INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 3 of 7		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Paul E. Stolorz
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication Date	Name of Patentee or Applicant of Cited Document
JW	3-1	5253275	12-Oct-93	Yurt et al.
	3-2	5675734	7-Oct-97	Hair
	3-3	5802106	01-Sep-98	Packer
	3-4	5845303	01-Dec-98	Templeman
	3-5	5966440	12-Oct-99	Hair
	3-6	5978791	02-Nov-99	Farber et al.
	3-7	6002720	14-Dec-99	Yurt et al.
	3-8	6003030	14-Dec-99	Kenner et al.
	3-9	6018516	25-Jan-00	Packer
	3-10	6029176	22-Feb-00	Cannon
	3-11	6038216	14-Mar-00	Packer
	3-12	6044405	28-Mar-00	Driscoll, III, et al.
	3-13	6046980	04-Apr-00	Packer
	3-14	6049831	11-Apr-00	Gardell et al.
	3-15	6112239	29-Aug-00	Kenner et al.
	3-16	6115357	05-Sep-00	Packer et al.
	3-17	6125388	26-Sep-00	Reisman
	3-18	6130890	10-Oct-00	Leinwand et al.
	3-19	6144702	07-Nov-00	Yurt et al.
	3-20	6154744	28-Nov-00	Kenner et al.
	3-21	6154753	28-Nov-00	McFarland
	3-22	6181867	30-Jan-01	Kenner et al.
	3-23	6205120	20-Mar-01	Packer et al.
	3-24	6249810	19-Jun-01	~~Ioporek et al.~~ Kiraly
	3-25	6269394	~~22-Apr-03~~ 7/2001	Kenner et al.
JW	3-26	6275470	14-Aug-01	Ricciulli

DOS 1/28/08

Examiner Signature	John B. Walsh	Date Considered	6/14/07

*Examiner: Initial if reference was 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.

Sandpiper EX2002 (Part 2 of 2)
Google v. Sandpiper
IPR2025-00806

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 2 of 15		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Paul E. Stolorz
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
JW	2-1	US-5519435	May-96	Anderson
	2-2	US-5528281	Jun-96	Grady
	2-3	US-5539621	Jul-96	Kikinis
	2-4	US-5542087	07/1996	Neimat et al.
	2-5	US-5544313	Aug-96	Shachnai
	2-6	US-5544327	Aug-96	Dan
	2-7	US-5550577	Aug-96	Verbiest
	2-8	US-5550863	Aug-96	Yurt
	2-9	US-5550982	Aug-96	Long
	2-10	US-5557317	Sep-96	Nishio
	2-11	US-5572643	Nov-96	Judson
	2-12	US-5590288	Dec-96	Castor
	2-13	US-5592611	Jan-97	Midgely
	2-14	US-5594910	Jan-97	Filepp et al.
	2-15	US-5603026	Feb-97	Demers et al.
	2-16	US-5619648	Apr-97	Canale
	2-17	US-5623656	Apr-97	Lyons
	2-18	US-5625781	Apr-97	Cline
	2-19	US-5627829	May-97	Gleeson et al.
	2-20	US-5630067	May-97	Kindell
	2-21	US-5633999	May-97	Clowes
	2-22	US-5634006	May-97	Baugher et al.
	2-23	US-5638443	06/1997	Stefik et al.
	2-24	US-5644714	Jul-97	Kikinis
	2-25	US-5646676	~~05/1995~~ 7/1997	Dewkett et al.
JW	2-26	US-5649186	Jul-97	Ferguson

Examiner Signature	John B. Walsh	Date Considered	9/14/07

*Examiner: Initial if reference was 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.

9 of 2/4/08

OIPE IAP97
MAR 26 2008
PATENT & TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF: STOLORZ, Paul et al.	Attorney Docket: 2711-0054
	Group Art Unit: 2151
Application Serial No.: 10/259,497	Examiner: Walsh, John B.
Application Filing Date: September 30, 2002	Confirmation No.: 5284
Title: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT	Date: March 26, 2008

INFORMATION DISCLOSURE STATEMENT

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

Sir:

Pursuant to 37 C.F.R. § 1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. One copy of each non-U.S. Patent reference is attached unless previously provided. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The submission of any document herewith, which is not a statutory bar, is not intended that any such document constitutes prior art against any of the claims of the present application or is considered to be material to patentability as defined in 37 C.F.R. § 1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference against the claims of the present application.

U.S. Patent counterparts have been (or are being) cited in lieu of copies of the following cited foreign patents[1]:

Foreign Patent/Publication	Pub. Date	Applicant	Also published as:
Taiwan NI-176482	08/19/03	IBM	US6418421 US6226618
AU 763380	11/06/03	IBM	US6226618
CA 2467998	04/25/06	IBM	US6226618
GB 2353877	03/30/04	IBM	US6460082
IL 140935	03/19/06	IBM	US6587837 US6418421 US6398245 US6263313
JP 3566626	06/18/04	IBM	US6460082
JP 3762649	01/20/06	IBM	US6763377
China ZL99810853.7	08/25/04	IBM	US6587837 US6418421 US6398245 US6263313 CN1320232
CA 2202572	10/14/98	Nortel Networks, Ltd..	US6330602
JP2002522995T	07/23/02	IBM	US6263313 US6418421
JP2005124165	05/12/05	IBM	US6263313 US6418421
CA 2335662	09-03-2001	IBM	US6963910
CA 2335661	09-03-2001	IBM	US6763377
EP 1104555	06-06-2001	IBM	US6263313 US6611812
EP 0865180	09/16/1998	Lucent	US6470389

[1] According to European Patent Office (per web site http://ep.espacenet.com)

RELATED APPLICATIONS

The Examiner's attention is directed to the following related applications:

Atty. Docket	Application No.	Filing Date	Status
2711-0095	11/932,162	10-31-2007	pending
2711-0096	11/976,648	10-26-2007	pending

The above applications are directed to related technical subject matter. The identification of these U.S. Patent Applications is not to be construed as a waiver of secrecy as to those applications now or upon issuance of the present application as a patent. The Examiner is respectfully requested to consider art cited therein during examination.

This Information Disclosure Statement is being filed after the filing of a Request for Continued Examination, and no Office Action has issued to the knowledge of the undersigned. No certification or fee is required.

Please credit or debit Deposit Account No. 501860 as needed to ensure consideration of the disclosed information.

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054.**

The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached

This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed.

CUSTOMER NUMBER

42624

Respectfully submitted,

By: _____

Brian Siritzky, Ph.D.
Registration No.: 37,497

Davidson Berquist Jackson & Gowdey LLP
4300 Wilson Blvd., 7th Floor,
Arlington Virginia 22203
Main: (703) 894-6400 • FAX: (703) 894-6430

OIPE IAP97
MAR 26 2008
PATENT & TRADEMARK OFFICE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
FORM PTO-1449 (modified)

Sheet 1 of 3

Application No.	10/259,497
Filing Date	09/30/2002
First Named Inventor	Stolorz, Paul E.
Group Art Unit	2151
Examiner Name	John B. Walsh
Attorney Docket No.	2711-0054
Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
	1-1	US-5931904	1999-08-03	Banga
	1-2	US-5944780	1999-08-31	Chase
	1-3	US-6021426	2000-02-01	Douglis
	1-4	US-6098078	2000-08-01	Gehani
	1-5	US-6125394	2000-09-26	Rabinovich
	1-6	US-6330602	Dec-11-01	Law et al.
	1-7	US-6470389	Oct-22-02	Chung et al
	1-8			
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	1-26			

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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.

OIPE IAP97
MAR 26 2008
PATENT & TRADEMARK OFFICE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
FORM PTO-1449 (modified)

Sheet 2 of 3

Application No.	10/259,497
Filing Date	09/30/2002
First Named Inventor	Stolorz, Paul E.
Group Art Unit	2151
Examiner Name	John B. Walsh
Attorney Docket No.	2711-0054
Confirmation No.	5284

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication Date	Name of Patentee or Applicant of Cited Document	Notes
	2-1	AU 763380	11/06/03	IBM	
	2-2	CA 2335661	09-03-2001	IBM	
	2-3	CA 2335662	09-03-2001	IBM	
	2-4	CA 2467998	04/25/06	IBM	
	2-5	CA-2202572	10/14/1998	Nortel Networks Ltd.	
	2-6	CN ZL99810853.7	08/25/04	IBM	
	2-7	EP-0865180 A2	09/16/1998	Lucent	
	2-8	EP1104555	06-06-2001	IBM	
	2-9	GB 2353877	03/30/04	IBM	
	2-10	IL 140935	03/19/06	IBM	
	2-11	JP 3566626	06/18/04	IBM	
	2-12	JP 3762649	01/20/06	IBM	
	2-13	JP-05162529	06/1993	Hiroshi, Saito	
	2-14	JP2002522995	07/23/02	IBM	
	2-15	JP2005124165	05-12-2005	IBM	
	2-16	NI-176482	08/19/03	IBM	
	2-17	WO 98/06033	02/12/1998	Agranat	
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	2-25				
	2-26				

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abtract, T = Translation, PF = Patent Family.

MAR 26 2008
PATENT & TRADEMARK OFFICE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 3 of 3	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	3-1	Korkea-aho, M. (1995). Scalability in Distributed Multimedia Systems, Technical report TKO-B128, Helsinki University of Technology.	
	3-2	"Local Area Network Server Replacement Procedure", IBM Technical Disclosure Bulletin, Vol. 38, No. 1, (January 1995), 235-236	
	3-3	"Patent Abstracts of Japan, Method and Device for Repeating and Converting Information", (Appln. No. JP19960328583) (Pub. No. JP10171727), 06-26-1998.	
	3-4		
	3-5		
	3-6		
	3-7		

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abtract, T = Translation, PF = Patent Family.

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

42624 7590 04/02/2008

DAVIDSON BERQUIST JACKSON & GOWDEY LLP
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
WALSH, JOHN B	
ART UNIT	PAPER NUMBER
2151	

DATE MAILED: 04/02/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	09/30/2002	Paul E. Stolorz	2711-0054	5284

TITLE OF INVENTION: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1440	$300	$0	$1740	07/02/2008

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

42624 7590 04/02/2008

DAVIDSON BERQUIST JACKSON & GOWDEY LLP
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	09/30/2002	Paul E. Stolorz	2711-0054	5284

TITLE OF INVENTION: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1440	$300	$0	$1740	07/02/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
WALSH, JOHN B	2151	709-238000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1_____

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2_____ 3_____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. 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 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, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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.

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.
10/259,497	09/30/2002	Paul E. Stolorz	2711-0054	5284

42624 7590 04/02/2008

DAVIDSON BERQUIST JACKSON & GOWDEY LLP
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
WALSH, JOHN B	
ART UNIT	PAPER NUMBER
2151	

DATE MAILED: 04/02/2008

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 845 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 845 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

Notice of Allowability	Application No.	Applicant(s)	
	10/259,497	STOLORZ ET AL.	
	Examiner	Art Unit	
	John B. Walsh	2151	

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *RCE of 12/19/07*.

2. ☒ The allowed claim(s) is/are *10-23,25-28,39-69,72-78,80-83 and 86-89*.

3. ☐ 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 the:
      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)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 12/19/07
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/John B. Walsh/
Primary Examiner
Art Unit: 2151

Issue Classification	Application/Control No. 10/259,497	Applicant(s)/Patent under Reexamination STOLORZ ET AL.
	Examiner John B. Walsh	Art Unit 2151

ISSUE CLASSIFICATION

ORIGINAL		INTERNATIONAL CLASSIFICATION									
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED				
709	238	G	06	F	15	/173	G	06	F	15	/173
		G	06	F	15	/16	G	06	F	15	/16

CROSS REFERENCES											
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)										
709	202	223				/				/	
						/				/	
						/				/	
						/				/	
						/				/	

(Assistant Examiner) (Date)	/John B. Walsh/ 2/13/08 (Primary Examiner) (Date)	Total Claims Allowed: 64	
(Legal Instruments Examiner) (Date)		O.G. Print Claim(s): 1	O.G. Print Fig.: 1

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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	2		32	35	62		92		122		152		182
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	29	32	59	55	89		119		149		179		209
	30	33	60		90		120		150		180		210

Search Notes	Application/Control No.	Applicant(s)/Patent under Reexamination	
	10/259,497	STOLORZ ET AL.	
	Examiner	Art Unit	
	John B. Walsh	2151	

SEARCHED			
Class	Subclass	Date	Examiner

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
709	**238,223**	2/13/2008	**JW**
709	245,224	2/13/2008	JW
709	202	2/13/2008	JW

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
text search in EAST-see attached search history	2/13/2008	JW

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BIB DATA SHEET JBW

CONFIRMATION NO. 5284

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/259,497	09/30/2002	709	2151	2711-0054

APPLICANTS

Paul E. Stolorz, Thousand Oaks, CA;
John K. Salmon, Altadena, CA;
Michael S. Warren, Santa Fe, NM;
Jeffrey Koller, Torrance, CA;
Aric Hagberg, Santa Fe, CA;
Maksim Yevmenkin, Thousand Oaks, CA;
Mark Brady, Thousand Oaks, CA;
David Pfitzner, Thousand Oaks, CA;

**** CONTINUING DATA ***************************

This appln claims benefit of 60/325,177 09/28/2001

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

10/28/2002

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /JOHN B WALSH/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	22	80	10

ADDRESS

DAVIDSON BERQUIST JACKSON & GOWDEY LLP
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203
UNITED STATES

TITLE

CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

FILING FEE RECEIVED		
3208	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1881	709/202,216,238.ccls.	US-PGPUB	OR	ON	2008/02/13 18:52
L2	7	L1 and (policy and server and agent).clm.	US-PGPUB	OR	ON	2008/02/13 18:52
L3	124	L1 and (policy and server and agent)	US-PGPUB	OR	ON	2008/02/13 18:52
L4	8999	709/202,216,223,224,238,245.ccls.	US-PGPUB	OR	ON	2008/02/13 18:53
L5	38	L4 and (policy and server and agent).clm.	US-PGPUB	OR	ON	2008/02/13 18:53

2/13/08 6:58:02 PM
C:\Documents and Settings\jwalsh\My Documents\EAST\workspaces\10259497.wsp

OIPE AP97 DEC 19 2007 PATENT & TRADEMARK OFFICE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified)	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Paul E. Stolorz
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
Sheet 1 of 4	Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
	1-1	US-5996025	11/30/99	Day
	1-2	US-6189039	02/13/01	Harvey
	1-3	US-6195680	02/27/01	Goldszmidt
	1-4	US-6226618	05/01/01	Downs
	1-5	US-6263313	07/17/01	Milsted
	1-6	US-6272566	08/07/01	Craft
	1-7	US-6398245	06/04/02	Gruse
	1-8	US-6418421	07/09/02	Hurtado
	1-9	US-6460082	10/01/02	Lumelsky
	1-10	US-6463454	10/08/02	Lumelsky
	1-11	US-6463508	10/08/02	Wolf
	1-12	US-6587837	07/01/03	Spagna
	1-13	US-6763377	07/13/04	Belknap
	1-14	US-6859791	02/22/05	Spagna
	1-15	US-6963910	11/08/05	Belknap
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	1-17	US-7110984	09/19/06	Spagna
	1-18	US-7117259	10/03/06	Rohwer
	1-19	US-7188085	03/06/07	Pelletier
	1-20	US-7206748	04/17/07	Gruse
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Examiner Signature	/John Walsh/	Date Considered	02/13/2008

*Examiner: Initial if reference was 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.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 2 of 4		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Paul E. Stolorz
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	T[1]
	2-1	Adler, R. M., "Distributed Coordination Models for Client/Server Computing," Computer 28, 4 (Apr. 1995), 14-22.	
	2-2	Basturk, E., et al., "Using network layer anycast for load distribution in the Internet," Tech. Rep., IBM T.J. Watson Research Center, July, 1997 (21 pgs.).	
	2-3	Bhattacharjee et al., "Application-layer anycasting," in Proc. IEEE INFOCOM '97, April, 1997.	
	2-4	Cisco Systems, Inc., Cisco DistributedDirector 2500 Series Installation and Configuration Guide, pp. xix - xxii; 1-1 to 1-12; 6-1 to 6-18; 7-1 to 7-18; 8-1 to 8-24, Dec., 1997, downloaded 04/07: http://www.cisco.com/univercd/cc/td/doc/product/iaabu/distrdir/dd2501/.	
	2-5	Cisco Systems, Inc., Cisco DistributedDirector 4700-M Installation and Configuration Guide, pgs. xix-xxii; 1-1 to 1-14; 7-1 to 7-18, 8-1 to 8-20; Dec., 1997, [downloaded 04/07 from http://www.cisco.com/univercd/cc/td/doc/product/iaabu/distrdir/dd4700m/].	
	2-6	Cormen, T. H., et al., "Introduction to Algorithms", The MIT Press, Cambridge, Massachusetts, (1994), 219-243, 991-993.	
	2-7	Devine, R., "Design and Implementation of DDH: A Distributed Dynamic Hashing Algorithm", In Proc. 4th Int'l Conf. on Foundations of Data Organizations and Algorithms, (Oct., 1993), 101-114.	
	2-8	Doi, K. "Super Proxy Script--How to make distributed proxy servers by URL hashing," Sharp Corp., http://naragw.sharp.co.jp/sps/, dates unknown (1996 -2000), download 07/07/07.	
	2-9	Feeley, M., et al., "Implementing Global Memory Management in a Workstation Cluster", In Proc. 15th ACM Symp. on Operating Systems Principles, (Dec. 1995), 201-212.	
	2-10	Fox, A., "A Framework for Separating Server Scalability and Availability from Internet Application Functionality," PhD thesis, University of California, Berkeley, 1998.	

Examiner Signature	/John Walsh/	Date Considered	02/13/2008

*Examiner: Initial if reference was 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.

