG. 5

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FIG. 6



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FIG. 7

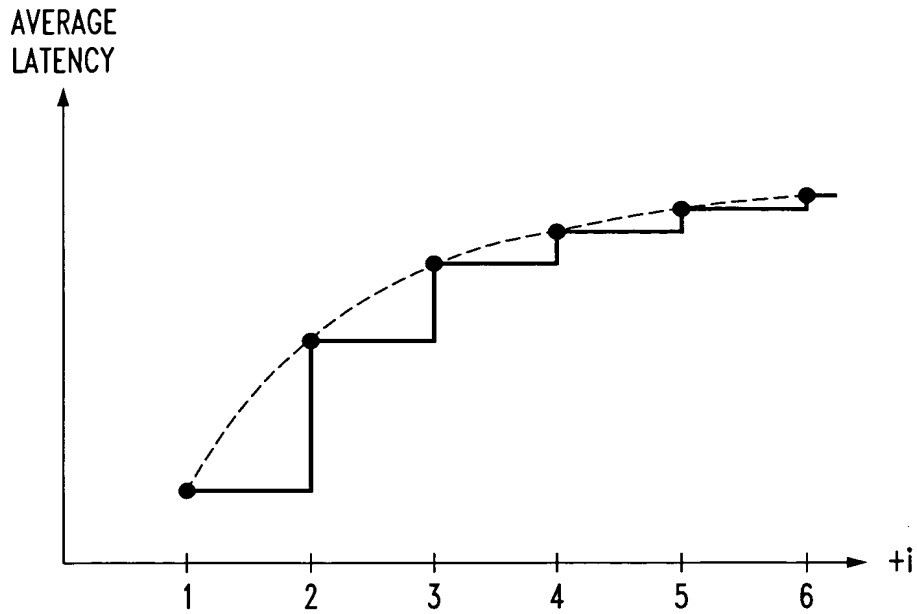
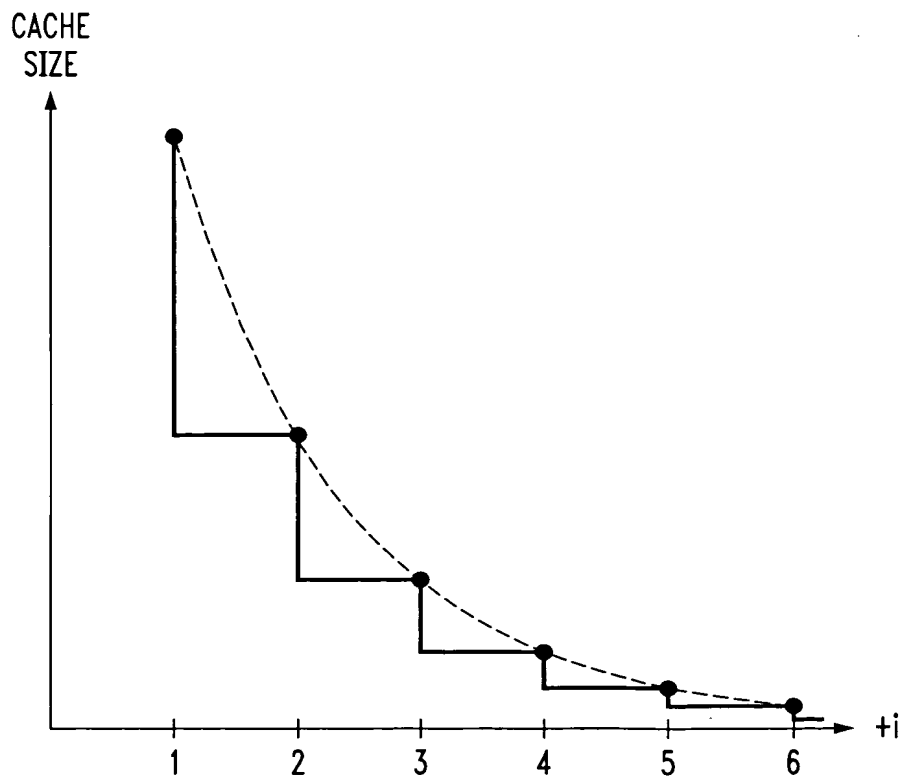


FIG. 8



METHOD AND APPARATUS FOR ECONOMICAL CACHE POPULATION

Reference to Related Applications

This application is related to U.S. patent application Serial No. 09/_____, entitled "Distributed Caching Architecture For Computer Networks," (Attorney Docket "Broadspider 1") filed on the same date as this application, which is incorporated by reference.

Field of the Invention

The present invention relates to data processing systems and computer networks in general, and, more particularly, to techniques for caching resources in cache.