[1]Translation provided.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /JW/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified)	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Paul E. Stolorz
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
Sheet 3 of 4	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	T[1]
	3-1	Grigni, M., et al., "Tight Bounds on Minimum Broadcasts Networks", SIAM J. Disc. Math. 4 (May, 1991), 207-222.	
	3-2	Guyton et al., "Locating nearby copies of replicated Internet servers," Proc. ACM SIGCOMM '95, pp. 288-298, October, 1995.	
	3-3	Jeffery, C., et al., "Proxy sharing proxy servers." In Proc. IEEE etaCOM Conf., pp.116-119, May 1996.	
	3-4	Litwin, W., et al., "LH*-A Scalable, Distributed Data Structure", ACM Trans. on Database Systems, Vol. 21, No. 4, pp 480-525, December, 1996.	
	3-5	Mockapetris et al., "Development of the Domain Name System," Proc. SIGCOMM '88 Computer Communications Review, vol. 18, No. 4, Aug. 1988.	
	3-6	Mourad et al., "Scalable Web Server Architectures," iscc, 2nd IEEE Symposium on Computers and Communications (ISCC '97), July, 1997, pp. 12-16.	
	3-7	Oguchi et al., A Study of Caching Proxy Mechanisms Realized on Wide Area Distributed Networks, High Performance Distributed Computing, 5th Int'l Symp., pp. 443-449, August, 1996.	
	3-8	Peleg, D., et al., "The Availability of Quorum Systems", Information and Computation, 123, (December, 1995), 210-223	
	3-9	Plaxton, G. C., et al., "Fast Fault-Tolerant Concurrent Access to Shared Objects", In Proc. 37th IEEE Symp. of Foundations of Computer Science, (October, 1996), 570-579.	
	3-10	Smith, "What can Archives offer the World Wide Web?", Technical Report 11, University of Kent, Computing Laboratory, University of Kent, Canterbury, UK, March, 1994.	

Examiner Signature	/John Walsh/	Date Considered	02/13/2008

*Examiner: Initial if reference was 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.

[1]Translation provided.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified)	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Paul E. Stolorz
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
Sheet 4 of 4	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	T[1]
	4-1	Vixie, Paul; "Name Server Operations Guide for BIND," Internet Software Consortium; La Honda, CA; p. SMM:10-2--SMM:10-30 (undated, 1996).	
	4-2	Wessels, Intelligent Caching for World-Wide Web Objects, Masters Thesis, University of Colorado, Jan. 1995 (also presented at INET '95 in June '95).	
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Examiner Signature	/John Walsh/	Date Considered	02/13/2008

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[1]Translation provided.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	09/30/2002	Paul E. Stolorz	2711-0054	5284

42624 7590 04/25/2008

DAVIDSON BERQUIST JACKSON & GOWDEY LLP
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
WALSH, JOHN B	

ART UNIT	PAPER NUMBER
2151	

MAIL DATE	DELIVERY MODE
04/25/2008	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.

UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
10259497	9/30/02	STOLORZ ET AL.	2711-0054

DAVIDSON BERQUIST JACKSON & GOWDEY LLP
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203

EXAMINER
John B. Walsh

ART UNIT	PAPER
2151	20080422

DATE MAILED:

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

Commissioner for Patents

See attached initialed copy of IDS of 3/26/08.

/John B. Walsh/
Primary Examiner
Art Unit: 2151

PTO-90C (Rev.04-03)

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MAR 26 2008
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
FORM PTO-1449 (modified)

Sheet 1 of 3

Application No.	10/259,497
Filing Date	09/30/2002
First Named Inventor	Stolorz, Paul E.
Group Art Unit	2151
Examiner Name	John B. Walsh
Attorney Docket No.	2711-0054
Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
	1-1	US-5931904	1999-08-03	Banga
	1-2	US-5944780	1999-08-31	Chase
	1-3	US-6021426	2000-02-01	Douglis
	1-4	US-6098078	2000-08-01	Gehani
	1-5	US-6125394	2000-09-26	Rabinovich
	1-6	US-6330602	Dec-11-01	Law et al.
	1-7	US-6470389	Oct-22-02	Chung et al
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Examiner Signature	/John Walsh/	Date Considered	04/22/2008

*Examiner: Initial if reference was 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.

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OIPE IAP97 MAR 26 2008 PATENT & TRADEMARK OFFICE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
FORM PTO-1449 (modified)

Sheet 2 of 3

Application No.	10/259,497
Filing Date	09/30/2002
First Named Inventor	Stolorz, Paul E.
Group Art Unit	2151
Examiner Name	John B. Walsh
Attorney Docket No.	2711-0054
Confirmation No.	5284

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication Date	Name of Patentee or Applicant of Cited Document	Notes
	~~2-1~~	~~AU 763380~~	~~11/06/03~~	~~IBM~~	
	~~2-2~~	~~CA 2335661~~	~~09-03-2001~~	~~IBM~~	
	~~2-3~~	~~CA 2335662~~	~~09-03-2001~~	~~IBM~~	
	~~2-4~~	~~CA 2467008~~	~~04/25/06~~	~~IBM~~	
	2-5	CA-2202572	10/14/1998	Nortel Networks Ltd.	
	~~2-6~~	~~CN ZL99810853.7~~	~~08/25/04~~	~~IBM~~	
	2-7	EP-0865180 A2	09/16/1998	Lucent	
	~~2-8~~	~~EP1104555~~	~~06-06-2001~~	~~IBM~~	
	~~2-9~~	~~GB 2353877~~	~~03/30/04~~	~~IBM~~	
	~~2-10~~	~~IL 140035~~	~~03/19/06~~	~~IBM~~	
	~~2-11~~	~~JP 3566626~~	~~06/18/04~~	~~IBM~~	
	~~2-12~~	~~JP 3762649~~	~~01/20/06~~	~~IBM~~	
	2-13	JP-05162529	06/1993	Hiroshi, Saito	
	~~2-14~~	~~JP2002522995~~	~~07/23/02~~	~~IBM~~	
	~~2-15~~	~~JP2005124165~~	~~05-12-2005~~	~~IBM~~	
	~~2-16~~	~~NL 176482~~	~~08/19/03~~	~~IBM~~	
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Examiner Signature	/John Walsh/	Date Considered	04/22/2008

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abtract, T = Translation, PF = Patent Family.

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(NO COPIES PROVIDED)

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PATENT & TRADEMARK OFFICE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 3 of 3	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	3-1	Korkea-aho, M. (1995). Scalability in Distributed Multimedia Systems, Technical report TKO-B128, Helsinki University of Technology.	
	3-2	"Local Area Network Server Replacement Procedure", IBM Technical Disclosure ~~Bulletin, Vol. 38, No. 1, (January 1995), 235-236~~ NO COPY PROVIDED	
	3-3	"Patent Abstracts of Japan, Method and Device for Repeating and Converting Information", (Appln. No. JP19960328583) (Pub. No. JP10171727), 06-26-1998.	
	3-4		
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Examiner Signature	/John Walsh/	Date Considered	04/22/2008

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abtract, T = Translation, PF = Patent Family.

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MAY 12 2008
IAP19
PATENT & TRADEMARK OFFICE

IFW RCE #

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION OF:

STOLORZ, Paul E. et al.

Application Serial No.: 10/259,497

Application Filing Date: September 30, 2002

Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**

Attorney Docket: 2711-0054

Group Art Unit: 2151

Examiner: WALSH, John B.

Date: May 12, 2008

Confirmation No.: 2584

Mail Stop RCE
Hon. Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REQUEST FOR CONTINUED EXAMINATION (RCE)

This is a request for continued examination (RCE) under 37 CFR 1.114 of the above-identified application. Please continue the examination of this application.

Prerequisites
• This application was filed on/after June 8, 1995, is not abandoned, and no court action has been filed, or if filed, it has been terminated. • An issue fee has not been paid (unless a petition under Rule 313(c)(2) is also being filed – see item 4 below). • Prosecution has been closed as defined in Rule 114(b). • Reply to any outstanding action and Rule 17(e) fee must be enclosed.

This application is entitled under Rule 114 to withdrawal of any outstanding finality or of any allowance plus a new action by the Examiner. Consideration on the merits of each submission (e.g., IDS, Amendment, new arguments, new evidence, but not appeal/reply briefs themselves) filed herewith or before the new action is respectfully requested.

Please consider the following before the next Official Action:

1. Submission required under 37 CFR 1.114:						
a.	☐	**Previously submitted**. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked. Please ☐ enter ☐ do not enter the Amendment filed				
	i.	☐	Consider the arguments in the appeal brief filed and/or reply brief filed			
	ii.	☐	Other:			
b.	☒	**Enclosed**				
	i.	☐	Amendment / Reply	iii	☒	Information Disclosure Statement (IDS)
	ii.	☐	Affidavit(s) / Declaration(s)	iv	☒	Other: Form PTO 1449 and 23 cited references

05/13/2008 AWONDAF2 00000072 501860 10259497
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Continued on next page . . .

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. After payment of issue fee:		
	☐	The issue fee has been paid, but this RCE is based on Rule 313(c)(2). See enclosed petition.
		☐ IDS Letter ☐ Cited Appln(s) ☐ Foreign Search Report/OA ☐ PTO-1449 ☐ Cited Documents

4. 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, any underpayment of fees, or credit any overpayments, to Deposit Account No. 501860, order no. **2711-0054**.	
	i.	☒	RCE fee required under 37 CFR 1.17(e) in the amount of $810
	ii.	☐	Extension of time fee (37 CFR 1.136 and 1.17) [Petition for Extension of Time filed herewith]
	iii.	☐	Other
b.	☐	Check number in the amount of $ enclosed	

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.

The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached

This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed.

CUSTOMER NUMBER
42624

Davidson Berquist Jackson & Gowdey LLP
4300 Wilson Blvd., 7th Floor, Arlington, VA 22203
Main: (703) 894-6400 • FAX: (703) 894-6430

Respectfully submitted,

By: _____

Brian Siritzky, Ph.D.
Registration No.: 37,497

OIPE
MAY 12 2008
PATENT & TRADEMARK OFFICE
IAP19

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF:	Attorney Docket: 2711-0054
STOLORZ, Paul E. et al.	Group Art Unit: 2151
Application Serial No.: 10/259,497	Examiner: WALSH, John B.
Application Filing Date: September 30, 2002	Date: May 12, 2008
Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**	Confirmation No.: 2584

INFORMATION DISCLOSURE STATEMENT

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

Sir:

Pursuant to 37 C.F.R. § 1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. One copy of each non-U.S. Patent reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application; and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The submission of any document herewith, which is not a statutory bar, is not intended that any such document constitutes prior art against any of the claims of the present application or is considered to be material to patentability as defined in 37 C.F.R. § 1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference against the claims of the present application.

This Information Disclosure Statement is being filed in conjunction with a Request for Continued Examination (RCE). No certification or fee is required.

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.

The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached

This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed.

CUSTOMER NUMBER

42624

Davidson Berquist Jackson & Gowdey LLP
4300 Wilson Blvd., 7th Floor,
Arlington Virginia 22203
Main: (703) 894-6400 • FAX: (703) 894-6430

Respectfully submitted,

By: _____

Brian Siritzky, Ph.D.
Registration No.: 37,497

OIPE
MAY 12 2008
PATENT & TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF:
STOLORZ, Paul E. et al.
Application Serial No.: 10/259,497
Application Filing Date: September 30, 2002
Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**

Attorney Docket: 2711-0054
Group Art Unit: 2151
Examiner: WALSH, John B.
Date: May 12, 2008
Confirmation No.: 2584

Mail Stop RCE
Hon. Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF REQUEST FOR CONTINUED EXAMINATION

Sir:

Attached please find the following documents, submitted for filing in connection with the above-identified application:

☒ **Request for Continued Examination (RCE) Under Rule 114**

☒ **Information Disclosure Statement**

☒ **PTO Form 1449**

☒ **23 cited references**

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.
The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached **This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed.**

CUSTOMER NUMBER 42624	Respectfully submitted, By: _____ Registration No.:
Davidson Berquist Jackson & Gowdey LLP 4300 Wilson Blvd., 7th Floor, Arlington, VA 22203 Main: (703) 894-6400 • FAX: (703) 894-6430	

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MAY 12 2008
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PATENT & TRADEMARK OFFICE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
FORM PTO-1449 (modified)

Sheet 1 of 5

Application No.	10/259,497
Filing Date	09/30/2002
First Named Inventor	Stolorz, Paul E.
Group Art Unit	2151
Examiner Name	John B. Walsh
Attorney Docket No.	2711-0054
Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
	1-1	US-5522070	May 28, 1996	Sumitomo, S.
	1-2	US-5826031	10/1998	Nielsen
	1-3	US-5838906	11/1998	Doyle et al.
	1-4	US-6041307	March 21, 2000	Ahuja, et al.
	1-5	US-6327622	Dec-04-2001	Jindal et al.
	1-6	US-6785704	08/2004	McCanne, Steve
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Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 2 of 5		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication Date	Name of Patentee or Applicant of Cited Document	Notes
	2-1	EP 0 817 020 A2	Jan-07-1998	Sun Microsystems, Inc.	
	2-2	JP 2000259539	Sept-22-2000	Hitachi Info. Tech.	
	2-3	WO 00 52594 A	09/08/2000	UltraDNS Inc.	
	2-4	WO 00/14633	Mar-16-2000	Sun Microsystems, Inc.	
	2-5	WO 00/62502	Oct-19-2000	Rainfinity, Inc.	
	2-6	WO 01/35601	May-17-2001	Rainfinity, Inc.	
	2-7	WO 01/52497	Jul-19-2001	Fast Forward Networks	
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Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abtract, T = Translation, PF = Patent Family.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 3 of 5		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	3-1	"Local Area Network Server Replacement Procedure", IBM Technical Disclosure Bulletin, Vol. 38, No. 1, (January 1995), 235-236	
	3-2	Aggarwal, A. et al., "Performance of Dynamic Replication Schemes for an Internet Hosting Service". Technical Report, AT&T Labs, October 1998.	
	3-3	Awerbuch, B. et al., Distributed Paging for General Networks. In Proc. of the 7th ACM-SIAM Symposium on Discrete Algorithms, pp. 574-583, January 1996.	
	3-4	Awerbuch, et al., Competitive Distributed File Allocation. in Proc. of the 25th Ann. ACM Symp. on Theory of Computing, pp. 164-173, May 1993.	
	3-5	Baentsch, M, et al. "Enhancing the Web's Infrastructure: From Caching to Replication." IEEE Internet Computing, 1(2):18--27, Mar. 1997.	
	3-6	Bartal, Y., et al., "Competitive Algorithms for Distributed Data Management", 24th Annual ACM STOC, 5/92, Victoria, B.C. Canada.	
	3-7	Cate, V. "Alex: a global file system", in Proc. Usenix Conf. on File Systems, May, 1992, pgs. 1-11.	

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abtract, T = Translation, PF = Patent Family.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 4 of 5		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	4-1	Communication (1 page) and European Search Report (with Annex) for Appln. No. EP 02799672.7, dated April 17, 2008.	
	4-2	Gadde, S., et al., "Reduce, reuse, recycle: An approach to building large internet caches," in Workshop on Hot Topics in Operating Systems (HotOS), April 1997.	
	4-3	Krishnamurthy, B. et al., Study of piggyback cache validation for proxy caches in the World Wide Web, in: Symp. on Internet Technology and Systems, USENIX Association, Dec. 1997.	
	4-4	Patent Abstracts of Japan, "Server System for Internet", Pub. No. 10-027148, pub. date Jan-27-98, Applicant: Hitachi, computer translation, 12 pgs.	
	4-5	Patent Abstracts of Japan, "Communication Connection Method With a Plurality of Hosts having Common Identifier", Appln. No. JP 08-20114, Pub. No. 10-093552, Applicant Nippon Telegraph & Telephone, published April, 1998.	
	4-6	Patent Abstracts of Japan, "Domain Name Solving Method and Domain Name Solving System", Appln. No. JP19990223763, Pub. No. 2001-053793, Applicant Nippon Telegraph & Telephone, published 02/23/2001.	
	4-7	Rabinovich, M. et al., "Dynamic Replication on the Internet Work Project No. 3116-17-7006", AT&T Labs Research, March 5, 1998.	

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abtract, T = Translation, PF = Patent Family.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 5 of 5		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	5-1	Rabinovich, M. et al., RaDaR: A Scalable Architecture for a Global Web Hosting Service, WWW8, May 1999.	
	5-2	SNMPV2 Working Group J Case SNMP Research et al: "Management Information Base for Version 2 of the Simple Network Management Protocol (SNMPv2); rfc1907.txt" IETF Standard, Internet Engineering Task Force, IETF, CH, Jan. 1996.	
	5-3		
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Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abtract, T = Translation, PF = Patent Family.

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.
10/259,497	09/30/2002	Paul E. Stolorz	2711-0054	5284

42624 7590 06/18/2008

DAVIDSON BERQUIST JACKSON & GOWDEY LLP
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
WALSH, JOHN B	

ART UNIT	PAPER NUMBER
2151	

MAIL DATE	DELIVERY MODE
06/18/2008	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.

Office Action Summary	Application No.	Applicant(s)	
	10/259,497	STOLORZ ET AL.	
	Examiner	Art Unit	
	John B. Walsh	2151	

-- 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 *RCE of 5/12/08*.

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) *10-23,25-28,39-69,72-78,80-83 and 86-89* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10-23,25-28,39-69,72-74,81-83,86,88 and 89* is/are allowed.

6)☒ Claim(s) *75 and 87* is/are rejected.

7)☒ Claim(s) *76-78 and 80* 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/SB/08) Paper No(s)/Mail Date *5/12/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. 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 75 and 87 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,327,622 B1 to Jindal et al.

As concerns claim 75, maintaining at least one policy (fig. 4, 402) used by at least one domain name server (col. 4, lines 25-30) in an adaptive traffic control name server network (col. 2, lines 46-56; load balancing network) to determine the IP address of a server in a server network in response to a request from a client (figure 1, 120) to resolve a hostname (col. 2, lines 11-13); monitoring the operational status of the ATC name server network, wherein said monitoring comprises: receiving by an ATC network monitoring mechanism (col. 3, lines 1-32) in the ATC administrative framework, events (col. 3, lines 1-26) sent from at least one monitoring mechanism (col. 3, lines 1-32) of the at least one domain name server (col. 3, lines 49-50); consolidating the events to form consolidated events (col. 3, lines 26-32; collecting and storing); and processing the consolidated events (col. 3, lines 26-32; analyzing).