Background of the Invention

When a user of the World Wide Web requests a Web page, the user must wait until the page is available on his or her data processing system (*e.g.*, computer, *etc.*) for viewing. In general, this wait occurs because the request for the Web page must traverse the Internet from the user's data processing system to the data processing system that is the source of the page, the request must be fulfilled, and the requested page must travel back to the user's system. If the Internet is congested or the data processing system that is the source of the page is overwhelmed with many concurrent requests for pages, the wait can be considerably long.

To shorten this wait, special data processing systems are deployed throughout the Internet that expedite the delivery of some Web pages. Some of these data processing systems expedite the delivery of Web pages by functioning as cache memories, which are also known as "caches." For the purpose of this specification, a "**cache**" is defined as a cache memory. For example, a cache stores commonly requested Web pages and thereafter enables requests for those pages to be intercepted and fulfilled from the cache without retrieval from the principal memory. This expedites the delivery of the Web page in two ways. First, a cache eliminates the need for the request to travel all of the way to the system that is the ultimate source of the page, and, therefore, eliminates some of the wait associated with the transit. Second, a cache also reduces the number of Web page requests that must be fulfilled by the system that is the ultimate source of the page, and, therefore, the wait associated with contention for the system is eliminated.

FIG. 1 depicts a block diagram of a computer network in the prior art in which one of the network's nodes acts as a cache for another of the nodes. Computer network 100 comprises three nodes that are interconnected *logically* as shown. The salient characteristic of the topology of

computer network 100 is that node 121 communicates with node 101 only through node 111, and, therefore, node 111 is capable of intercepting and fulfilling requests from node 121 for node 101. In other words, although there might be more than one physical telecommunication path between node 101 and node 111 (not shown in FIG. 1) and more than one physical telecommunication path between node 111 and node 121 (also not shown in FIG. 1), and even a direct physical telecommunication path between node 101 and 121, node 111 is *logically* in the path between node 101 and node 121.

From the perspective of node 121 and node 111, node 101 actually or apparently comprises a vast amount of information arranged in bundles, called "resources." For the purposes of this specification, a "**resource**" is defined as an individually addressable bundle of information that can be requested by a node. For example, a resource might be an individual computer file (*e.g.*, a World Wide Web page, a .gif file, a Java script, *etc.*) or a database record, *etc.* Although node 101 can actually comprise a vast amount of information if, for example, it is a disk farm, it can also apparently comprise the information if it acts as a gateway to a data network, such as the Internet.

When node 101 is bombarded with a large number of concurrent requests for resources from node 121, node 101 might not be able to instantaneously respond to all of the requests. Therefore, to reduce the average delay between when node 121 requests a resource from node 101 and when it receives the resource, node 111 functions as a cache for node 101.

FIG. 2 depicts a block diagram of the salient components of node 111 in accordance with the prior art. Node 111 comprises: processor 201, memory 202, receiver 210, transmitter 211, transmitter 213, and receiver 214. Processor 201 is typically a general-purpose processor or a special-purpose processor that performs the functionality described herein with respect to FIG. 3. Memory 202 holds programs and data for processor 201 and comprises cache 203, which holds the cached resources for node 101. Node 111 uses receiver 210 for receiving data from node 121, transmitter 211 for transmitting to node 121, transmitter 213 for transmitting to node 101, and receiver 214 for receiving from node 121.

FIG. 3 depicts a flowchart of the operations performed by node 121 and node 111 when node 121 requests a resource from node 101 and node 111 intercepts the request, acts a cache for node 101, and fulfills the request, if possible, or passes the request on to node 101, if necessary.

At step 301, node 121 receives a resource identifier and a request for the resource. This request and resource identifier might, for example, originate with a user of node 121 as part of a World Wide Web browsing session (*e.g.*, <http://www.amazon.com/mccullers.htm>, *etc.*).

At step 302, node 121 transmits: (i) the resource identifier, and (ii) a request for the resource to node 111, and at step 303, node 111 receives: (i) the resource identifier, and (ii) a request for the resource.

At step 305, node 111 determines if, in fact, the requested resource is in its cache data structure. If it is (*i.e.*, a cache "hit"), then control passes to step 309; otherwise (*i.e.*, a cache "miss") control passes to step 306.

At step 306, node 111 transmits the resource identifier and request for the resource identifier to node 101, and at step 307 node 111 receives the requested resource.

At step 308, node 111 populates its cache with the received resource so that the next time the resource is requested, node 111 can fulfill the request itself. If the cache does not have enough empty storage available for the resource, node 111 can delete other resources in the cache, in accordance with any of many well-known cache replacement algorithms, to make room for the most recently requested resource.

At step 309, node 111 transmits the resource to node 121, as requested, whether the requested resource was in node 111's cache data structure or not.

The increasing size and complexity of the Internet, and its increasing use for transmitting multimedia resources has created the need for improved caching techniques.

Summary of the Invention

The present invention is a technique for efficiently populating a cache with resources that avoids some of the costs and disadvantages associated with caching techniques in the prior art. In particular, a node in accordance with the illustrative embodiment of the present invention defers, at least occasionally, populating its cache with a resource until at least two requests for the resource have been received. This is advantageous because it prevents the cache from being populated with infrequently requested resources.

Furthermore, the illustrative embodiment of the present invention populates a cache with a resource only when:

1. at least i requests for the resource have been received at a given node within an elapsed time interval, Δt , wherein i is an integer greater than one; and
2. at least one request for the resource has been received from at least n of the m filial nodes of the given node within an elapsed time interval, Δt , wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

Embodiments of the present invention are particularly advantageous in computer networks that comprise a *logical* hierarchical topology, but are useful in any computer network, and in individual data processing systems and routers that comprise a cache memory.

The illustrative embodiment of the present invention comprises populating a cache with a resource only when at least i requests for said resource have been received, wherein i is an integer greater than one.

Brief Description of the Drawings

FIG. 1 depicts a block diagram of a computer network in the prior art.

FIG. 2 depicts a block diagram of the salient components of one of the nodes depicted in

FIG. 1.

FIG. 3 depicts a flowchart of the operations performed by two of the nodes depicted in FIG. 1.

FIG. 4 depicts a block diagram of the illustrative embodiment of the present invention.

FIG. 5 depicts a block diagram of the salient components of a data processing node in accordance with the illustrative embodiment of the present invention.

FIG. 6 depicts a flowchart of the illustrative embodiment of the present invention.

FIG. 7 depicts a graph of the average latency as a function of i , in accordance with the illustrative embodiment of the present invention.

FIG. 8 depicts a graph of the cache storage needs as a function of i , in accordance with the illustrative embodiment of the present invention.

Detailed Description

FIG. 4 depicts a block diagram of the illustrative embodiment of the present invention, which comprises 12 nodes (*i.e.*, data processing systems) that are interconnected in a computer network with a *logical* hierarchical topology. In other words, although there might be one or more physical telecommunication links (not shown) between *any* two nodes depicted in FIG. 4, the nodes are interrelated in a *logical* hierarchy. This point is worth reiterating; the depicted paths between the nodes in FIG. 4 represent the logical hierarchical relationship of the nodes and not the physical telecommunication links that the nodes use to communicate with each other. Therefore, the illustrative embodiment is well-suited for networks with dynamic routing (*e.g.*, Internet Protocol networks, *etc.*).

Although the illustrative embodiment comprises 12 data processing nodes in one particular hierarchy, it will be clear to those skilled in the art how to make and use embodiments of the present

invention that comprise any number of nodes that are interconnected in any hierarchy. Furthermore, it will be clear to those skilled in the art how the inventions described herein are useful in any computer network with any logical topology — including those that are not hierarchical — and also to individual data processing systems and routers that comprise a cache memory.

5 In accordance with the illustrative embodiment of the present invention, each pair of interconnected nodes communicate with each other, either directly or indirectly, via one or more physical wireline or wireless telecommunications links or both (not shown in FIG. 4). It will be clear to those skilled in the art how to make and use such telecommunications links. For the purposes of this specification, the term "**path**" refers to the logical communication between the nodes and not to
10 the physical telecommunications links between the nodes.

Because the illustrative embodiment has a hierarchical topology, several terms relating to hierarchies are defined so as to facilitate an unambiguous description of the illustrative embodiment. Therefore, for the purpose of this specification:

- 15 • a "**hierarchical computer network**" is defined as a computer network in which there is only one logical communication path between any two nodes in the network, and one of the nodes in the network is designated as the "root."
- a "**given node**" is any node in a computer network.
- the "**ancestral nodes**" of a given node are defined as *all* of the nodes, if any, logically between the given node and the root, including the root. For example, the ancestral nodes
20 of node 423 are nodes 411 and 401. One corollary of this definition is that the root has no ancestral nodes, but all other nodes have at least one ancestral node (the root).
- the "**parental node**" of a given node is defined as only that node, if any, adjacent to the given node and in the logical path between the given node and the root. For example, the parental node of node 423 is node 411 and the parental node of node 411 is node 401.
25 One corollary of this definition is that the root has no parental node. A second corollary is that all of the nodes in the hierarchy except the root have exactly one parental node. A third corollary of this definition is that a parental node of a given node is also an ancestral node of the given node, but an ancestral node of a given node might be, but is not necessarily a parental node of the given node.
- 30 • the "**grandparental node**" of a given node is defined as only that node, if any, adjacent to the parental node of the given node and in the logical path between the given node and

the root. For example, the grandparental node of node 432 is node 411, and the grandparental node of node 425 is node 401.