As concerns claim 87, receiving, by a domain name server (col. 4, lines 25-30) in an adaptive traffic control name server network (col. 2, lines 46-56; load balancing network), a request to resolve a hostname (col. 2, lines 11-13); determining, by the domain name server, an

answer corresponding to a server in a server network based at least on the geographic location of the client (col. 10, lines 37-38; col. 11, lines 9-14) and at least one policy (fig. 4, 402); causing the answer to be provided to the requestor, wherein the answer is at least one of the IP address and the CNAME of a server in a server network (col. 2, lines 11-13); and further comprising administering, by an ATC administrative framework, an operational status of the ATC name server network, wherein said administering comprises: receiving events from monitoring mechanisms of the domain name servers in the ATC name server network (col. 3, lines 1-32, 49-50); consolidating, by the ATC network monitoring mechanism, the events received from the domain name servers to generate consolidated events (col. 3, lines 26-32; collecting and storing); and processing the consolidated events (col. 3, lines 26-32; analyzing).

Allowable Subject Matter

3. The indicated allowability of claims 75 and 87 is withdrawn in view of the newly discovered reference to Jindal et al. '622. Rejections based on the newly cited reference(s) can be found above.

4. Claims 10-23, 25-28, 39-69, 72-74, 81-83, 86, 88 and 89 are allowed.

5. Claims 76-78 and 80 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.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Walsh whose telephone number is 571-272-7063. The examiner can normally be reached on Monday-Thursday from 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. 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.

/John B. Walsh/
Primary Examiner, Art Unit 2151

Search Notes	Application/Control No.	Applicant(s)/Patent under Reexamination	
	10/259,497	STOLORZ ET AL.	
	Examiner	Art Unit	
	John B. Walsh	2151	

SEARCHED			
Class	Subclass	Date	Examiner

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
search in EAST-see attached search history	6/13/2008	JW

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L3	0	"6360256".pn. and (policy or policies)	US-PGPUB; USPAT	OR	ON	2008/06/13 17:12
L2	1	("6360256").PN.	US-PGPUB; USPAT	OR	OFF	2008/06/13 16:58
L1	1	("6306256").PN.	US-PGPUB; USPAT	OR	OFF	2008/06/13 16:57
S82	34	mccanne-steven.in.	US-PGPUB; USPAT	OR	ON	2008/06/12 00:50
S81	6	bohossian-vasken.in.	US-PGPUB; USPAT	OR	ON	2008/06/12 00:47
S80	0	daiji-yahara.in.	US-PGPUB; USPAT	OR	ON	2008/06/12 00:37
S79	0	yahara-daiji.in.	US-PGPUB; USPAT	OR	ON	2008/06/12 00:36
S78	8	jindal-anita.in.	US-PGPUB; USPAT	OR	ON	2008/06/12 00:02
S77	10	lim-swee-b.in.	US-PGPUB; USPAT	OR	ON	2008/06/11 23:54
S76	1	lim-swee.in.	US-PGPUB; USPAT	OR	ON	2008/06/11 23:54
S75	6	(("5522070") or ("5826031") or ("5838906") or ("6041307") or ("6327622") or ("6785704")).PN.	US-PGPUB; USPAT	OR	OFF	2008/06/11 16:07

6/13/08 5:29:29 PM
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
FORM PTO-1449 (modified)

Sheet 1 of 5

Application No.	10/259,497
Filing Date	09/30/2002
First Named Inventor	Stolorz, Paul E.
Group Art Unit	2151
Examiner Name	John B. Walsh
Attorney Docket No.	2711-0054
Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
	1-1	US-5522070	May 28, 1996	Sumitomo, S.
	1-2	US-5826031	10/1998	Nielsen
	1-3	US-5838906	11/1998	Doyle et al.
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	1-26			

Examiner Signature	/John Walsh/	Date Considered	06/12/2008

*Examiner: Initial if reference was 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.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 2 of 5		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

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Examiner Initials*	Cite No.	Document No.	Publication Date	Name of Patentee or Applicant of Cited Document	Notes
	2-1	EP 0 817 020 A2	Jan-07-1998	Sun Microsystems, Inc.	
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Examiner Signature	/John Walsh/	Date Considered	06/12/2008

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 3 of 5		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
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Examiner Signature	/John Walsh/	Date Considered	06/12/2008

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 4 of 5		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

NON-PATENT REFERENCES

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Examiner Signature	/John Walsh/	Date Considered	06/12/2008

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 5 of 5		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
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	5-6		
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Examiner Signature	/John Walsh/	Date Considered	06/12/2008

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APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	FILE WRAPPER LOCATION
10/259,497		2151	21M1

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Correspondence Address/Fee Address Change

The following fields have been set to Customer Number 75948 on 09/10/2008

- **Correspondence Address**
- **Maintenance Fee Address**
- **Power of Attorney Address**

The address of record for Customer Number 75948 is:

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PART 1 - ATTORNEY/APPLICANT COPY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:

Inventor(s):	*Stolorz,* Paul E.; et al.	**Group Art Unit:**	2151
Appl. No.:	10/259,497	**Examiner:**	WALSH, John
Filing Date:	09/30/2002	**Confirmation No.:**	5284
Attorney Docket No.:	2711-0054	**Date:**	December 16, 2008

Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**

AMENDMENT

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

Sir:

Responsive to the Non-Final Official Action mailed 06/18/2008, please amend this application as follows.

Amendments to the claims begin on page 2.

Remarks begin on page 28.

IN THE CLAIMS

Please amend the claims as follows:

1 - 9. (Canceled).

10. (Previously presented) A framework for adaptive traffic control comprising:

a server network; and

an adaptive traffic control (ATC) name server network having at least one domain name server constructed and adapted to provide adaptive policy-based domain name service, wherein, in response to a request to resolve a hostname, at least one domain name server in the ATC domain name server network provides an answer based on a policy and on a location of the requester, wherein each server in the server network is at least one of:

a monitored server, wherein an availability of the monitored server is dynamically monitored; and

a managed server, wherein either an availability of the managed server is dynamically monitored, or a load share or a shed fraction of the managed server is defined dynamically, wherein the framework further comprises:

an ATC administrative framework, wherein the ATC administrative framework comprises:

an administrative master agent (AMA);

at least one administrative master backup agent; and

a network operation center.

11. (Original) A framework as in claim 10 wherein the answer comprises:

an Internet protocol (IP) address or a CNAME corresponding to a server in the server network.

12. (Original) The framework according to claim 10, wherein the server network includes

at least one of:

a subscriber server network; and

a content delivery network.

13. (Previously presented) The framework according to claim 10, wherein the server network includes a subscriber server network, and wherein the subscriber server network comprises at least one server group, wherein each of the at least one server groups corresponds to a server hierarchy.

14. (Original) The framework according to claim 13, wherein the server hierarchy includes at least one of:

a first tier comprising at least one primary server;

a second tier comprising at least one first level overflow server that functions when the at least one primary server in the first tier fails to function; and a third tier comprising at least one second level overflow server that functions when both the at least one primary server and the one or more first level overflow server fail to function.

15. (Previously presented) The framework according to claim 81, wherein each server in the server network is at least one of:

a monitored server, wherein the availability of the monitored server is dynamically monitored; and

a managed server, wherein either the availability of the managed server is dynamically monitored, or the load share or the shed fraction of the managed server is defined dynamically.

16. (Previously presented) The framework according to claim 10, wherein each domain name server in the ATC domain name server network comprises:

a location determiner constructed and adapted to determine a geographic location of a requesting client;

an adaptive traffic control (ATC) mechanism capable of facilitating the policy-based domain name service.

17. (Previously presented) The framework according to claim 10, wherein the at least one policy includes at least one of:

a geo-political policy governing the selection of a server group in the server network according to a geographical location of the client;

a load share policy governing the selection of a server from a server group according to dynamic load share information associated with the servers in the server group;

a shedding policy governing how the load of a server in a server group is to be shed to other servers;

a failover policy governing the selection of a server at a tier of a server hierarchy when at least one of the servers at the same tier fail to function;

a tiered failover policy governing the selection of a server at a next tier in a server hierarchy when servers in a previous tier fail to function; and

a server designation policy defining a server in the server network as at least one of a monitored server and a managed server.

18. (Original) The framework according to claim 17, wherein the geo-political policy includes at least one of:

a continent-based policy;

a country-based policy;

a region-based policy; and

a time-zone based policy.

19. (Previously presented) The framework according to claim 10, further comprising a regulatory policy.

20. (Previously presented) The framework according to claim 10, wherein the domain name server further comprises a monitoring agent capable of observing events that occur during the operation of the domain name server.

21. (Original) The framework according to claim 20, wherein the monitoring agent is further constructed and adapted to monitor availability of one or more servers in the server network that are designated as either a monitored

server or a managed server whereby the domain name server can determine the server according to the availability of the one or more servers.

22. (Previously presented) The framework according to claim 20, wherein the monitoring agent is constructed and adapted to poll dynamic load share and load shed information from one or more managed servers so that the domain name server can determine the answer according to the dynamic load share and load shed information associated with the managed servers.

23. (Previously presented) The framework according to claim 10, further comprising:

an adaptive traffic control (ATC) administrative framework constructed and adapted to administer operations of the ATC name server network and the status of the server network.

24. (Canceled)

25. (Previously presented) The framework according to claim 10, wherein the AMA comprises:

an ATC network monitoring mechanism capable of monitoring the operations of the ATC domain name server network through event information received from at least one monitoring agent of the at least one domain name server;

an ATC policy management mechanism capable of receiving and dynamically polling at least one policy from at least one source and broadcasting

the at least one policy to the at least one domain name server in the ATC domain name server network; and

an administrative master backup mechanism capable of enabling the at least one administrative master agent backup to function in place of the AMA when the AMA fails to function.

26. (Original) The framework according to claim 25, wherein the at least one source includes at least one of:

the subscriber capable of interacting with the administrative master agent to define subscriber's policies and providing dynamic policies that can be polled by the ATC policy management mechanism;

one or more policy entities defining policies that can be received or dynamically polled by the ATC policy management mechanism; and

one or more managed servers in the server network that provide dynamic load share and load shed policies that can be polled.

27. (Original) The framework according to claim 25, wherein the ATC network monitoring mechanism comprises:

a trap handler capable of receiving event information from monitoring agents associated with different ATC domain name servers and consolidating the trapped event information;

a processing mechanism capable of analyzing the consolidated trapped event information; and

an alert generation mechanism capable of generating an alert according to the processing result from said processing and sending the alert to the network operation center.

28. (Original) The framework according to claim 27, wherein the alert generation mechanism is further capable of sending the alert to the subscriber.

29-38. (canceled)

39. (Original) An adaptive traffic control (ATC) administrative framework, comprising:

an administrative master agent (AMA);

at least one administrative master agent (AMA) backup; and

a network operation center, wherein the AMA comprises:

an ATC network monitoring mechanism capable of monitoring the operations of an adaptive traffic control (ATC) domain name server network comprising at least one domain name server through event information received from at least one monitoring agent located in the at least one domain name server; and

an ATC policy management mechanism capable of receiving and dynamically polling at least one policy from at least one source and broadcasting the at least one policy to the at least one domain name server; and an administrative master backup mechanism capable of enabling the at least one administrative master agent backup to function in place of the AMA when the AMA fails to function.

40. (Original) The framework according to claim 39, wherein the at least one source includes at least one of:

a subscriber capable of interacting with the administrative master agent to define subscriber's policies and providing dynamic policies that can be polled by the ATC policy management mechanism;

one or more policy entities capable of defining policies that can be dynamically polled by the ATC policy management mechanism; and one or more servers in a server network that are designated as managed servers.

41. (Original) The framework according to claim 40, wherein the ATC network monitoring mechanism comprises:

a trap handler capable of receiving event information from monitoring agents located in different ATC domain name servers and consolidating the trapped event information;

a processing mechanism capable of analyzing the trapped event information; and an alert generation mechanism capable of generating an alert according to the processing result from said processing and sending the alert to the network operation center and the subscriber.

42. (Previously presented) A method for adaptive traffic control based domain name service, comprising:

receiving, by a domain name server in an adaptive traffic control (ATC) name server network, a request to resolve a hostname;

determining, by the domain name server, an answer corresponding to a server in a server network based at least on the geographic location of the client and at least one policy; and

causing the answer to be provided to the requestor, wherein the answer is at least one of the IP address and the CNAME of a server in a server network,

wherein the server network includes a subscriber server network providing content delivery service, and wherein the subscriber server network includes at least one server group,

wherein each server group corresponds to a server hierarchy that includes at least one of:

a first tier comprising at least one primary server;

a second tier comprising one or more first level overflow servers that function when the at least one primary server fails to function; and a third tier comprising one or more second level overflow servers that function when both the at least one primary server and the one or more first level overflow servers fail to function,

the method further comprising establishing the at least one policy, wherein said establishing the at least one policy comprises at least one of:

receiving, by an adaptive traffic control (ATC) policy management mechanism of an administrative master agent (AMA) in an adaptive traffic control (ATC) administrative framework, the at least one policy from at least one source;

dynamically polling the at least one policy from one or more managed servers in the server network.

43. (Original) The method according to claim 42, wherein the server network includes at least one of:

a subscriber server network providing content delivery service; and

a content delivery network providing the content delivery service.

44. (Previously presented) The method according to claim 86, wherein the server network includes a subscriber server network providing content delivery service, and wherein the subscriber server network includes at least one server group.

45. (Original) The method according to claim 44, wherein each server group corresponds to a server hierarchy that includes at least one of:

a first tier comprising at least one primary server;

a second tier comprising one or more first level overflow servers that function when the at least one primary server fails to function; and a third tier comprising one or more second level overflow servers that function when both the at least one primary server and the one or more first level overflow servers fail to function.

46. (Previously presented) The method according to claim 42, wherein each server in the server network can be designated as at least one of:

a monitored server, wherein the availability of the monitored server is dynamically monitored; and

a managed server, wherein either the availability of the managed server is dynamically monitored or the load share or the load shed of the managed server is dynamically defined.

47. (Previously presented) The method according to claim 42, wherein the at least one policy includes one or more of:

a geo-political policy governing the selection of a server group in the server network according to the geographical location of the client;

a load share policy governing the selection of a server from a server group according to dynamic load share information associated with the servers in the server group;

a shedding policy governing how the load of a server in a server group is to be shed to other servers;

a failover policy governing the selection of a server at a tier of a server hierarchy when at least one of the servers at the same tier fail to function;

a tiered failover policy governing the selection of a server at a next tier in a server hierarchy when servers in a previous tier fail to function; and

a server designation policy defining a server in the server network as at least one of a monitored server and a managed server.

48. (Previously presented) The method according to claim 47, wherein, when the policy is a geo-political policy, the geo-political policy includes at least one of:

a continent-based policy;

a country-based policy;

a region-based policy; and

a time-zone based policy.

49. (Previously presented) The method according to claim 42, further comprising a regulatory policy.

50. (Previously presented) The method according to claim 42, wherein said determining the answer comprises:

determining the geographic location of the client;

retrieving one or more policies relevant to the geographic location of the client;

identifying the server according to the retrieved one or more policies; and

identifying the at least one of the IP address and the CNAME of the server.

51. (Previously presented) The method according to claim 89, further comprising establishing the at least one policy.

52. (Original) The method according to claim 51, wherein said establishing the at least one policy comprises at least one of:

receiving, by an adaptive traffic control (ATC) policy management mechanism of an administrative master agent (AMA) in an adaptive traffic control (ATC) administrative framework, the at least one policy from at least one source;

dynamically polling the at least one policy from one or more managed servers in the server network.

53. (Previously presented) The method according to claim 42, wherein the at least one source includes at least one of:

the subscriber; and

a regulatory entity.

54. (Previously presented) The method according to claim 51, further comprising broadcasting the at least one policy to the at least one domain name server in the ATC name server network.

55. (Previously presented) The method according to claim 51, further comprising:

dynamically updating a policy based on a dynamic policy to generate an updated policy; and

broadcasting the updated policy to the at least one domain name server in the ATC name server network.

56. (Previously presented) The method according to claim 42, further comprising monitoring, by a monitoring mechanism in a domain name server, an operational status of the domain name server.

57. (Previously presented) The method according to claim 56, wherein said monitoring comprises:

monitoring events that occur during operation of the domain name server; and

sending the events to an ATC network monitoring mechanism in the ATC administrative framework.

58. (Previously presented) The method according to claim 42, further comprising monitoring, by a monitoring mechanism, the availability of one or more servers that are designated as either a monitored server or a managed server whereby the domain name server can determine the answer according to the availability of the one or more servers.

59. (Previously presented) The method according to claim 42, further comprising polling, by a monitoring mechanism, dynamic load share or load shed information from one or more managed servers in the server network whereby the domain name server can determine the answer according to the dynamic load share and load shed information.

60. (Previously presented) The method according to claim 42, further comprising administering, by an ATC administrative framework, an operational status of the ATC name server network.

61. (Original) The method according to claim 60, wherein said administering comprises:

receiving events from monitoring mechanisms of the domain name servers in the ATC name server network;

consolidating, by the ATC network monitoring mechanism, the events received from the domain name servers to generate consolidated events; and processing the consolidated events.

62. (Original) The method according to claim 61, further comprising:

generating an alert based on results from said processing; and

sending the alert to an network operation center of the ATC administrative network and the subscriber.

63. (Previously presented) A method for resolving a hostname, comprising, by a domain name server in an adaptive traffic control (ATC) name server network, the method comprising:

receiving a request to resolve a hostname;

ascertaining at least one policy; and then

determining a server in a server network based at least on the geographic location of the client and said at least one policy; and

determining at least one of an IP address and a CNAME of the server based on the determined location at least one location-based policy,

wherein the server network includes a subscriber server network, and wherein the subscriber server network includes at least one server group, wherein each server group corresponds to a server hierarchy that includes at least one of:

a first tier comprising at least one primary server;

a second tier comprising one or more first level overflow servers that function when the at least one primary server fails to function; and a third

tier comprising one or more second level overflow servers that function when both the at least one primary server and the one or more first level overflow servers fail to function,

the method further comprising dynamically establishing the at least one policy, wherein said establishing the at least one policy comprises at least one of:

receiving the at least one policy broadcasted from an adaptive traffic control (ATC) policy management mechanism of an administrative master agent (AMA) in an adaptive traffic control (ATC) administrative framework; and

dynamically polling one or more load share or load shed policies from one or more managed servers in the server network; and

updating a policy based on a corresponding dynamic policy that is either received from the ATC policy management mechanism or polled from a managed server to generate an updated policy.

64. (Original) The method according to claim 63, wherein the server network includes at least one of:

a subscriber server network; and

a content delivery network.

65. (Previously presented) The method according to claim 88, wherein the server network includes a subscriber server network, and wherein the subscriber server network includes at least one server group.

66. (Original) The method according to claim 65, wherein each server group corresponds to a server hierarchy that includes at least one of:

a first tier comprising at least one primary server;

a second tier comprising one or more first level overflow servers that function when the at least one primary server fails to function; and a third tier comprising one or more second level overflow servers that function when both the at least one primary server and the one or more first level overflow servers fail to function.

67. (Previously presented) The method according to claim 63, wherein each server in the server network is at least one of:

a monitored server, wherein the availability of the monitored server is dynamically monitored; and

a managed server, wherein either the availability of the managed server is dynamically monitored or the load share or the load shed of the managed server is dynamically defined.

68. (Original) The method according to claim 67, wherein the at least one policy includes one or more of:

a geo-political policy governing the selection of a server group in the server network according to the geographical location of the client;

a load share policy governing the selection of a server from a server group according to dynamic load share information associated with the servers in the server group;

a shedding policy governing how the load of a server in a server group is to be shed to other servers;

a failover policy governing the selection of a server at a tier of a server hierarchy when at least one of the servers at the same tier fail to function;

a tiered failover policy governing the selection of a server at a next tier in a server hierarchy when servers in a previous tier fail to function;

a server designation policy defining a server in the server network as at least one of a monitored server and a managed server; and a regulatory policy.

69. (Previously presented) The method according to claim 63, wherein said determining the server comprises:

determining the geographic location of the client;

retrieving one or more policies relevant to the geographic location of the client; and

determining the server according to the retrieved one or more policies.

70-71 (cancelled)

72. (Previously presented) The method according to claim 63, further comprising

monitoring, by a monitoring mechanism of the domain name server, the operational status of the domain name server.

73. (Previously presented) The method according to claim 72, wherein said monitoring comprises:

monitoring events that occur during operation of the domain name server;

sending the events to an ATC network monitoring mechanism in the ATC administrative framework.

74. (Previously presented) The method according to claim 73, further comprising

monitoring the availability of one or more servers that are designated as either a monitored server or a managed server so that the domain name server can determine the server according to the availability of the one or more servers.

75. (Currently amended) A method of an adaptive traffic control (ATC) administrative framework, comprising:

maintaining at least one policy used by at least one domain name server in an adaptive traffic control (ATC) name server network to determine the IP address of a server in a server network in response to a request from a client to resolve a hostname;

monitoring the operational status of the ATC name server network, wherein said monitoring comprises:

receiving, by an ATC network monitoring mechanism in the ATC administrative framework, events sent from at least one monitoring mechanism of the at least one domain name server;

consolidating the events to form consolidated events; and processing the consolidated events,

wherein said maintaining the at least one policy comprises:

receiving, by an adaptive traffic control (ATC) policy management mechanism of an administrative master agent (AMA) in the ATC administrative framework, the at least one policy from at least one source; and

broadcasting the received at least one policy to the at least one domain name server in the ATC name server network.

76. (Canceled).

77. (Original) The method according to claim 76, wherein the at least one source includes at least one of:

a subscriber; and

a regulatory entity.

78. (Previously presented) The method according to claim 75, further comprising:

polling one or more load share or load shed policies from one or more servers that are designated as managed servers in the server network;

updating a policy using a corresponding dynamic policy that is either received from the at least one source or polled from a managed server to generate an updated policy; and

broadcasting the updated policy to one or more domain name servers in the ATC name server network.

79. (canceled).

80. (Previously presented) The method according to claim 75, further comprising:

generating an alert based on results from said processing; and sending the alert to an network operation center of the ATC administrative framework and the subscriber.

81. (Previously presented) A framework for adaptive traffic control comprising:

a server network; and

an adaptive traffic control (ATC) name server network having at least one domain name server constructed and adapted to provide adaptive policy-based domain name service, wherein, in response to a request to resolve a hostname, at least one domain name server in the ATC domain name server network provides an answer based on a policy and on a location of the requester, wherein the server network includes a subscriber server network, and wherein the subscriber server network comprises at least one server group, wherein each of the at least one server groups corresponds to a server hierarchy, wherein the server hierarchy includes at least one of:

a first tier comprising at least one primary server;

a second tier comprising at least one first level overflow server that functions when the at least one primary server in the first tier fails to function; and a third tier comprising at least one second level overflow server that functions

when both the at least one primary server and the one or more first level overflow server fail to function, wherein the framework further comprises:

an ATC administrative framework, wherein the ATC administrative framework comprises:

an administrative master agent (AMA);

at least one administrative master backup agent; and

a network operation center

82. (Previously presented) A framework for adaptive traffic control comprising:

a server network; and

an adaptive traffic control (ATC) name server network having at least one domain name server constructed and adapted to provide adaptive policy-based domain name service, wherein, in response to a request to resolve a hostname, at least one domain name server in the ATC domain name server network provides an answer based on a policy and on a location of the requester,

wherein the domain name server further comprises a monitoring agent capable of observing events that occur during the operation of the domain name server, wherein the framework further comprises:

an ATC administrative framework, wherein the ATC administrative framework comprises:

an administrative master agent (AMA);

at least one administrative master backup agent; and

a network operation center.

83. (Previously presented) A framework for adaptive traffic control comprising:

a server network;

an adaptive traffic control (ATC) name server network having at least one domain name server constructed and adapted to provide adaptive policy-based domain name service, wherein, in response to a request to resolve a hostname, at least one domain name server in the ATC domain name server network provides an answer based on a policy and on a location of the requester; and

an adaptive traffic control (ATC) administrative framework, wherein the ATC administrative framework comprises:

an administrative master agent (AMA);

at least one administrative master backup agent; and

a network operation center.

84-85 (cancelled)

86. (Previously presented) A method for adaptive traffic control based domain name service, comprising:

receiving, by a domain name server in an adaptive traffic control (ATC) name server network, a request to resolve a hostname;

determining, by the domain name server, an answer corresponding to a server in a server network based at least on the geographic location of the client and at least one policy; and

causing the answer to be provided to the requestor, wherein the answer is at least one of the IP address and the CNAME of a server in a server network, wherein said establishing the at least one policy comprises at least one of:

receiving, by an adaptive traffic control (ATC) policy management mechanism of an administrative master agent (AMA) in an adaptive traffic control (ATC) administrative framework, the at least one policy from at least one source, wherein the at least one source includes at least one of: the subscriber; and a regulatory entity;

dynamically polling the at least one policy from one or more managed servers in the server network; and

monitoring, by a monitoring mechanism, the availability of one or more servers that are designated as either a monitored server or a managed server whereby the domain name server can determine the answer according to the availability of the one or more servers.

87. (Canceled)

88. (Previously presented) A method for resolving a hostname, comprising, by a domain name server in an adaptive traffic control (ATC) name server network, the method comprising:

receiving a request to resolve a hostname;

ascertaining at least one policy; and then

determining a server in a server network based at least on the geographic location of the client and said at least one policy; and

determining at least one of an IP address and a CNAME of the server based on the determined location at least one location-based policy, and the method further comprising

dynamically establishing the at least one policy, wherein said establishing the at least one policy comprises at least one of:

receiving the at least one policy broadcasted from an adaptive traffic control (ATC) policy management mechanism of an administrative master agent (AMA) in an adaptive traffic control (ATC) administrative framework; and

dynamically polling one or more load share or load shed policies from one or more managed servers in the server network; and

updating a policy based on a corresponding dynamic policy that is either received from the ATC policy management mechanism or polled from a managed server to generate an updated policy.

89. (Previously presented) A method for adaptive traffic control based domain name service, comprising:

(A) receiving, by a domain name server in an adaptive traffic control (ATC) name server network, a request to resolve a hostname;

(B) determining, by the domain name server, an answer corresponding to a server in a server network based at least on the geographic location of the client and at least one policy; and

(C) causing the answer to be provided to the requestor, wherein the answer is at least one of the IP address and the CNAME of a server in a server network,

wherein the server network includes a subscriber server network providing content delivery service, and wherein the subscriber server network includes at least one server group,

wherein each server group corresponds to a server hierarchy that includes at least one of:

a first tier comprising at least one primary server;

a second tier comprising one or more first level overflow servers that function when the at least one primary server fails to function; and a third tier comprising one or more second level overflow servers that function when both the at least one primary server and the one or more first level overflow servers fail to function; and

(D) administering, by an ATC administrative framework, an operational status of the ATC name server network, wherein said administering comprises:

(d1) receiving events from monitoring mechanisms of the domain name servers in the ATC name server network;

(d2) consolidating, by the ATC network monitoring mechanism, the events received from the domain name servers to generate consolidated events; and

(d3) processing the consolidated events.

REMARKS

Reconsideration and allowance of this application are respectfully requested.

By this Amendment, claims 76 and 87 have been canceled, and claim 75 has been amended. No new matter has been added by any amendments.

Claims 10-23, 25-28, 39-69, 72-75, 77-78, 80-83, 86, and 88-89 are pending in this application.

The Examiner indicated that claims 10-23, 25-28, 39-69, 72-74, 81-83, 86, 88 and 89 are allowed.

The Examiner objected to claims 76-78 and 80 as being dependent upon a rejected base claim, and indicated that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 75 has been amended to include the subject matter of objected-to claim 76. Claim 76 has been canceled.

The Examiner rejected claims 75 and 87 under §102(e). In view of the amendment to claim 75 and the cancelation of claim 87, withdrawal of this rejection is respectfully requested.

INVENTORSHIP

Applicant advises the Office that the inventive entity set forth in the original declaration is in error, and that this error arose without any deceptive intention on the part of the persons named as inventor or on the part of the person not named as an inventor. Applicant will file (as a separate paper) a request to correct the inventorship under 37 CFR §1.48(a).

CONCLUSION

Applicant respectfully submits that this application is in condition for allowance and an early action to that effect is earnestly solicited. The Examiner is respectfully invited to contact the undersigned at the number provided to resolve any outstanding issues or concerns.

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.
The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/ Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached. **This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed**.

CUSTOMER NUMBER 75948	Respectfully submitted, /Brian Siritzky/Reg. No. 37497 By: Brian Siritzky, Ph.D. Registration No.: 37,497

DAVIDSON BERQUIST JACKSON & GOWDEY LLP
4300 Wilson Blvd., 7th Floor, Arlington, Virginia 22203
Main: (703) 894-6400 ● FAX: (703) 894-6430

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	*Stolorz,* Paul E.; et al.	**Group Art Unit:**	2151
Appl. No.:	10/259,497	**Examiner:**	WALSH, John
Filing Date:	09/30/2002	**Confirmation No.:**	5284
Attorney Docket No.:	2711-0054	**Date:**	December 16, 2008
Title:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT		

PETITION FOR EXTENSION OF TIME

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

Sir:

Petition is hereby made to extend the original due date to cover the date this response/paper is filed for which the requisite fee is:

1. Extension fee required:

Extended	**Large/Small Entity**	
3 months	$1110 / $555	+ 1110
Less extension fees paid since last Action		(-)
TOTAL FEE OF:		$ 1110

Please charge the present and any missing or inadequate fee for this petition to our Deposit Account No. 501860, Order No. 2711-0054

CUSTOMER NUMBER 75948	Respectfully submitted, /Brian Siritzky/Reg. No. 37497 By: Brian Siritzky, Ph.D. Registration No.: 37,497

DAVIDSON BERQUIST JACKSON & GOWDEY LLP
4300 Wilson Blvd., 7th Floor, Arlington, Virginia 22203
Main: (703) 894-6400 ● FAX: (703) 894-6430

Electronic Patent Application Fee Transmittal

Application Number:	10259497
Filing Date:	30-Sep-2002
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Filer:	Brian Siritzky
Attorney Docket Number:	2711-0054

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:				
Extension - 3 months with $0 paid	1253	1	1110	1110

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**1110**

Electronic Acknowledgement Receipt

EFS ID:	4471614
Application Number:	10259497
International Application Number:	
Confirmation Number:	5284
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Customer Number:	75948
Filer:	Brian Siritzky
Filer Authorized By:	
Attorney Docket Number:	2711-0054
Receipt Date:	17-DEC-2008
Filing Date:	30-SEP-2002
Time Stamp:	12:24:11
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1110
RAM confirmation Number	7588
Deposit Account	501860
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	**Document Description**	**File Name**	**File Size(Bytes)/ Message Digest**	**Multi Part /.zip**	**Pages (if appl.)**
1	Amendment/Req. Reconsideration-After Non-Final Reject	PA-Response.pdf	459489 94b2f21f0d6b4f32c4ce7eb17ac897fe98b9c66f	no	29
Warnings:					
Information:					
2	Extension of Time	PA-EOT.pdf	321606 393870b0c76a4f3b82e1c49e3267d2b86ecf54fa	no	1
Warnings:					
Information:					
3	Fee Worksheet (PTO-06)	fee-info.pdf	30270 45c3ad64184cad0f35733d5297eec6dd2c43211e	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	811365		

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.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 10/259,497	Filing Date 09/30/2002	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☐		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☒ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	**740**
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	**740**

APPLICATION AS AMENDED – PART II

AMENDMENT	12/17/2008	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 60	Minus	** 80	= 0	X $ =		OR	X $52=	0
	Independent (37 CFR 1.16(h))	* 11	Minus	***15	= 0	X $ =		OR	X $220=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	**0**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L 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.

Legal Instrument Examiner:
/TAMMY MCBETH BROWN/

This collection of information is required by 37 CFR 1.16. 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 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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF:	Attorney Docket: 2711-0054
Stolorz, Paul E.	Group Art Unit: 2151
Application Serial No.: 10/259,497	Examiner: John B. Walsh
Application Filing Date: 09/30/2002	Date: February 18, 2009
Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**	Confirmation No.: 5284

INFORMATION DISCLOSURE STATEMENT

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

Sir:

Pursuant to 37 C.F.R. § 1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. One copy of each non-U.S. Patent reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The submission of any document herewith, which is not a statutory bar, is not intended that any such document constitutes prior art against any of the claims of the present application or is considered to be material to patentability as defined in 37 C.F.R. § 1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference against the claims of the present application.

☐ This Information Disclosure Statement is being filed within three (3) months of the U.S. filing date OR before the mailing date of a first Office Action on the merits. No certification or fee is required.

☒ This Information Disclosure Statement is being filed more than three (3) months after the U.S. filing date AND after the mailing date of the first Office Action on the merits, but before the mailing date of a Final Rejection or Notice of Allowance.

☐ I hereby certify that each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three (3) months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1).

☐ I hereby certify that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three (3) months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).

☒ Please credit or debit Deposit Account No. 501860 as needed under 37 C.F.R. § 1.17(p) to ensure consideration of the disclosed information.

☐ This Information Disclosure Statement is being filed more than three (3) months after the U.S. filing date and after the mailing date of a Final Rejection or Notice of Allowance, but before payment of the Issue Fee. Applicant(s) hereby requests that the Information Disclosure Statement be considered. Attached is our check in the amount required under 37 C.F.R. § 1.17(p). Please credit or debit Deposit Account No. 501860 as needed to ensure consideration of the disclosed information. A duplicate copy of this paper is attached.

☐ I hereby certify that each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three (3) months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1).

☐ I hereby certify that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three (3) months prior to the filing of this Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).

☐ Relevance of the non-English language reference(s) is/are discussed in the present specification.

☐ The reference(s) was/were cited in a counterpart foreign application. An English language version of the foreign search report is attached for the Examiner's information.

☐ A concise explanation of the relevance of the non-English language reference(s) appear(s) in the Appendix hereto.

☐ The Examiner's attention is directed to co-pending U.S. Patent Application No. _____, filed _____, which is directed to related technical subject matter. The identification of this U.S. Patent Application is not to be construed as a waiver of secrecy as to that application now or upon issuance of the present application as a patent. The Examiner is respectfully requested to consider the cited application and the art cited therein during examination.

☐ Copies of the references were cited by or submitted to the Office in parent Application No. _____, filed _____, which is relied upon for an earlier filing date

under 35 U.S.C. 120. Thus, Form PTO 1449 is attached without copies of these references. 37 C.F.R. § 1.98(d).

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.

The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached

This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed.

CUSTOMER NUMBER

75948

Davidson Berquist Jackson & Gowdey LLP
4300 Wilson Blvd., 7th Floor,
Arlington Virginia 22203
Main: (703) 894-6400 • FAX: (703) 894-6430

Respectfully submitted,

By: _____

Brian Siritzky, Ph.D.
Registration No.: 37,497

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 1 of 1		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
	1-1	US-2002/0078233	Jun-02	Biliris
	1-2	US-2003/0149581	Aug-03	Chaudhri
	1-3	US-5777988	Jul-98	Cisneros
	1-4	US-7254645	Aug-07	Nishi
	1-5			
	1-6			
	1-7			
	1-8			
	1-9			
	1-10			
	1-11			
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	1-19			
	1-20			
	1-21			
	1-22			
	1-23			
	1-24			
	1-25			
	1-26			

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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.