- the "**lineal nodes**" of a given node are defined as *all* of the nodes, if any, that must communicate through the given node to communicate with the root. For example, the lineal nodes of node 411 are nodes 421, 422, 423, 424, 431, 432, and 433. One corollary of this definition is that all of the nodes other than the root are lineal nodes of the root.
- the "**filial nodes**" of a given node are defined as *all* of the nodes, if any, that must communicate through the given node to communicate with the root and that are adjacent to the given node. For example, the filial nodes of node 411 are nodes 421, 422, 423, and 424. One corollary to this definition is that a filial node of a given node is also a lineal node of the given node, but a lineal of a given node might be, but is not necessarily a filial node of the given node.
- the "**leaves**" of a hierarchy are defines as those nodes that do not have any filial nodes. For example, the leaves in the illustrative embodiment are nodes 412, 422, 424, 425, 431, 432, and 433.

In accordance with the illustrative embodiment, root node 401 actually or apparently comprises a vast amount of information, arranged in bundles called "resources," that are individually addressable and that can be individually requested by some or all of the nodes in hierarchical network 400. For example, root node 401 can be a disk farm or a gateway to a data network (not shown in FIG. 4), such as the Internet, that itself comprises some or all of the resources. In accordance with the illustrative embodiment, each resource is a file (*e.g.*, a World Wide Web page, a .gif file, a Java script, *etc.*). It will be clear to those skilled in the art how to make and use embodiments of the present invention in which a resource is something other than a file.

For the purposes of this specification, a "**resource identifier**" is defined as the indicium of a resource. In accordance with the illustrative embodiment, each resource identifier is a uniform resource locator (*e.g.*, www.amazon.com/books/102-8956393, *etc.*), which is commonly called a "URL." It will be clear to those skilled in the art how to make and use embodiments of the present invention in which a resource identifier is something other than a URL.

In accordance with the illustrative embodiment of the present invention, some or all of the nodes in the illustrative embodiment generate requests for resources that are originally available via root node 401. Some of these requests might be instigated by a user associated with a node and some of the requests might be instigated by a node itself. Typically, the leaf nodes are the nodes that

originally generate the requests because the leaf nodes are typically those that interact most often with end-users.

Because root node 401 might be bombarded with many concurrent requests for resources, it is typically not able to instantaneously provide a requested resource. And because any delay between the time when a node requests a resource and when the node receives the resource is generally undesirable, the illustrative embodiment advantageously incorporates caches for reducing the average delay. In accordance with the illustrative embodiment of the present invention, each node advantageously acts as a cache for its lineal nodes.

FIG. 5 depicts a block diagram of the salient components of a data processing node in accordance with the illustrative embodiment of the present invention. Each data processing node comprises: processor 501, memory 502, cache 503, transmitter 513, receiver 514, receivers 510-1 through 510- n , and transmitters 511-1 through 511- n .

Processor 501 is advantageously a general-purpose processor or a special-purpose processor that performs the functionality described herein and with respect to FIG. 6. Memory 502 holds programs and data for processor 501, and cache 503. It will be clear to those skilled in the art that memory 502 can utilize any storage technology (*e.g.*, semiconductor RAM, magnetic hard disk, optical disk, *etc.*) or combination of storage technologies, and it will also be clear to those skilled in the art that memory 502 can comprise a plurality of memories, each of which has different memory spaces.

All nodes, including root node 401 if it is a gateway to a data network, comprise: transmitter 513 for transmitting data to its parental node (or to the data network in the case of the root node) and receiver 514 for receiving data from its parental node (or from the data network in the case of the root node). It will be clear to those skilled in the art how to make and use transmitter 513 and receiver 514.

All nodes, except the leaves, comprise: one or more receivers 510- i and one or more transmitters 511- i for communicating with each of the node's n filial nodes, where $i = 1$ to n . It will be clear to those skilled in the art how to make and use receivers 510-1 through 510- n and transmitters 511-1 through 511- n .

FIG. 6 depicts a flowchart of the operation of the illustrative embodiment of the present invention, in which a given node, hereinafter called the "*Given Node*," requests a resource from its parental node, hereinafter called the "*Parental Node*," which resource might be in the Parental Node's cache or if not will need to be requested and received from the parental node of the *Parental Node*, which is called the "*Grandparental Node*."