Electronic Patent Application Fee Transmittal

Application Number:	10259497
Filing Date:	30-Sep-2002
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Filer:	Brian Siritzky
Attorney Docket Number:	2711-0054

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:	4812583
Application Number:	10259497
International Application Number:	
Confirmation Number:	5284
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Customer Number:	75948
Filer:	Brian Siritzky
Filer Authorized By:	
Attorney Docket Number:	2711-0054
Receipt Date:	18-FEB-2009
Filing Date:	30-SEP-2002
Time Stamp:	12:53:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	8719
Deposit Account	501860
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		20090218133526692.pdf	687826 7bdd24911ff4b9501dc73794c5614e63d886220e	yes	5

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Information Disclosure Statement Letter	1	4
	Information Disclosure Statement (IDS) Filed (SB/08)	5	5

Warnings:

Information:

2	Fee Worksheet (PTO-06)	fee-info.pdf	30523 4d8ba10fac26dd6a8e0cc3918df6cff278ba99ab	no	2

Warnings:

Information:

Total Files Size (in bytes):	718349

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

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

75948 7590 02/27/2009

DAVIDSON BERQUIST JACKSON & GOWDEY, LLP
ATTN: BRIAN SIRITZKY, Ph.D.
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
WALSH, JOHN B	
ART UNIT	PAPER NUMBER
2451	

DATE MAILED: 02/27/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	09/30/2002	Paul E. Stolorz	2711-0054	5284

TITLE OF INVENTION: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	05/27/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

75948 7590 02/27/2009

DAVIDSON BERQUIST JACKSON & GOWDEY, LLP
ATTN: BRIAN SIRITZKY, Ph.D.
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	09/30/2002	Paul E. Stolorz	2711-0054	5284

TITLE OF INVENTION: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	05/27/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
WALSH, JOHN B	2451	709-238000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1_____

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2_____ 3_____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. 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 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, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	09/30/2002	Paul E. Stolorz	2711-0054	5284

75948 7590 02/27/2009

DAVIDSON BERQUIST JACKSON & GOWDEY, LLP
ATTN: BRIAN SIRITZKY, Ph.D.
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
WALSH, JOHN B	
ART UNIT	PAPER NUMBER
2451	

DATE MAILED: 02/27/2009

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 605 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 605 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

Notice of Allowability	Application No. 10/259,497	Applicant(s) STOLORZ ET AL.	
	Examiner John B. Walsh	Art Unit 2451	

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *12/17/08*.

2. ☒ The allowed claim(s) is/are *10-23, 25-28, 39-69, 72-75, 77, 78, 80-83, 86, 88 and 89* .

3. ☐ 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 the:
      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)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 2/18/09
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *20090211* .
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/John B. Walsh/
Primary Examiner, Art Unit 2451

Interview Summary	Application No.	Applicant(s)	
	10/259,497	STOLORZ ET AL.	
	Examiner	Art Unit	
	John B. Walsh	2451	

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

(1) *John B. Walsh*. (3)_____.

(2) *Brian Siritzky*. (4)_____.

Date of Interview: *2/11/09*.

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: *77*.

Identification of prior art discussed: *n/a*.

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: *See Examiner's Amendment*.

(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.

/John B. Walsh/ Primary Examiner, Art Unit 2451	

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Brian Siritzky on February 11, 2009.

The application has been amended as follows:

In the Claims:

a. Claim 77, line 1 – replace "claim 76" with --claim 75--.

Allowable Subject Matter

2. Claims 10-23, 25-28, 39-69, 72-75, 77, 78, 80-83, 86, 88 and 89 are allowed.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Walsh whose telephone number is 571-272-7063. The examiner can normally be reached on Monday-Thursday from 8:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. 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.

/John B. Walsh/
Primary Examiner, Art Unit 2451

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BIB DATA SHEET

CONFIRMATION NO. 5284

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/259,497	09/30/2002 RULE	709	2451	2711-0054

APPLICANTS

Paul E. Stolorz, Thousand Oaks, CA;
John K. Salmon, Altadena, CA;
Michael S. Warren, Santa Fe, NM;
Jeffrey Koller, Torrance, CA;
Aric Hagberg, Santa Fe, CA;
Maksim Yevmenkin, Thousand Oaks, CA;
Mark Brady, Thousand Oaks, CA;
David Pfitzner, Thousand Oaks, CA;

**** CONTINUING DATA ***************************

This appln claims benefit of 60/325,177 09/28/2001

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

10/28/2002

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /JOHN B WALSH/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	22	80	10

ADDRESS

DAVIDSON BERQUIST JACKSON & GOWDEY, LLP
ATTN: BRIAN SIRITZKY, Ph.D.
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203
UNITED STATES

TITLE

CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

FILING FEE RECEIVED		
3208	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 1 of 1		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2151
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054
	Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
	1-1	US-2002/0078233	Jun-02	Biliris
	1-2	US-2003/0149581	Aug-03	Chaudhri
	1-3	US-5777988	Jul-98	Cisneros
	1-4	US-7254645	Aug-07	Nishi
	1-5			
	1-6			
	1-7			
	1-8			
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	1-10			
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	1-20			
	1-21			
	1-22			
	1-23			
	1-24			
	1-25			
	1-26			

Examiner Signature	/John Walsh/ (02/25/2009)	Date Considered	02/25/2009

*Examiner: Initial if reference was 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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /JW/ (02/25/2009)

Search Notes	Application/Control No.	Applicant(s)/Patent under Reexamination	
	10/259,497	STOLORZ ET AL.	
	Examiner	Art Unit	
	John B. Walsh	2451	

SEARCHED			
Class	Subclass	Date	Examiner

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
709	202,216	2/10/2009	JW
709	223,224	2/10/2009	JW
709	238,245	2/10/2009	JW

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
text search in EAST-see attached search history	2/10/2009	JW

Issue Classification	Application/Control No. 10/259,497	Applicant(s)/Patent under Reexamination STOLORZ ET AL.
	Examiner John B. Walsh	Art Unit 2451

ISSUE CLASSIFICATION

ORIGINAL		INTERNATIONAL CLASSIFICATION									
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED				
709	238	G	06	F	15	/173	G	06	F	15	/173
		G	06	F	15	/16	G	06	F	15	/16

CROSS REFERENCES				
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)			
709	202	223	224	

N/A (Assistant Examiner) (Date)	/John B. Walsh/ 2/9/09 (Primary Examiner) (Date)	Total Claims Allowed: 62
(Legal Instruments Examiner) (Date)		O.G. Print Claim(s): 1 / O.G. Print Fig.: 1

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		31	34	61		91		121		151		181
	2		32	35	62		92		122		152		182
	3		33	36	63		93		123		153		183
	4		34	37	64		94		124		154		184
	5		35	61	65		95		125		155		185
	6		36	62	66		96		126		156		186
	7		37	38	67		97		127		157		187
	8		38	39	68		98		128		158		188
	9	18	39	40	69		99		129		159		189
1	10	19	40		70		100		130		160		190
2	11	20	41		71		101		131		161		191
3	12	21	42	41	72		102		132		162		192
4	13	22	43	42	73		103		133		163		193
5	14	53	44	43	74		104		134		164		194
49	15	54	45	44	75		105		135		165		195
6	16	23	46		76		106		136		166		196
7	17	24	47	45	77		107		137		167		197
8	18	25	48	46	78		108		138		168		198
9	19	26	49		79		109		139		169		199
10	20	27	50	47	80		110		140		170		200
11	21	56	51	48	81		111		141		171		201
12	22	57	52	50	82		112		142		172		202
13	23	28	53	51	83		113		143		173		203
	24	58	54		84		114		144		174		204
14	25	59	55		85		115		145		175		205
15	26	29	56	52	86		116		146		176		206
16	27	30	57		87		117		147		177		207
17	28	31	58	60	88		118		148		178		208
	29	32	59	55	89		119		149		179		209
	30	33	60		90		120		150		180		210

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	82	709/202,216,223,224,238,245.ccls. and ((policy or policies) and agent).clm.	US-PGPUB	OR	ON	2009/02/10 21:56
L2	48	709/202,216,223,224,238,245.ccls. and ((policy or policies) and agent and server).clm.	US-PGPUB	OR	ON	2009/02/10 21:56
L3	4	("2003/0065762").URPN.	USPAT	OR	ON	2009/02/10 21:59

2/10/09 10:02:44 PM
C:\Documents and Settings\jwalsh\My Documents\EAST\workspaces\10259497.wsp

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:

Inventor(s):	*Stolorz,* Paul E.; et al.	**Group Art Unit:**	2451
Appl. No.:	10/259,497	**Examiner:**	WALSH, John
Filing Date:	09/30/2002	**Confirmation No.:**	5284
		Attorney Docket No.:	2711-0054

Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**

DECLARATION OF JONATHAN SIEKMANN
(Accompanying Petition Under 37 CFR 1.47)

I, Jonathan Siekmann, declare and state as follows:

1. On September 8, 2008, I sent an initial email to, *inter alia*, Paul Stolorz (paul.stolorz@gmail.com) and John Salmon (john@thesalmons.org) to: i) inform the inventors of the forthcoming change in inventorship to add Ted Middleton, ii) request contact information necessary to create the corrected declarations, and iii) request Aric Hagberg's contact information so that I could get in touch with him regarding the same. (Exh. 1) Note that this email, as well as other communications referenced herein, make further reference to currently pending continuation and continuation-in-part child applications of Application No. 10/259,497 ("the '497 Application") as these applications also require the same correction in inventorship.
2. On September 8, 2008, I received a reply email message from Mr. Salmon (to my Sept. 8th email, see ¶ 1) containing his home address information. (Exh. 2)
3. On September 9, 2009, after obtaining his email address, I sent an initial email to Mr. Hagberg (aric@hagberg.org) informing him of the

forthcoming change in inventorship to add Ted Middleton and requesting contact information necessary to create the corrected declarations. (Exh. 3)

4. On September 10, 2008, I received a reply email message from Mr. Hagberg (to my Sept. 9th email, see ¶ 3) containing his home address information. (Exh. 4)
5. On September 11, 2008, after obtaining potential alternate email addresses, I sent a follow-up email to Mr. Stolorz at each address which contained the same information/requests as my Sept. 8th email to Mr. Stolorz, see ¶ 1. (Exh. 5)
6. On September 12, 2008, I received a reply email message from Mr. Stolorz (to my Sept. 11th email, see ¶ 5). In this email message Mr. Stolorz provided his home address information and expressed his appreciation for our (Level 3's) "interest in following up with the ITM patent application." The ITM patent application refers to the '497 Application. (Exh. 6)
7. On September 12, 2008, I replied to Mr. Stolorz's Sept. 12th email message (see ¶ 6) indicating that I would follow up with Mr. Stolorz the following week after I had a chance to further discuss with Mr. Middleton his contribution to the '497 Application. (Exh. 7)
8. On September 12, 2008, I received a reply email message from Mr. Stolorz (to my Sept. 12th email, see ¶ 7) in which he agreed to continue our dialogue the following week. (Exh. 8)
9. On September 18, 2008, I sent a letter by United Parcel Service (UPS) to Mr. Stolorz, to his last known address as provided in Mr. Stolorz's Sept. 12th email message, see ¶ 6 (124 University Ave, Los Altos, CA 94022). (Exh. 9) This letter included, *inter alia*, a copy of the continuation-in-part child application of the '497 Application at issue, a copy of the currently pending claims of the '497 Application, and a copy of the corrected

declaration corresponding to the '497 Application. UPS emailed a corresponding receipt containing tracking information for this letter. (Exh. 10)

10. On September 18, 2008, I sent a letter by United Parcel Service (UPS) to Mr. Salmon, to his last known address as provided in Mr. Salmon's Sept. 8th email message, see ¶ 2 (820 Hardscrabble Rd., Chappaqua, NY 10514). (Exh. 11) This letter included, *inter alia*, a copy of the continuation-in-part child application of the '497 Application at issue, a copy of the currently pending claims of the '497 Application, and a copy of the corrected declaration corresponding the '497 Application. UPS emailed a corresponding receipt containing tracking information for this letter. (Exh. 12)
11. On September 18, 2008, I sent a letter by United Parcel Service (UPS) to Mr. Hagberg, to his last known address as provided in Mr. Hagberg's Sept. 10th email message, see ¶ 4 (36 Camino Chupadero, Santa Fe, NM 87506). (Exh. 13) This letter included, *inter alia*, a copy of the continuation-in-part child application of the '497 Application at issue, a copy of the currently pending claims of the '497 Application, and a copy of the corrected declaration corresponding to the '497 Application. UPS emailed a corresponding receipt containing tracking information for this letter. (Exh. 14)
12. On September 19, 2008, I received an email message from Mr. Stolorz indicating that he had had a discussion with Mr. Middleton regarding the inventorship issue and that he would follow up with a phone call to me later that afternoon. (Exh. 15)

13. On September 19, 2008, I replied to Mr. Stolorz's Sept. 19th email message (see ¶ 15) to indicate that I would be available to take his phone call anytime before 4p.m. that afternoon. (Exh. 16).
14. On September 19, 2008, I received an email message from Mr. Stolorz indicating that he left me a voice message earlier that afternoon. In this email message Mr. Stolorz further expressed his appreciation for our (Level 3's) desire to correct inventorship with the Patent Office, and that he would review any pertinent documentation as soon as possible. (Exh. 17)
15. On September 22, 2008, I sent a reply email message to Mr. Stolorz's Sept. 19th email (see ¶ 17) alerting him to the fact that I had recently sent him a package containing all the necessary material that he requested, including the continuation-in-part application which is inclusive of all subject matter in the '497 Application. (Exh. 18)
16. According to UPS records, my Sept. 18th letter with enclosures to Mr. Stolorz was delivered by UPS on September 22, 2008. (Exh. 19)
17. According to UPS records, my Sept. 18th letter with enclosures to Mr. Salmon was delivered by UPS on September 22, 2008. (Exh. 20)
18. According to UPS records, my Sept. 18th letter with enclosures to Mr. Hagberg was delivered by UPS on September 22, 2008. (Exh. 21)
19. On September 26, 2008, I received an email message from Mr. Stolorz indicating that he had received the letter I sent to him Sept. 18 (see ¶ 9). Mr. Stolorz further indicated that he was working through the documents and that he would get back to me the following week. (Exh. 22)
20. On October 7, 2008, I sent a follow-up group email message to, *inter alia*, Mr. Stolorz, Mr. Salmon and Mr. Hagberg requesting that each return to me the executed declarations at their earliest convenience. (Exh. 23)

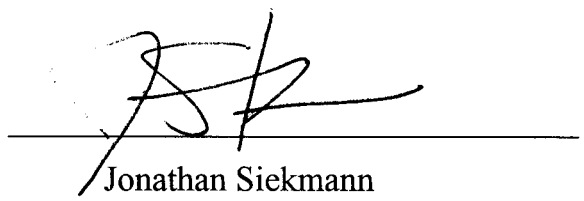
21. On October 14, 2008, I received an email message from Mr. Stolorz indicating that he expected to "finish up" by the following evening. (Exh. 24)
22. On November 3, 2008, I sent another follow-up group email message to, *inter alia*, Mr. Stolorz, Mr. Salmon and Mr. Hagberg. (Exh. 25)
23. On December 16, 2008, I sent yet another follow-up email message to Mr. Stolorz. (Exh. 26)
24. On December 16, 2008, I sent yet another follow-up email message to Mr. Salmon. (Exh. 27)
25. On December 16, 2008, I sent yet another follow-up email message to Mr. Hagberg. (Exh. 28)
26. On December 30, 2008, I received an email message from Mr. Stolorz indicating that he had finished reviewing the PAIR documentation "uspto docs" related to the '497 Application and that he had a couple of follow-up questions that he would like to discuss. (Exh. 29)
27. On December 31, 2008, I sent a reply email message to Mr. Stolorz's December 30th email message (see ¶ 26) indicating to Mr. Stolorz that he could give me a call the following week after the New Year's holiday. (Exh. 30)
28. On May 18, 2009, I sent a letter by United Parcel Service (UPS) to Mr. Stolorz, to his last known address as provided in Mr. Stolorz's Sept. 12th email message, see ¶ 6 (124 University Ave, Los Altos, CA 94022). (Exh. 31) This letter included a copy of the corrected declaration(s) that required Mr. Stolorz's signatures and a copy of the Sept. 18th letter (see ¶ 9). UPS emailed a corresponding receipt containing tracking information for this letter. (Exh. 32)

29. On May 18, 2009, I sent a letter by United Parcel Service (UPS) to Mr. Salmon, to his last known address as provided in Mr. Salmon's Sept. 8th email message, see ¶ 2 (820 Hardscrabble Rd., Chappaqua, NY 10514). (Exh. 33) This letter included a copy of the corrected declaration(s) that required Mr. Salmon's signatures and a copy of the Sept. 18th letter (see ¶ 9). UPS emailed a corresponding receipt containing tracking information for this letter. (Exh. 34)
30. On May 18, 2009, I sent a letter by United Parcel Service (UPS) to Mr. Hagberg, to his last known address as provided in Mr. Hagberg's Sept. 10th email message, see ¶ 4 (36 Camino Chupadero, Santa Fe, NM 87506). (Exh. 35) This letter included a copy of the corrected declaration(s) that required Mr. Hagberg's signatures and a copy of the Sept. 18th letter (see ¶ 9). UPS emailed a corresponding receipt containing tracking information for this letter. (Exh. 36)
31. On May 18, 2009, I sent a group email message to, *inter alia*, Mr. Stolorz, Mr. Salmon and Mr. Hagberg indicating that I was sending (overnight) to each another letter containing documentation that required their signatures. This email message further indicated the impending deadline of May 27, 2009 on which payment of the issue fee for the '497 Application is due. (Exh. 37)
32. According to UPS records, my Sept. 18th letter with enclosures to Mr. Stolorz was delivered by UPS on September 22, 2008. (Exh. 38)
33. According to UPS records, my Sept. 18th letter with enclosures to Mr. Salmon was delivered by UPS on September 22, 2008. (Exh. 39)
34. According to UPS records, my Sept. 18th letter with enclosures to Mr. Hagberg was delivered by UPS on September 22, 2008. (Exh. 40)

35. On May 26, 2009, I sent a follow-up group email message to, *inter alia*, Mr. Stolorz, Mr. Salmon and Mr. Hagberg. Forwarded as attachments with this email message were, *inter alia*, the continuation-in-part child application of the '497 Application, the currently pending claim set for the '497 Application, and the corrected declaration corresponding to the '497 Application. (Exh. 41)

I further 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 issuing thereon.