At step 601, the *Given Node* receives a resource identifier and a request for the resource. This request and resource identifier might, for example, originate with a user of the *Given Node* as part of a World Wide Web browsing session (e.g., <http://www.amazon.com/mccullers.htm>, etc.). As another example, the request and resource identifier can originate with a lineal node of the *Given Node*, in which case the *Given Node* might retrieve the resource and store it and its resource identifier in its own cache.

At step 602, the *Given Node* transmits:

- i. the resource identifier, and
- ii. a request for the resource

to the *Parental Node*.

At step 603, the *Parental Node* receives:

- i. the resource identifier, and
- ii. a request for the resource

from the *Given Node*. It should be understood that the request for the resource can be either explicit or implicit. For example, an explicit request might comprise a command code that accompanies the resource identifier and that is to be interpreted as a request for the resource associated with the resource identifier. Alternatively, an implicit request might be assumed whenever the *Parental Node* merely receives a resource identifier from the *Given Node*.

At step 604, the *Parental Node* uses the resource identifier as an index into cache 503 to determine if the resource is contained in the *Parental Node's* cache. Alternatively, as taught in applicants' co-pending U.S. patent application Serial No. 09/_____, entitled "Distributed Caching Architecture For Computer Networks," the *Parental Node* can use a hashed function of the resource identifier as the index into cache 503. In either case, if the requested resource is in cache 503 (i.e., a cache hit), then control passes to step 610; otherwise (i.e., a cache "miss") control passes to step 605.

At step 605, the *Parental Node* begins the process, which is completed in step 606, of retrieving the requested resource from its parental node, the *Grandparental Node*. Advantageously, the *Parental Node* retrieves the requested resource from its parental node in the same manner that the *Given Node* did from the *Parental Node*. In other words, step 605 for the *Parental Node* is identical to step 602 for the *Given Node* in that the *Parental Node* advantageously transmits:

- i. the resource identifier,
- ii. a request for the resource

to the *Grandparental Node*. In this way, steps 602 through 611 in FIG. 6 are recursive up through the hierarchy until the requested resource is found.

At step 606, the *Parental Node* receives the requested resource from the *Grandparental Node*.

At step 607 the *Parental Node* records:

- i. the instance of the request from the *Given Node* for the resource,
- ii. the identity of the *Given Node* to distinguish it from the *Parental Node's* other filial nodes, and
- iii. the time of the instance of the request from the *Given Node*,

in a data structure, such as that shown in Table 1.

Resource Identifier	Requesting Node ID	Time Stamp
...	...	...
www.amazon.com/mccullers.htm	Node #34	10:34 GMT Aug. 24, 2000
www.amazon.com/books.htm	Node #238	21:11 GMT Aug. 15, 2000
www.amazon.com/sales.htm	Node #238	11:06 GMT Aug. 23, 2000
...	...	...

Table 1 — Illustrative Data Structure For Maintaining A Record of Each Request

The purpose of recording this information is to enable the *Parental Node*, at step 608, to determine when and if the resource received in step 606 should be stored in cache 503.

At step 608, the *Parental Node* determines whether the resource received in step 606, which is not currently in the *Parental Node's* cache, should be stored in cache 503. There are several factors that the *Parental Node* considers.

First, the *Parental Node* only populates cache 503 with the resource when at least i requests for the resource have been received, wherein i is a positive integer. In other words, the illustrative embodiment won't store the resource in the *Parental Node's* cache unless at least i requests for the resource have been received within an elapsed time interval, Δt . In some cases, the value of i is one, and in other cases the value of i is an integer greater than one.

In some cases, the value of i is invariant (*i.e.*, it does not change over time or as a function of circumstance). Alternatively, the value of i varies and is based on:

- i. the calendrical time, or
- ii. the elapsed time interval, Δt , or
- iii. the number, m , of filial nodes of the *Parental Node*, or
- iv. any combination of i, ii, and iii.

For the purposes of this specification, the phrase "**calendrical time**" is defined as the time with respect to the calendar. For example, the value of i can vary with the time of day, the day of the week, the day of the month, the day of the year, the month of the year, the season of the year, the year itself, *etc.*

Table 2 depicts an illustrative embodiment of the present invention in which the value of i varies as a function of the day of the week.

Day of the Week	i
Sunday	2
Monday	3
Tuesday	1
Wednesday	4
Thursday	3
Friday	1
Saturday	2

Table 2 — Illustrative Embodiment in Which i is a Function of the Day of the Week

The *Parental Node* can determine how many total requests there have been for a resource by using the data the *Parental Node* stored in step 607. As will be clear to those skilled in the art, varying the value of i as a function of the calendrical time has several effects on the operation of the illustrative embodiment. First, as shown in FIG. 7, the average amount of time that a given node must wait for a requested resource increases as i increases, but, as shown in FIG. 8, the storage requirements for cache 503 in the *Parental Node* decrease as i increases. Therefore, varying the value of i as a function of the calendrical time provides a parameter for controlling the operation of some embodiments of the present invention.

Second, the *Parental Node* only populates cache 503 with the resource when at least i requests for the resource have been received within an elapsed time interval, Δt . In other words, the illustrative embodiment won't store the resource in the *Parental Node's* cache unless at least a plurality of requests for the resource have been received within some time interval, Δt . In some cases, the value of Δt can be invariant.

Alternatively, the value of Δt can vary and can be based on:

- i. the value of i , or
- ii. the calendrical time, or
- iii. the number, m , of filial nodes of the *Parental Node*, or
- iv. any combination of i, ii, and iii.

Table 3 depicts an illustrative embodiment of the present invention in which the value Δt varies as a function of the value of i .

i	Δt
2	24 minutes
3	150 minutes
4	350 minutes
5	1000 minutes
6	2400 minutes
≥ 7	6000 minutes

Table 3 — The Value of Δt Varies Based On The Value of i

Furthermore, both i and Δt can vary and can be based on the calendrical time. Table 4 depicts an illustrative embodiment of the present invention in which the values of i and Δt vary as a function of the time of day.

Time of Day	i	Δt
Midnight to 5:30 AM	2	300 minutes
5:30 AM to 9:00 AM	3	150 minutes
9:00 AM to 4:30 PM	3	75 minutes
4:30 PM to Midnight	4	100 minutes

Table 4 — The Value of i and Δt Vary Based On Calendrical Time

The *Parental Node* can determine when each request for a resource have been made, and therefore if the requisite number of requests have been made in the elapsed time interval, Δt , by using the using the data the *Parental Node* has stored in step 607.

Third, the *Parental Node* only populates cache 503 with the resource when at least one request for the resource has been received from at least n of the *Parental Node's* m filial nodes. This is advantageous because it prevents the cache from being populated with resources that are only being used by a few of the *Parental Node's* filial nodes. In some cases, the value of n can be invariant.

Alternatively, the value of n can vary based on:

- i. the value of m , or
- ii. the value of i , or
- iii. the elapsed time interval, Δt , or
- iv. the calendrical time,
- v. any combination of i, ii, iii, and iv.

The *Parental Node* can determine how many of the *Parental Node's* m filial nodes have requested the resource by using the using the data the *Parental Node* has stored in step 607.

As part of step 608, if the *Parental Node* determines that the resource should be stored in cache 503, then control passes to step 609; otherwise, control passes to step 610.

At step 609, the *Parental Node* populates its cache with the resource with the resource identifier (or a hash function of the resource identifier) as the index.

5 At step 610, the *Parental Node* transmits the resource to the *Given Node*, and at step 611, the *Given Node* receives the resource.

It is to be understood that the above-described embodiments are merely illustrative of the present invention and that many variations of the above-described embodiments can be devised by those skilled in the art without departing from the scope of the invention. It is therefore intended that
10 such variations be included within the scope of the following claims and their equivalents.

What is claimed is:

- 1 **1. A method comprising:**
2 populating a cache with a resource only when at least i requests for said resource have been
3 received;
4 wherein at least occasionally i is an integer greater than one.
- 1 **2. The method of claim 1 wherein the value of i is invariant.**
- 1 **3. The method of claim 1 wherein the value of i is based on calendrical time.**
- 1 **4. The method of claim 1 wherein said cache is populated with said resource only when at**
2 **least i requests for said resource have been received within an elapsed time interval, Δt .**
- 1 **5. The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on**
2 **the value of i .**
- 1 **6. The method of claim 4 wherein the value of i is based on calendrical time.**
- 1 **7. The method of claim 4 wherein the duration of said elapsed time interval, Δt , is based on**
2 **calendrical time.**
- 1 **8. A data processing system comprising:**
2 a cache for storing a resource; and
3 a processor for populating said cache with said resource only when at least i requests for said
4 resource have been received;
5 wherein i is an integer greater than one.
- 1 **9. The data processing system of claim 8 wherein the value of i is invariant.**
- 1 **10. The data processing system of claim 8 wherein the value of i is based on calendrical time.**
- 1 **11. The data processing system of claim 8 wherein said cache is populated with said resource**
2 **only when at least i requests for said resource have been received within an elapsed time interval, Δt .**
- 1 **12. The data processing system of claim 8 wherein the duration of said elapsed time interval,**
2 **Δt , is based on the value of i .**
- 1 **13. The data processing system of claim 8 wherein the value of i is based on calendrical time.**
- 1 **14. The data processing system of claim 8 wherein the duration of said elapsed time interval,**
2 **Δt , is based on calendrical time.**

1 **15. A method comprising:**
 2 receiving at a first node in a computer network at least one request for a resource;
 3 retrieving said resource from a second node in said computer network; and
 4 populating a cache in said first node with said resource only when at least i requests for said
 5 resource have been received at said first node;
 6 wherein i is an integer greater than one.