May 27, 2009



Jonathan Siekmann

Exhibit 1

From: Siekmann, Jonathan
Sent: Monday, September 08, 2008 3:17 PM
To: paul.stolorz@gmail.com; john@thesalmons.org; msw@lanl.gov
Subject: ITM Patent Application :: Request for Info
Paul, John and Mike:

David Fullagar passed along your email addresses, so I apologize for sending you this email out of the blue.

We are in the process of submitting updated documentation (Assignments and Declarations) to the Patent Office for the ITM family of patent applications in which each of you were involved. It just came to our attention that Ted Middleton needs to be included as an inventor, so we have to execute and submit updated Assignments/Declarations that reflect this addition of inventorship. Unfortunately, with the addition of a new inventor, we also need the signatures of all of the inventors listed in the original applications.

Before we can send out the new documents for signatures, we need current address information of each named inventor. When you get a chance, could each of you forward me your home addresses so that we can add them to the appropriate documents? Once prepared, we'll send you the Assignments/Declarations for you to sign/date along with a pre-paid return-addressed envelope.

Also, do any of you have a current email address (or phone #) for Aric Hagberg? We'll need his updated address info and signature as well.

Please feel free to call me at the number below if you have any questions.

Thanks in advance for your help with this matter,

Jon

Jonathan Siekmann
Intellectual Property Counsel
Level 3 Communications, LLC
1025 Eldorado Blvd.
Broomfield, CO 80021
Direct 720.888.2140
Facsimile 720.888.5619

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

Exhibit 2

From: john.salmon@gmail.com on behalf of John Salmon [john@thesalmons.org]
Sent: Monday, September 08, 2008 7:32 PM
To: Siekmann, Jonathan
Subject: Re: ITM Patent Application :: Request for Info

Current home address:

John Salmon
820 Hardscrabble Rd,
Chappaqua NY, 10514

On Mon, Sep 8, 2008 at 5:17 PM, Siekmann, Jonathan <Jonathan.Siekmann@level3.com> wrote:
> Paul, John and Mike:
>
> David Fullagar passed along your email addresses, so I apologize for sending you this email out of the blue.
>
> We are in the process of submitting updated documentation (Assignments and Declarations) to the Patent Office for the ITM family of patent applications in which each of you were involved. It just came to our attention that Ted Middleton needs to be included as an inventor, so we have to execute and submit updated Assignments/Declarations that reflect this addition of inventorship. Unfortunately, with the addition of a new inventor, we also need the signatures of all of the inventors listed in the original applications.
>
> Before we can send out the new documents for signatures, we need current address information of each named inventor. When you get a chance, could each of you forward me your home addresses so that we can add them to the appropriate documents? Once prepared, we'll send you the Assignments/Declarations for you to sign/date along with a pre-paid return-addressed envelope.
>
> Also, do any of you have a current email address (or phone #) for Aric Hagberg? We'll need his updated address info and signature as well.
>
> Please feel free to call me at the number below if you have any questions.
>
> Thanks in advance for your help with this matter,
>
> Jon
>
> Jonathan Siekmann
> Intellectual Property Counsel
> Level 3 Communications, LLC
> 1025 Eldorado Blvd.
> Broomfield, CO 80021
> Direct 720.888.2140
> Facsimile 720.888.5619
>
> This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

Exhibit 3

From: Siekmann, Jonathan
Sent: Tuesday, September 09, 2008 2:43 PM
To: aric@hagberg.org
Subject: ITM Patent Application :: Request for Info
Hello Aric,

Mike Warren passed along your email address, so I hope you don't mind me sending you this email out of the blue.

We are in the process of submitting updated documentation (Assignments and Declarations) to the Patent Office for the ITM family of patent applications in which you were involved. It just came to our attention that Ted Middleton needs to be included as an inventor, so we have to execute and submit updated Assignments/Declarations that reflect this addition of inventorship. Unfortunately, with the addition of a new inventor, we also need the signatures of all of the inventors listed in the original applications.

Before we can send out the new documents for signatures, we need current address information of each named inventor. When you get a chance, could you forward me your home address so that we can add it to the appropriate documents? Once prepared, we'll send you the Assignments/Declarations for you to sign/date along with a pre-paid return-addressed envelope.

Please feel free to call me at the number below if you have any questions.

Thanks in advance for your help with this matter,

Jon

Jonathan Siekmann
Intellectual Property Counsel
Level 3 Communications, LLC
1025 Eldorado Blvd.
Broomfield, CO 80021
Direct 720.888.2140
Facsimile 720.888.5619

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

Exhibit 4

From: Aric Hagberg [ahagberg@gmail.com]
Sent: Wednesday, September 10, 2008 10:36 AM
To: Siekmann, Jonathan
Subject: Re: ITM Patent Application :: Request for Info

My address is

Aric Hagberg
36 Camino Chupadero
Santa Fe, NM 87506

On Tue, Sep 9, 2008 at 2:43 PM, Siekmann, Jonathan
<Jonathan.Siekmann@level3.com> wrote:
> Hello Aric,
>
> Mike Warren passed along your email address, so I hope you don't mind
> me sending you this email out of the blue.
>
> We are in the process of submitting updated documentation (Assignments
> and Declarations) to the Patent Office for the ITM family of patent
> applications in which you were involved. It just came to our
> attention that Ted Middleton needs to be included as an inventor, so
> we have to execute and submit updated Assignments/Declarations that
> reflect this addition of inventorship. Unfortunately, with the
> addition of a new inventor, we also need the signatures of all of the
> inventors listed in the original applications.
>
> Before we can send out the new documents for signatures, we need
> current address information of each named inventor. When you get a
> chance, could you forward me your home address so that we can add it
> to the appropriate documents? Once prepared, we'll send you the
> Assignments/Declarations for you to sign/date along with a pre-paid
return-addressed envelope.
>
> Please feel free to call me at the number below if you have any
questions.
>
> Thanks in advance for your help with this matter,
>
> Jon
>
> Jonathan Siekmann
> Intellectual Property Counsel
> Level 3 Communications, LLC
> 1025 Eldorado Blvd.
> Broomfield, CO 80021
> Direct 720.888.2140
> Facsimile 720.888.5619
>
> This message is confidential and may contain Privileged
> Attorney-Client Communications and/or Attorney Work Product. If you
> have received this message in error, please notify the sender
immediately.

Exhibit 5

From: Siekmann, Jonathan
Sent: Thursday, September 11, 2008 11:21 AM
To: paul.stolorz@kyluka.com; paul@kyluka.com; info@kyluka.com
Subject: ITM Patent Application :: Request for Info
Hi Paul,

Ted Middleton passed along your email address(es) at Kyluka. I also tried your gmail address a couple of days ago, so I apologize for the redundancy if you already received that message.

We are in the process of submitting updated documentation (Assignments and Declarations) to the Patent Office for the ITM family of patent applications in which you were involved. It just came to our attention that Ted Middleton needs to be included as an inventor, so we have to execute and submit updated Assignments/Declarations that reflect this addition of inventorship. Unfortunately, with the addition of a new inventor, we also need the signatures of all of the inventors listed in the original applications.

Before we can send out the new documents for signatures, we need current address information of each named inventor. When you get a chance, could you forward me your home addresses so that we can add them to the appropriate documents? Once prepared, we'll send you the Assignments/Declarations for you to sign/date and then send back to us (we'll include a pre-paid return-addressed envelope).

Please feel free to call me at the number below if you have any questions.

Thanks in advance for your help with this matter,

Jon

Jonathan Siekmann
Intellectual Property Counsel
Level 3 Communications, LLC
1025 Eldorado Blvd.
Broomfield, CO 80021
Direct 720.888.2140
Facsimile 720.888.5619

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

Exhibit 6

From: Paul Stolorz [paul.stolorz@gmail.com]
Sent: Friday, September 12, 2008 3:01 PM
To: Siekmann, Jonathan
Subject: Re: ITM Patent Application :: Request for Info

Hi Jonathan,
I came across your message in our company info folder, though it was something of a fluke as it gets a lot of spam traffic, the same fate that befell your email from earlier this week.

The right email address to use is the original one in the header of this reply: Paul.Stolorz@gmail.com - I've changed my filters so that your messages will get through.

My home address you'll need is
124 University Ave
Los Altos CA 94022

I'm really glad to see corporate interest in following up on the ITM patent application. Could you send me the rationale for Ted's addition to the inventor list? I'd like to make sure that I understand the steps being taken before signature.

Regards,
Paul

On Thu, Sep 11, 2008 at 10:21 AM, Siekmann, Jonathan <Jonathan.Siekmann@level3.com> wrote:
> Hi Paul,
>
> Ted Middleton passed along your email address(es) at Kyluka. I also tried your gmail address a couple of days ago, so I apologize for the redundancy if you already received that message.
>
> We are in the process of submitting updated documentation (Assignments and Declarations) to the Patent Office for the ITM family of patent applications in which you were involved. It just came to our attention that Ted Middleton needs to be included as an inventor, so we have to execute and submit updated Assignments/Declarations that reflect this addition of inventorship. Unfortunately, with the addition of a new inventor, we also need the signatures of all of the inventors listed in the original applications.
>
> Before we can send out the new documents for signatures, we need current address information of each named inventor. When you get a chance, could you forward me your home addresses so that we can add them to the appropriate documents? Once prepared, we'll send you the Assignments/Declarations for you to sign/date and then send back to us (we'll include a pre-paid return-addressed envelope).
>
> Please feel free to call me at the number below if you have any questions.
>
> Thanks in advance for your help with this matter,
>
> Jon
>
> Jonathan Siekmann
> Intellectual Property Counsel

Exhibit 7

From: Siekmann, Jonathan
Sent: Friday, September 12, 2008 3:13 PM
To: Paul Stolorz
Subject: RE: ITM Patent Application :: Request for Info

Paul, thanks for getting back. I feel honored to now have unfettered access to your inbox.

I'll follow up with you next week to explain our reasons for adding Ted. I want to speak with Ted first to make sure I'm passing along accurate information regarding his contribution to the ITM applications. Nevertheless, he has confirmed that he had contributed (in a conceptual capacity) to one or more claims of each of the ITM's.

Thanks again, have a great weekend, and I'll be sure to get back to you next week.

Jon

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately

-----Original Message-----
From: Paul Stolorz [mailto:paul.stolorz@gmail.com]
Sent: Friday, September 12, 2008 3:01 PM
To: Siekmann, Jonathan
Subject: Re: ITM Patent Application :: Request for Info

Hi Jonathan,
I came across your message in our company info folder, though it was something of a fluke as it gets a lot of spam traffic, the same fate that befell your email from earlier this week.

The right email address to use is the original one in the header of this reply: Paul.Stolorz@gmail.com - I've changed my filters so that your messages will get through.

My home address you'll need is
124 University Ave
Los Altos CA 94022

I'm really glad to see corporate interest in following up on the ITM patent application. Could you send me the rationale for Ted's addition to the inventor list? I'd like to make sure that I understand the steps being taken before signature.

Regards,
Paul

Exhibit 8

From: Paul Stolorz [paul.stolorz@gmail.com]
Sent: Friday, September 12, 2008 3:50 PM
To: Siekmann, Jonathan
Subject: Re: ITM Patent Application :: Request for Info

On Fri, Sep 12, 2008 at 2:12 PM, Siekmann, Jonathan
<Jonathan.Siekmann@level3.com> wrote:
> Paul, thanks for getting back. I feel honored to now have unfettered access to your inbox.
Yep, it's pretty rarefied air in my inner sanctum - but the company is excellent :-).

>
> I'll follow up with you next week to explain our reasons for adding Ted. I want to speak with Ted first to make sure I'm passing along accurate information regarding his contribution to the ITM applications. Nevertheless, he has confirmed that he had contributed (in a conceptual capacity) to one or more claims of each of the ITM's.
>
> Thanks again, have a great weekend, and I'll be sure to get back to you next week.
>
> Jon
>
>
> This message is confidential and may contain Privileged
> Attorney-Client Communications and/or Attorney Work Product. If you
> have received this message in error, please notify the sender
> immediately
>

Sounds good. Talk to you next week.
Paul

Exhibit 9

Jonathan Siekmann
Corporate Counsel
TEL: (720) 888-2140
FAX: (720) 888-5619
jonathan.siekmann@level3.com

September 18, 2008

VIA UPS 2DAY

Paul Stolorz
124 University Ave
Los Altos CA 94022

Matter: ITM Patent Applications
Re: Updated Declarations to Correct Inventorship

Dear Mr. Stolorz:

Please find enclosed Declaration documents (3) pertaining to the ITM family of patent applications in which you were involved. As I noted in my previous email message, we need your signature on these updated documents so that we can correct inventorship and add Ted Middleton as a named inventor to each patent application.

For your reference, I am also enclosing a copy of the ITM Continuation-in-Part application (w/ currently pending claims) as well as the currently pending claims for the ITM Parent and Continuation applications.

At your earliest convenience, please return the three (3) Declarations, each having been signed and dated, in the enclosed postage-paid return-addressed envelope. By signing these updated Declarations, you are averring that you are in fact an inventor of subject matter claimed in the applications. In addition, you are acknowledging that the other inventors identified in the Declarations are also inventors that conceptually contributed to the invention.

Please feel free to contact me at the number above should you have any questions.

Thanks for your prompt attention to this matter.

Sincerely,

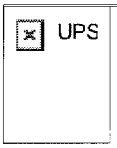
Jonathan Siekmann

Enclosures

Exhibit 10

From: Lomeli, Jen
Sent: Monday, May 18, 2009 2:03 PM
To: Siekmann, Jonathan
Subject: FW: UPS Ship Notification, Tracking Number 1Z6038EW0291170510

From: UPS Quantum View [mailto:auto-notify@ups.com]
Sent: Thursday, September 18, 2008 10:52 AM
To: Lomeli, Jen
Subject: UPS Ship Notification, Tracking Number 1Z6038EW0291170510



This message was sent to you at the request of Level 3 Communications Inc. to notify you that the package information below has been transmitted to UPS. The package(s) may not have actually been placed with UPS for shipment. To verify when and if the shipment is tendered to UPS and its actual transit status, click on the tracking link below or contact Level 3 Communications Inc. directly.

Important Delivery Information

Scheduled Delivery: 22-September-2008

Shipment Detail

Ship To:
Paul Stolorz
Paul Stolorz
124 University Ave
LOS ALTOS
CA
940223514
US

Number of Packages	1
UPS Service:	2ND DAY AIR
Shipment Type:	Letter

Tracking Number: 1Z6038EW0291170510
Reference Number 1: 900

Exhibit 11

Jonathan Siekmann
Corporate Counsel
TEL: (720) 888-2140
FAX: (720) 888-5619
jonathan.siekmann@level3.com

September 18, 2008

VIA UPS 2DAY

John Salmon
820 Hardscrabble Rd.
Chappaqua NY, 10514

Matter: ITM Patent Applications
Re: Updated Declarations to Correct Inventorship

Dear Mr. Salmon:

Please find enclosed Declaration documents (3) pertaining to the ITM family of patent applications in which you were involved. As I noted in my previous email message, we need your signature on these updated documents so that we can correct inventorship and add Ted Middleton as a named inventor to each patent application.

For your reference, I am also enclosing a copy of the ITM Continuation-in-Part application (w/ currently pending claims) as well as the currently pending claims for the ITM Parent and Continuation applications.

At your earliest convenience, please return the three (3) Declarations, each having been signed and dated, in the enclosed postage-paid return-addressed envelope. By signing these updated Declarations, you are averring that you are in fact an inventor of subject matter claimed in the applications. In addition, you are acknowledging that the other inventors identified in the Declarations are also inventors that conceptually contributed to the invention.

Please feel free to contact me at the number above should you have any questions.

Thanks for your prompt attention to this matter.

Sincerely,

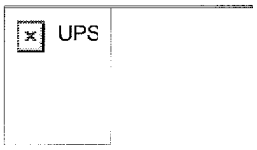
Jonathan Siekmann

Enclosures

Exhibit 12

From: Lomeli, Jen
Sent: Monday, May 18, 2009 2:02 PM
To: Siekmann, Jonathan
Subject: FW: UPS Ship Notification, Tracking Number 1Z6038EW0293161482

From: UPS Quantum View [mailto:auto-notify@ups.com]
Sent: Thursday, September 18, 2008 10:43 AM
To: Lomeli, Jen
Subject: UPS Ship Notification, Tracking Number 1Z6038EW0293161482



This message was sent to you at the request of Level 3 Communications Inc. to notify you that the package information below has been transmitted to UPS. The package(s) may not have actually been placed with UPS for shipment. To verify when and if the shipment is tendered to UPS and its actual transit status, click on the tracking link below or contact Level 3 Communications Inc. directly.

Important Delivery Information

Scheduled Delivery: 22-September-2008

Shipment Detail

Ship To:
John Salmon
John Salmon
820 Hardscrabble Rd.
CHAPPAQUA
NY
105143012
US

Number of Packages	1
UPS Service:	2ND DAY AIR
Shipment Type:	Letter
Tracking Number:	1Z6038EW0293161482
Reference Number 1:	900

Exhibit 13

Level(3)
COMMUNICATIONS

Jonathan Siekmann
Corporate Counsel
TEL: (720) 888-2140
FAX: (720) 888-5619
jonathan.siekmann@level3.com

September 18, 2008

VIA UPS 2DAY

Aric Hagberg
36 Camino Chupadero
Santa Fe, NM 87506

Matter: ITM Patent Applications
Re: Updated Declarations to Correct Inventorship

Dear Mr. Hagberg:

Please find enclosed Declaration documents (3) pertaining to the ITM family of patent applications in which you were involved. As I noted in my previous email message, we need your signature on these updated documents so that we can correct inventorship and add Ted Middleton as a named inventor to each patent application.

For your reference, I am also enclosing a copy of the ITM Continuation-in-Part application (w/ currently pending claims) as well as the currently pending claims for the ITM Parent and Continuation applications.

At your earliest convenience, please return the three (3) Declarations, each having been signed and dated, in the enclosed postage-paid return-addressed envelope. By signing these updated Declarations, you are averring that you are in fact an inventor of subject matter claimed in the applications. In addition, you are acknowledging that the other inventors identified in the Declarations are also inventors that conceptually contributed to the invention.

Please feel free to contact me at the number above should you have any questions.

Thanks for your prompt attention to this matter.

Sincerely,

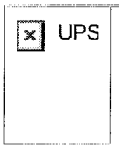
Jonathan Siekmann

Enclosures

Exhibit 14

From: Lomeli, Jen
Sent: Monday, May 18, 2009 2:02 PM
To: Siekmann, Jonathan
Subject: FW: UPS Ship Notification, Tracking Number 1Z6038EW0294210079

From: UPS Quantum View [mailto:auto-notify@ups.com]
Sent: Thursday, September 18, 2008 10:35 AM
To: Lomeli, Jen
Subject: UPS Ship Notification, Tracking Number 1Z6038EW0294210079



This message was sent to you at the request of Level 3 Communications Inc. to notify you that the package information below has been transmitted to UPS. The package(s) may not have actually been placed with UPS for shipment. To verify when and if the shipment is tendered to UPS and its actual transit status, click on the tracking link below or contact Level 3 Communications Inc. directly.

Important Delivery Information

Scheduled Delivery: 22-September-2008

Shipment Detail

Ship To:
Aric Hagberg
Aric Hagberg
36 Camino Chupadero
SANTA FE
NM
875060079
US

Number of Packages	1
UPS Service:	2ND DAY AIR
Shipment Type:	Letter
Tracking Number:	1Z6038EW0294210079
Reference Number 1:	900

Exhibit 15

From: Paul Stolorz [paul.stolorz@gmail.com]
Sent: Friday, September 19, 2008 1:51 PM
To: Siekmann, Jonathan
Subject: Re: ITM Patent Application :: Request for Info

Hi Jon,
  I talked to Ted yesterday about all this. I'll give you a call this afternoon if you're available to follow up.

 Assume you can be reached at 720.888.2140?

Regards,
Paul

>>
>> I'll follow up with you next week to explain our reasons for adding Ted. I want to speak with Ted first to make sure I'm passing along accurate information regarding his contribution to the ITM applications. Nevertheless, he has confirmed that he had contributed (in a conceptual capacity) to one or more claims of each of the ITM's.
>>
>> Thanks again, have a great weekend, and I'll be sure to get back to you next week.
>>
>> Jon
>>
>>
>> This message is confidential and may contain Privileged
>> Attorney-Client Communications and/or Attorney Work Product. If you
>> have received this message in error, please notify the sender
>> immediately
>>
>
> Sounds good. Talk to you next week.
> Paul
>

Exhibit 16

From: Siekmann, Jonathan
Sent: Friday, September 19, 2008 1:53 PM
To: Paul Stolorz
Subject: RE: ITM Patent Application :: Request for Info

Yep, that's the number. I should be in the office until about 4pm MST.

Speak with you soon, Jon

-----Original Message-----
From: Paul Stolorz [mailto:paul.stolorz@gmail.com]
Sent: Friday, September 19, 2008 1:51 PM
To: Siekmann, Jonathan
Subject: Re: ITM Patent Application :: Request for Info

Hi Jon,
I talked to Ted yesterday about all this. I'll give you a call this afternoon if you're available to follow up.

Assume you can be reached at 720.888.2140?

Regards,
Paul

>>
>> I'll follow up with you next week to explain our reasons for adding Ted. I want to speak with Ted first to make sure I'm passing along accurate information regarding his contribution to the ITM applications. Nevertheless, he has confirmed that he had contributed (in a conceptual capacity) to one or more claims of each of the ITM's.
>>
>> Thanks again, have a great weekend, and I'll be sure to get back to you next week.
>>
>> Jon
>>
>>
>> This message is confidential and may contain Privileged
>> Attorney-Client Communications and/or Attorney Work Product. If you
>> have received this message in error, please notify the sender
>> immediately
>>
>
> Sounds good. Talk to you next week.
> Paul
>

Exhibit 17

From: Paul Stolorz [paul.stolorz@gmail.com]
Sent: Friday, September 19, 2008 4:12 PM
To: Siekmann, Jonathan
Subject: Re: ITM Patent Application :: Request for Info

Jon,
Left you a vmail earlier this afternoon.

Would you be comfortable sending me an email version of the latest patent application you want to submit? This would help me a lot to sort things out. I'd be happy to sign an NDA for it if you'd like.

Let's talk on Monday morning in any case. I appreciate that you want to get this into the PTO system, so I'll undertake to review anything you send me ASAP.

Regards,
Paul

On Fri, Sep 19, 2008 at 12:52 PM, Siekmann, Jonathan <Jonathan.Siekmann@level3.com> wrote:
> Yep, that's the number. I should be in the office until about 4pm MST.
>
> Speak with you soon, Jon
>
> -----Original Message-----
> From: Paul Stolorz [mailto:paul.stolorz@gmail.com]
> Sent: Friday, September 19, 2008 1:51 PM
> To: Siekmann, Jonathan
> Subject: Re: ITM Patent Application :: Request for Info
>
> Hi Jon,
> I talked to Ted yesterday about all this. I'll give you a call this
> afternoon if you're available to follow up.
>
> Assume you can be reached at 720.888.2140?
>
> Regards,
> Paul
>
>>>
>>> I'll follow up with you next week to explain our reasons for adding Ted. I want to speak with Ted first to make sure I'm passing along accurate information regarding his contribution to the ITM applications. Nevertheless, he has confirmed that he had contributed (in a conceptual capacity) to one or more claims of each of the ITM's.
>>>
>>> Thanks again, have a great weekend, and I'll be sure to get back to you next week.
>>>
>>> Jon
>>>
>>>
>>> This message is confidential and may contain Privileged
>>> Attorney-Client Communications and/or Attorney Work Product. If you
>>> have received this message in error, please notify the sender
>>> immediately
>>>
>>

Exhibit 18

From: Siekmann, Jonathan
Sent: Monday, September 22, 2008 9:39 AM
To: Paul Stolorz
Subject: RE: ITM Patent Application :: Request for Info

...I sent you a package last week which may or may not have already arrived. The package includes the documents that require your signature as well as copies of the currently pending Continuation-in-Part application, currently pending claims in the Continuation application, and currently pending claims in the parent application. Including the specification for each application is terribly redundant as they contain substantially the same subject matter.

I'll give you a call sometime this morning so we can have a quick chat.

Regards, Jon

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

-----Original Message-----
From: Paul Stolorz [mailto:paul.stolorz@gmail.com]
Sent: Friday, September 19, 2008 4:12 PM
To: Siekmann, Jonathan
Subject: Re: ITM Patent Application :: Request for Info

Jon,
Left you a vmail earlier this afternoon.

Would you be comfortable sending me an email version of the latest patent application you want to submit? This would help me a lot to sort things out. I'd be happy to sign an NDA for it if you'd like.

Let's talk on Monday morning in any case. I appreciate that you want to get this into the PTO system, so I'll undertake to review anything you send me ASAP.

Regards,
Paul

On Fri, Sep 19, 2008 at 12:52 PM, Siekmann, Jonathan <Jonathan.Siekmann@level3.com> wrote:
> Yep, that's the number. I should be in the office until about 4pm MST.
>
> Speak with you soon, Jon
>
> -----Original Message-----
> From: Paul Stolorz [mailto:paul.stolorz@gmail.com]
> Sent: Friday, September 19, 2008 1:51 PM
> To: Siekmann, Jonathan
> Subject: Re: ITM Patent Application :: Request for Info
>
> Hi Jon,
> I talked to Ted yesterday about all this. I'll give you a call this
> afternoon if you're available to follow up.
>
> Assume you can be reached at 720.888.2140?

Exhibit 19

United States

Log-In Search Submit Query

My UPS Shipping Tracking Freight Locations Support Business Solutions

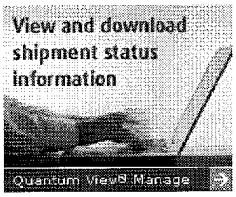
Tracking

Track Shipments
Track by Reference
Track by E-mail
Signature Tracking
Import Tracking Numbers
Mobile Tracking
Track with Quantum View
Access Flex Global View
Integrate Tracking Tools
Void a Shipment

Search Support

Enter a keyword:

Search



Track Shipments

Track Packages & Freight Quantum View Flex Global View

Tracking Summary

Printer Friendly | Help

Tracking Number:	1Z 603 8EW 02 9117 051 0
	View package progress
Type:	Package
Status:	**Delivered**
Delivered On:	09/22/2008 11:03 A.M.
Delivered To:	LOS ALTOS, CA, US
Service:	2ND DAY AIR

Tracking results provided by UPS: 05/27/2009 12:24 P.M. ET

Printer Friendly

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Web Site Terms of Use
Trademarks
UPS Tariff/Terms and Conditions of Service

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UPS Express Critical
UPS Capital
UPS Mail Innovations
UPS Professional Services
UPS Logistics Technologies
UPS Pressroom
UPS Investor Relations
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Exhibit 20

United States

Log-In Search Submit Query

My UPS Shipping Tracking Freight Locations Support Business Solutions

Tracking

Track Shipments
Track by Reference
Track by E-mail
Signature Tracking
Import Tracking Numbers
Mobile Tracking
Track with Quantum View
Access Flex Global View
Integrate Tracking Tools
Void a Shipment

Search Support

Enter a keyword:

Search



Track Shipments

Track Packages & Freight Quantum View Flex Global View

Tracking Summary

Printer Friendly | Help

Tracking Number:	1Z 603 8EW 02 9316 148 2
	View package progress
Type:	Package
Status:	**Delivered**
Delivered On:	09/22/2008 10:50 A.M.
Delivered To:	CHAPPAQUA, NY, US
Service:	2ND DAY AIR

Tracking results provided by UPS: 05/27/2009 12:23 P.M. ET

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UPS Express Critical
UPS Capital
UPS Mail Innovations
UPS Professional Services
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UPS Pressroom
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More...

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Exhibit 21

United States Log-In Search Submit Query

My UPS Shipping Tracking Freight Locations Support Business Solutions

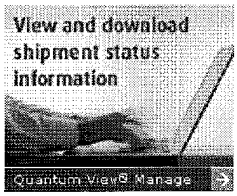
Tracking

Track Shipments
Track by Reference
Track by E-mail
Signature Tracking
Import Tracking Numbers
Mobile Tracking
Track with Quantum View
Access Flex Global View
Integrate Tracking Tools
Void a Shipment

Search Support

Enter a keyword:

Search



Track Shipments

Track Packages & Freight Quantum View Flex Global View

Tracking Summary Printer Friendly | Help

Tracking Number:	1Z 603 8EW 02 9421 007 9
	View package progress
Type:	Package
Status:	**Delivered**
Delivered On:	09/22/2008 4:08 P.M.
Delivered To:	SANTA FE, NM, US
Service:	2ND DAY AIR

Tracking results provided by UPS: 05/27/2009 12:22 P.M. ET

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How To Ship
How To Track
Deliveries and the UPS InfoNotice

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View Examples

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UPS Capital
UPS Mail Innovations
UPS Professional Services
UPS Logistics Technologies
UPS Pressroom
UPS Investor Relations
More...

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Exhibit 22

From: Paul Stolorz [paul.stolorz@gmail.com]
Sent: Friday, September 26, 2008 12:58 PM
To: Siekmann, Jonathan
Subject: Re: ITM Patent Application :: Request for Info
Jon,
Quick followup note that I got your Fedex and am working through the docs. Will get back to you next week - thanks for sending me the details.

Paul

On Mon, Sep 22, 2008 at 8:38 AM, Siekmann, Jonathan <Jonathan.Siekmann@level3.com> wrote:

> Paul, sorry for not getting back to you last week. I fell a bit ill to a Tetanus shot that I endured earlier in the week. I take the position now that I'd rather suffer whatever illness the Tetanus intends to prevent than the wrath of the Tetanus shot itself.
>
> Anyway, I sent you a package last week which may or may not have already arrived. The package includes the documents that require your signature as well as copies of the currently pending Continuation-in-Part application, currently pending claims in the Continuation application, and currently pending claims in the parent application. Including the specification for each application is terribly redundant as they contain substantially the same subject matter.
>
> I'll give you a call sometime this morning so we can have a quick chat.
>
> Regards, Jon
>
> This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.
>
> -----Original Message-----
> From: Paul Stolorz [mailto:paul.stolorz@gmail.com]
> Sent: Friday, September 19, 2008 4:12 PM
> To: Siekmann, Jonathan
> Subject: Re: ITM Patent Application :: Request for Info
>
> Jon,
> Left you a vmail earlier this afternoon.
>
> Would you be comfortable sending me an email version of the latest patent application you want to submit? This would help me a lot to sort things out. I'd be happy to sign an NDA for it if you'd like.
>
> Let's talk on Monday morning in any case. I appreciate that you want to get this into the PTO system, so I'll undertake to review anything you send me ASAP.
>
> Regards,
> Paul
>
> On Fri, Sep 19, 2008 at 12:52 PM, Siekmann, Jonathan

Exhibit 23

From: Siekmann, Jonathan
Sent: Tuesday, October 07, 2008 10:49 AM
To: Paul Stolorz; john.salmon@gmail.com; Koller, Jeff; aric@hagberg.org; Brady, Mark; Mike Warren; Yevmenkin, Maksim; Middleton, Ted
Subject: ITM Signature Documents

Just checking in to see if you've had a chance to review the ITM application/claim sets and corresponding Declaration documents.

We are quickly approaching a deadline for filing these signature documents. If you haven't done so already, please drop the signed Declarations in the mail at your earliest convenience.

I'd be happy to answer any of your questions - so please feel free to give me a call at the number below.

Thanks again for you help with this matter,

Jon

Jonathan Siekmann
Intellectual Property Counsel
Legal Department
Level 3 Communications
1025 Eldorado Blvd.
Broomfield, CO 80021
p: 720-888-2140
f: 720-888-5619
e: jonathan.siekmann@level3.com

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Exhibit 24

From: Paul Stolorz [paul.stolorz@gmail.com]
Sent: Tuesday, October 14, 2008 10:52 AM
To: Siekmann, Jonathan
Subject: Re: ITM Signature Documents
Almost there Jon,
I found the public pair info and have waded through most of it. What a saga!

I've haven't been quite as plugged into the recent developments as Max for obvious reasons, so appreciate your forbearance. Expect to finish up tomorrow night and will call Thursday if any issues.

Rgds,
Paul

On Tue, Oct 7, 2008 at 9:49 AM, Siekmann, Jonathan <Jonathan.Siekmann@level3.com> wrote:

> Just checking in to see if you've had a chance to review the ITM application/claim sets and corresponding Declaration documents.
>
> We are quickly approaching a deadline for filing these signature documents. If you haven't done so already, please drop the signed Declarations in the mail at your earliest convenience.
>
> I'd be happy to answer any of your questions - so please feel free to give me a call at the number below.
>
> Thanks again for you help with this matter,
>
> Jon
>
> **Jonathan Siekmann**
> Intellectual Property Counsel
> Legal Department
> Level 3 Communications
> 1025 Eldorado Blvd.
> Broomfield, CO 80021
> p: 720-888-2140
> f: 720-888-5619
> e: jonathan.siekmann@level3.com
>
> ***This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.***
>
> 
>

Exhibit 25

From: Siekmann, Jonathan
Sent: Monday, November 03, 2008 11:34 AM
To: Paul Stolorz; John Salmon; Mike Warren; aric@hagberg.org
Subject: ITM Signature Documents
((If you have already sent in your signed documents, please disregard this message))

Paul, John, Mike, and Aric:

Just checking in once again to see if you've had a chance to look over the packet of information that I sent you regarding the ITM family of applications. We would like to file the newly executed Declarations as soon as possible to resolve the change of inventorship issue.

Please feel free to give me a call at the number below if you have any questions.

Thanks, Jon

Jonathan Siekmann
Intellectual Property Counsel
Legal Department
Level 3 Communications
1025 Eldorado Blvd.
Broomfield, CO 80021
p: 720-888-2140
f: 720-888-5619
e: jonathan.siekmann@level3.com

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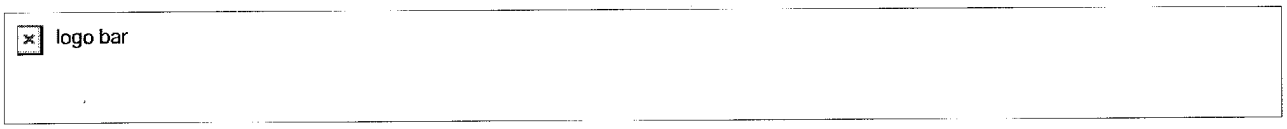


Exhibit 26

From: Siekmann, Jonathan
Sent: Tuesday, December 16, 2008 9:40 AM
To: 'Paul Stolorz'
Subject: RE: ITM Signature Documents
Hi Paul – just a friendly reminder that we need to file the updated Declarations with the PTO in order to correct inventorship for the ITM applications.

Please let me know if you have any questions regarding the Declarations or the procedure for correcting inventorship.

Have a great Holiday Season!

Jon

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

From: Siekmann, Jonathan
Sent: Monday, November 03, 2008 11:34 AM
To: Paul Stolorz; John Salmon; Mike Warren; aric@hagberg.org
Subject: ITM Signature Documents

((If you have already sent in your signed documents, please disregard this message))

Paul, John, Mike, and Aric:

Just checking in once again to see if you've had a chance to look over the packet of information that I sent you regarding the ITM family of applications. We would like to file the newly executed Declarations as soon as possible to resolve the change of inventorship issue.

Please feel free to give me a call at the number below if you have any questions.

Thanks, Jon

Jonathan Siekmann
Intellectual Property Counsel
Legal Department
Level 3 Communications
1025 Eldorado Blvd.
Broomfield, CO 80021
p: 720-888-2140
f: 720-888-5619
e: jonathan.siekmann@level3.com

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logo bar

Exhibit 27

From: Siekmann, Jonathan
Sent: Tuesday, December 16, 2008 9:40 AM
To: 'John Salmon'
Subject: RE: ITM Signature Documents
Hi John – just a friendly reminder that we need to file the updated Declarations with the PTO in order to correct inventorship for the ITM applications.

Please let me know if you have any questions regarding the Declarations or the procedure for correcting inventorship.