1 **16. The method of claim 15 wherein the value of i is invariant.**

1 **17. The method of claim 15 wherein the value of i is based on calendrical time.**

1 **18. The method of claim 15 wherein said cache is populated with said resource only when at**
 2 **least i requests for said resource have been received within an elapsed time interval, Δt .**

1 **19. The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on**
 2 **the value of i .**

1 **20. The method of claim 18 wherein the value of i is based on calendrical time.**

1 **21. The method of claim 18 wherein the duration of said elapsed time interval, Δt , is based on**
 2 **calendrical time.**

1 **22. The method of claim 15:**
 2 wherein said computer network is a hierarchical computer network and said first node has m
 3 filial nodes;
 4 wherein said cache is populated with said resource only when at least one request for said
 5 resource has been received from at least n of said m filial nodes; and
 6 wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

1 **23. The method of claim 15:**
 2 wherein said computer network is a hierarchical computer network and said first node has m
 3 filial nodes;
 4 wherein said cache is populated with said resource only when at least one request for said
 5 resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ;
 6 and
 7 wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

1 **24.** A first node in a computer network, said first node comprising:
2 a cache;
3 at least one receiver for receiving at least one request for a resource; and
4 a processor for retrieving said resource from a second node in said computer network, and for
5 populating said cache in said first node with said resource only when at least i requests for said
6 resource have been received at said first node;
7 wherein i is an integer greater than one.

1 **25.** The first node of claim 24 wherein the value of i is invariant.

1 **26.** The first node of claim 24 wherein the value of i is based on calendrical time.

1 **27.** The first node of claim 24 wherein said cache is populated with said resource only when
2 at least i requests for said resource have been received within an elapsed time interval, Δt .

1 **28.** The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based
2 on the value of i .

1 **29.** The first node of claim 27 wherein the value of i is based on calendrical time.

1 **30.** The first node of claim 27 wherein the duration of said elapsed time interval, Δt , is based
2 on calendrical time.

1 **31.** The first node of claim 24:
2 wherein said computer network is a hierarchical computer network and said first node has m
3 filial nodes;
4 wherein said cache is populated with said resource only when at least one request for said
5 resource has been received from at least n of said m filial nodes; and
6 wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

1 **32.** The first node of claim 24:
2 wherein said computer network is a hierarchical computer network and said first node has m
3 filial nodes;
4 wherein said cache is populated with said resource only when at least one request for said
5 resource has been received from at least n of said m filial nodes within an elapsed time interval, Δt ;
6 and
7 wherein m is an integer greater than one, n is an integer greater than one, and $m \geq n$.

Abstract

1 A technique for efficiently populating a cache in a data processing system with resources is
2 disclosed. In particular, a node in accordance with the illustrative embodiment of the present
3 invention defers populating its cache with a resource until at least two requests for the resource have
4 been received. This is advantageous because it prevents the cache from being populated with
5 infrequently requested resources. Furthermore, the illustrative embodiment of the present invention
6 populates a cache with a resource only when: at least i requests for the resource have been received at
7 a given node within an elapsed time interval, Δt , wherein i is an integer greater than one; and at least
8 one request for the resource has been received from at least n of the m filial nodes of the given node
9 within an elapsed time interval, Δt , wherein m is an integer greater than one, n is an integer greater
10 than one, and $m \geq n$. Embodiments of the present invention are particularly advantageous in computer
11 networks that comprise a *logical* hierarchical topology, but are useful an any computer network, and in
12 individual data processing systems and routers that comprise a cache memory.

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Declaration and Power of Attorney

As the below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **METHOD AND APPARATUS FOR ECONOMICAL CACHE POPULATION**, the specification of which is attached hereto.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by an amendment, if any, specifically referred to in this oath or declaration.

I acknowledge the duty to disclose all information known to me which is material to patentability as defined in Title 37, Code of Federal Regulations, 1.56.