Have a great Holiday Season!

Jon

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

From: Siekmann, Jonathan
Sent: Monday, November 03, 2008 11:34 AM
To: Paul Stolorz; John Salmon; Mike Warren; aric@hagberg.org
Subject: ITM Signature Documents

((If you have already sent in your signed documents, please disregard this message))

Paul, John, Mike, and Aric:

Just checking in once again to see if you've had a chance to look over the packet of information that I sent you regarding the ITM family of applications. We would like to file the newly executed Declarations as soon as possible to resolve the change of inventorship issue.

Please feel free to give me a call at the number below if you have any questions.

Thanks, Jon

Jonathan Siekmann
Intellectual Property Counsel
Legal Department
Level 3 Communications
1025 Eldorado Blvd.
Broomfield, CO 80021
p: 720-888-2140
f: 720-888-5619
e: jonathan.siekmann@level3.com

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Exhibit 28

From: Siekmann, Jonathan
Sent: Tuesday, December 16, 2008 9:41 AM
To: 'aric@hagberg.org'
Subject: RE: ITM Signature Documents
Hi Aric – just a friendly reminder that we need to file the updated Declarations with the PTO in order to correct inventorship for the ITM applications.

Please let me know if you have any questions regarding the Declarations or the procedure for correcting inventorship.

Have a great Holiday Season!

Jon

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

From: Siekmann, Jonathan
Sent: Monday, November 03, 2008 11:34 AM
To: Paul Stolorz; John Salmon; Mike Warren; aric@hagberg.org
Subject: ITM Signature Documents

((If you have already sent in your signed documents, please disregard this message))

Paul, John, Mike, and Aric:

Just checking in once again to see if you've had a chance to look over the packet of information that I sent you regarding the ITM family of applications. We would like to file the newly executed Declarations as soon as possible to resolve the change of inventorship issue.

Please feel free to give me a call at the number below if you have any questions.

Thanks, Jon

Jonathan Siekmann
Intellectual Property Counsel
Legal Department
Level 3 Communications
1025 Eldorado Blvd.
Broomfield, CO 80021
p: 720-888-2140
f: 720-888-5619
e: jonathan.siekmann@level3.com

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logo bar

Exhibit 29

From: Paul Stolorz [paul.stolorz@gmail.com]
Sent: Tuesday, December 30, 2008 12:25 PM
To: Siekmann, Jonathan
Subject: Re: ITM Signature Documents
Hi Jon,
I finished reviewing the uspto docs over the break. I do have a couple of followup questions. Are you around this week at all? I can give you a call if you're in the office today. Else let me know a convenient time after New Years.

Best for the holidays,
Paul

On Tue, Dec 16, 2008 at 8:40 AM, Siekmann, Jonathan <Jonathan.Siekmann@level3.com> wrote:

> Hi Paul – just a friendly reminder that we need to file the updated Declarations with the PTO in order to correct inventorship for the ITM applications.
>
> Please let me know if you have any questions regarding the Declarations or the procedure for correcting inventorship.
>
> Have a great Holiday Season!
>
> Jon
>
> ***This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.***
>
> ---
>
> **From:** Siekmann, Jonathan
> **Sent:** Monday, November 03, 2008 11:34 AM
> **To:** Paul Stolorz; John Salmon; Mike Warren; aric@hagberg.org
> **Subject:** ITM Signature Documents
>
> ((If you have already sent in your signed documents, please disregard this message))
>
> Paul, John, Mike, and Aric:
>
> Just checking in once again to see if you've had a chance to look over the packet of information that I sent you regarding the ITM family of applications. We would like to file the newly executed Declarations as soon as possible to resolve the change of inventorship issue.
>
> Please feel free to give me a call at the number below if you have any questions.

Exhibit 30

From: Siekmann, Jonathan
Sent: Wednesday, December 31, 2008 8:53 AM
To: Paul Stolorz
Subject: RE: ITM Signature Documents
Paul – feel free to give me a call anytime next week.

Have a very Happy New Year.

Thanks, Jon

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

From: Paul Stolorz [mailto:paul.stolorz@gmail.com]
Sent: Tuesday, December 30, 2008 12:25 PM
To: Siekmann, Jonathan
Subject: Re: ITM Signature Documents

Hi Jon,
I finished reviewing the uspto docs over the break. I do have a couple of followup questions. Are you around this week at all? I can give you a call if you're in the office today. Else let me know a convenient time after New Years.

Best for the holidays,
Paul

On Tue, Dec 16, 2008 at 8:40 AM, Siekmann, Jonathan <Jonathan.Siekmann@level3.com> wrote:

Hi Paul – just a friendly reminder that we need to file the updated Declarations with the PTO in order to correct inventorship for the ITM applications.

Please let me know if you have any questions regarding the Declarations or the procedure for correcting inventorship.

Have a great Holiday Season!

Jon

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

From: Siekmann, Jonathan
Sent: Monday, November 03, 2008 11:34 AM
To: Paul Stolorz; John Salmon; Mike Warren; aric@hagberg.org
Subject: ITM Signature Documents

((If you have already sent in your signed documents, please disregard this message))

Exhibit 31

Jonathan Siekmann
Corporate Counsel
TEL: (720) 888-2140
FAX: (720) 888-5619
jonathan.siekmann@level3.com

May 18, 2009

VIA UPS OVERNIGHT

Paul Stolorz
124 University Ave
Los Altos CA 94022

Matter: ITM Patent Applications
Re: URGENT: Updated Declarations to Correct Inventorship

Dear Mr. Stolorz:

I wrote to you last fall (on September 18, 2009) regarding the ITM family of patent applications in which you are a named inventor. A copy of that letter is enclosed herewith. I have also included the revised Declaration documents that additionally include Ted Middleton as a named inventor. Please return the signed Declaration documents in the enclosed return-addressed, postage-paid envelope as soon as possible. Also, please review the inclusive continuation-in-part application and related claim sets that I previously sent to you before signing the documents.

If it is more convenient, you can fax the signed Declarations to me at (720) 888-5619. The deadline for filing the revised documents is May 27, 2009. Your inability to provide us with the signed Declarations may jeopardize the validity of the entire ITM patent family.

If you have any questions or concerns, please do not hesitate to contact me at (720) 888-2140.

Thank you in advance for your prompt attention to this matter.

Sincerely,

Jonathan Siekmann

Enclosures

Exhibit 32

From: UPS Quantum View [mailto:auto-notify@ups.com]
Sent: Monday, May 18, 2009 2:12 PM
To: Lomeli, Jen
Subject: UPS Ship Notification, Tracking Number 1Z6038EW1394017811



This message was sent to you at the request of Level 3 Communications Inc. to notify you that the electronic shipment information below has been transmitted to UPS. The physical package(s) may or may not have actually been tendered to UPS for shipment. To verify the actual transit status of your shipment, click on the tracking link below or contact Level 3 Communications Inc. directly.

Important Delivery Information

Scheduled Delivery: 19-May-2009

Shipment Detail

Ship To:
Paul Stolorz
Paul Stolorz
124 University Ave
LOS ALTOS
CA
940223514
US

Number of Packages	1
UPS Service:	NEXT DAY AIR SAVER
Shipment Type:	Letter

Tracking Number: 1Z6038EW1394017811
Reference Number 1: 900

Click here to track if UPS has received your shipment or visit http://www.ups.com/WebTracking/track?loc=en_US on the Internet.

Exhibit 33

Jonathan Siekmann
Corporate Counsel
TEL: (720) 888-2140
FAX: (720) 888-5619
jonathan.siekmann@level3.com

May 18, 2009

VIA UPS OVERNIGHT

John Salmon
820 Hardscrabble Rd.
Chappaqua NY, 10514

Matter: ITM Patent Applications
Re: URGENT: Updated Declarations to Correct Inventorship

Dear Mr. Salmon:

I wrote to you last fall (on September 18, 2009) regarding the ITM family of patent applications in which you are a named inventor. A copy of that letter is enclosed herewith. I have also included the revised Declaration documents that additionally include Ted Middleton as a named inventor. Please return the signed Declaration documents in the enclosed return-addressed, postage-paid envelope as soon as possible. Also, please review the inclusive continuation-in-part application and related claim sets that I previously sent to you before signing the documents.

If it is more convenient, you can fax the signed Declarations to me at (720) 888-5619. The deadline for filing the revised documents is May 27, 2009. Your inability to provide us with the signed Declarations may jeopardize the validity of the entire ITM patent family.

If you have any questions or concerns, please do not hesitate to contact me at (720) 888-2140.

Thank you in advance for your prompt attention to this matter.

Sincerely,

Jonathan Siekmann

Enclosures

Exhibit 34

From: UPS Quantum View [mailto:auto-notify@ups.com]
Sent: Monday, May 18, 2009 2:21 PM
To: Lomeli, Jen
Subject: UPS Ship Notification, Tracking Number 1Z6038EW1394400834



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Important Delivery Information

Scheduled Delivery: 19-May-2009

Shipment Detail

Ship To:
John Salmon
John Salmon
820 Hardscrabble Rd
CHAPPAQUA
NY
105143012
US

Number of Packages	1
UPS Service:	NEXT DAY AIR SAVER
Shipment Type:	Letter

Tracking Number: 1Z6038EW1394400834
Reference Number 1: 900

Click here to track if UPS has received your shipment or visit http://www.ups.com/WebTracking/track?loc=en_US on the Internet.

Exhibit 35

Jonathan Siekmann
Corporate Counsel
TEL: (720) 888-2140
FAX: (720) 888-5619
jonathan.siekmann@level3.com

May 18, 2009

VIA UPS OVERNIGHT

Aric Hagberg
36 Camino Chupadero
Santa Fe, NM 87506

Matter: ITM Patent Applications
Re: URGENT: Updated Declarations to Correct Inventorship

Dear Mr. Hagberg:

I wrote to you last fall (on September 18, 2009) regarding the ITM family of patent applications in which you are a named inventor. A copy of that letter is enclosed herewith. I have also included the revised Declaration documents that additionally include Ted Middleton as a named inventor. Please return the signed Declaration documents in the enclosed return-addressed, postage-paid envelope as soon as possible. Also, please review the inclusive continuation-in-part application and related claim sets that I previously sent to you before signing the documents.

If it is more convenient, you can fax the signed Declarations to me at (720) 888-5619. The deadline for filing the revised documents is May 27, 2009. Your inability to provide us with the signed Declarations may jeopardize the validity of the entire ITM patent family.

If you have any questions or concerns, please do not hesitate to contact me at (720) 888-2140.

Thank you in advance for your prompt attention to this matter.

Sincerely,

Jonathan Siekmann

Enclosures

Exhibit 36

From: UPS Quantum View [mailto:auto-notify@ups.com]
Sent: Monday, May 18, 2009 2:12 PM
To: Lomeli, Jen
Subject: UPS Ship Notification, Tracking Number 1Z6038EW0190746429



This message was sent to you at the request of Level 3 Communications Inc. to notify you that the electronic shipment information below has been transmitted to UPS. The physical package(s) may or may not have actually been tendered to UPS for shipment. To verify the actual transit status of your shipment, click on the tracking link below or contact Level 3 Communications Inc. directly.

Important Delivery Information

Scheduled Delivery: 19-May-2009

Shipment Detail

Ship To:
ARIC HAGBERG
ARIC HAGBERG
36 CAMINO CHUPADERO
SANTA FE
NM
875060079
US

Number of Packages	1
UPS Service:	NEXT DAY AIR
Shipment Type:	Letter

Tracking Number: 1Z6038EW0190746429
Reference Number 1: 900

Click here to track if UPS has received your shipment or visit http://www.ups.com/WebTracking/track?loc=en_US on the Internet.

Exhibit 37

From: Siekmann, Jonathan
Sent: Monday, May 18, 2009 11:11 AM
To: 'Paul Stolorz'; 'John Salmon'; 'aric@hagberg.org'
Cc: Wier, David; Fullagar, David; Swart, Andrew
Subject: RE: ITM Signature Documents
Paul, John, and Aric:

The deadline for correcting inventorship for the ITM family of patent applications is May 27, 2009. As you may recall, we are adding Ted Middleton as an inventor to these applications.

I am once again sending an overnight package to each of you containing the documents that require your signatures. Please return the signed documents in the enclosed pre-paid envelope as soon as possible. Your inability to return the signed Declarations before May 27 may jeopardize the validity of these soon-to-be patents.

Please do not hesitate to call me at 720.888.2140 if you have any questions or concerns.

Thanks in advance for your prompt attention to this matter.

Jon

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

From: Siekmann, Jonathan
Sent: Monday, November 03, 2008 11:34 AM
To: Paul Stolorz; John Salmon; Mike Warren; aric@hagberg.org
Subject: ITM Signature Documents

((If you have already sent in your signed documents, please disregard this message))

Paul, John, Mike, and Aric:

Just checking in once again to see if you've had a chance to look over the packet of information that I sent you regarding the ITM family of applications. We would like to file the newly executed Declarations as soon as possible to resolve the change of inventorship issue.

Please feel free to give me a call at the number below if you have any questions.

Thanks, Jon

Jonathan Siekmann
Intellectual Property Counsel
Legal Department
Level 3 Communications
1025 Eldorado Blvd.
Broomfield, CO 80021
p: 720-888-2140
f: 720-888-5619
e: jonathan.siekmann@level3.com

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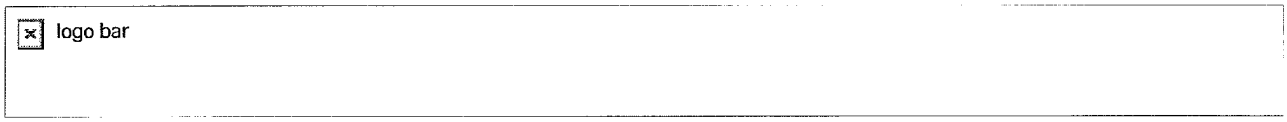


Exhibit 38

United States

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Track with Quantum View
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Tracking Summary

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Tracking Number:	1Z 603 8EW 13 9401 781 1
	View package progress
Type:	Package
Status:	**Delivered**
Delivered On:	05/19/2009 10:41 A.M.
Delivered To:	LOS ALTOS, CA, US
Service:	NEXT DAY AIR SAVER

Tracking results provided by UPS: 05/27/2009 12:33 P.M. ET

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Exhibit 39

United States

Log-In Search Submit Query

My UPS Shipping Tracking Freight Locations Support Business Solutions

Tracking

Track Shipments
Track by Reference
Track by E-mail
Signature Tracking
Import Tracking Numbers
Mobile Tracking
Track with Quantum View
Access Flex Global View
Integrate Tracking Tools
Void a Shipment

Search Support

Enter a keyword:

Search



Track Shipments

Track Packages & Freight Quantum View Flex Global View

Tracking Summary

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Tracking Number:	1Z 603 8EW 13 9440 083 4
	View package progress
Type:	Package
Status:	**Delivered**
Delivered On:	05/19/2009 10:31 A.M.
Delivered To:	CHAPPAQUA, NY, US
Service:	NEXT DAY AIR SAVER

Tracking results provided by UPS: 05/27/2009 12:32 P.M. ET

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Exhibit 40

United States

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My UPS Shipping Tracking Freight Locations Support Business Solutions

Tracking

Track Shipments
Track by Reference
Track by E-mail
Signature Tracking
Import Tracking Numbers
Mobile Tracking
Track with Quantum View
Access Flex Global View
Integrate Tracking Tools
Void a Shipment

Search Support

Enter a keyword:

Search



Track Shipments

Track Packages & Freight Quantum View Flex Global View

Tracking Summary

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Tracking Number:	1Z 603 8EW 01 9074 642 9
	View package progress
Type:	Package
Status:	**Delivered**
Delivered On:	05/19/2009 4:35 P.M.
Delivered To:	SANTA FE, NM, US
Service:	NEXT DAY AIR

Tracking results provided by UPS: 05/27/2009 12:32 P.M. ET

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UPS Mail Innovations
UPS Professional Services
UPS Logistics Technologies
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Exhibit 41

From: Siekmann, Jonathan
Sent: Tuesday, May 26, 2009 11:09 AM
To: 'Paul Stolorz'; 'John Salmon'; 'aric@hagberg.org'
Cc: Wier, David
Subject: RE: ITM Signature Documents

Attachments: ITM CIP part I.pdf; ITM CIP part II.pdf; ITM Parent - current claims.pdf; 2711-0095 (0093-US-C1) Declaration.pdf; 2711-0054 (0093-US-U1) Declaration.pdf; 2711-0096 (0093-US-I1) Declaration.pdf; ITM Continuation current claims.pdf

Paul, John, and Aric:

As you already know, the deadline to correct inventorship and add Ted Middleton as an inventor for the ITM patent applications is tomorrow, May 27, 2009. If you haven't done so already, please send in (overnight) the executed declarations so that we may submit these documents with the Patent Office before the deadline lapses. You can still use the postage-paid, return-addressed envelope that we previously provided. If you have already sent in the executed documents, please let me know ASAP.

For your convenience, I have attached copies of the declarations along with the corresponding continuation-in-part application and currently pending claim sets for the parent and continuation applications. Please review the continuation-in-part application and all three claim sets before you sign to once again make sure that you contributed to the inventive aspect(s) of at least one claim in each application.

Please do not hesitate to call me at 720.888.2140 if you have any questions or concerns.

Thank you for your prompt attention to this matter.

Jon

Jonathan Siekmann
Intellectual Property Counsel
Legal Department
Level 3 Communications
1025 Eldorado Blvd.
Broomfield, CO 80021
p: 720-888-2140
f: 720-888-5619
e: jonathan.siekmann@level3.com

This message is confidential and may contain Privileged Attorney-Client Communications and/or Attorney Work Product. If you have received this message in error, please notify the sender immediately.

From: Siekmann, Jonathan
Sent: Monday, May 18, 2009 11:11 AM
To: 'Paul Stolorz'; 'John Salmon'; 'aric@hagberg.org'
Cc: Wier, David; Fullagar, David; Swart, Andrew
Subject: RE: ITM Signature Documents

Paul, John, and Aric:

The deadline for correcting inventorship for the ITM family of patent applications is May 27, 2009. As you may