I hereby claim the benefit under Title 35, United States Code, 119(e) of any United States provisional application(s) identified below:

None

I hereby claim foreign priority benefits under Title 35, United States Code, 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

None

I hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

None

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorney(s) with full power of substitution and revocation, to prosecute said application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith:

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FEE RECORD SHEET

12/04/2000 VVAN11 00000222 09725737

01 FC:202	40.00	OP
02 FC:203	108.00	OP
03 FC:201	344.00	OP

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01 FC:202	-40.00	OP
02 FC:203	-108.00	OP
03 FC:201	-344.00	OP

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01 FC:201	355.00	OP
02 FC:202	40.00	OP
03 FC:203	90.00	OP
04 FC:998	7.00	OP

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01/08/2001 YGIZAW 00000001 09725737
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01 FC:203	90.00	OP
02 FC:998	7.00	OP

Globus Medical, Inc.

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PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 2000

Application or Docket Number

Broad spider

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	32	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	32 minus 20 =	* 12
INDEPENDENT CLAIMS	4 minus 3 =	* 1
MULTIPLE DEPENDENT CLAIM PRESENT ☐		

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus	**
Independent	*	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM ☐			

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SMALL ENTITY TYPE ☐

OR OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	355.00
X\$ 9=	108
X40=	40
+135=	
TOTAL	503.00

RATE	FEE
BASIC FEE	710.00
X\$18=	
X80=	
+270=	
TOTAL	

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL	

RATE	ADDITIONAL FEE
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+135=	
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RATE	ADDITIONAL FEE
X\$18=	
X80=	
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RATE	ADDITIONAL FEE
X\$ 9=	
X40=	
+135=	
TOTAL	

RATE	ADDITIONAL FEE
X\$18=	
X80=	
+270=	
TOTAL	

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET (FOR USE WITH FORM PTO-875)							SERIAL NO. 09725737	FILING DATE 01-04-01
							APPLICANT(S)	
CLAIMS								
	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT			
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TOTAL IND.	4							
TOTAL DEP.	28							
TOTAL CLAIMS	32							

PTO-1360 (2)

*MAY BE USED FOR ADDITIONAL CLAIMS OR AMENDMENTS

U.S. DEPARTMENT of COMMERCE
Patent and Trademark Office

Globus Medical, Inc.

IPR2015-00111 Exhibit 1017, p. 460

Serial No. Not Yet Assigned

Broadspider 2

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Patent Application

Inventors: Peter Joseph Giacomini
Walter Michael Pitio
Hector Francisco Rodriguez
Donald David Shugard

Case: Broadspider 2

Serial No.: Not Yet Assigned

Filing Date: 29 November 2000

Examiner: Not Yet Assigned

Group Art Unit: Not Yet Assigned

Title: Method and Apparatus For Economical Cache Population

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

"Express Mail" mailing label number EL025877142US;
Date of Deposit: November 29, 2000.

I hereby certify that this application is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to "Box PATENT APPLICATION, Assistant Director of Patents, Washington, D.C. 20231".

Jason Paul DeMont



INFORMATION DISCLOSURE STATEMENT

In accordance with 37 CFR 1.97(b), the enclosed Information Disclosure Statement, with attached reference(s), is submitted for consideration in the above-identified application.

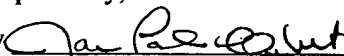
Copies of the listed documents are enclosed.

NO FEE IS REQUIRED.

In the event of non-payment or improper payment of a required fee, the Commissioner is authorized to charge or credit **Jason Paul DeMont Deposit Account No. 10-1045** as required to correct the error.

Pursuant to 37 C.F.R. 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time.

Respectfully,

By 

Jason Paul DeMont
Attorney for Applicants
Reg. No. 35,793
908-903-1255

Date: 11/29/00
DeMont & Breyer, L.L.C.
P.O. Box 437
Basking Ridge, NJ 07920-0437

INFORMATION DISCLOSURE STATEMENT	Case: 2	Serial No. NYA
	Applicant: Broadspider	
	Filing Date: 11/29/00	Group: NYA

3921 U.S. PTO
09/25/37

Examiner: Initial box if reference is considered, whether or not citation is in conformance with MPEP 609. Draw a line through citation if not in conformance and not considered. Include a copy of this form with next communication to applicant.

U.S. PATENT DOCUMENTS

- ☐ AA: Patent No. 5,924,116, issued Jul. 13, 1999 to C.C. Aggarwal et al.
- ☐ AB:
- ☐ AC:

FOREIGN PATENT DOCUMENTS

- ☐ AL:
- ☐ AM:
- ☐ AN:

OTHER DOCUMENTS

- ☐ AR:
- ☐ AS:
- ☐ AT:

Att: References as noted above

Examiner:	Date Considered: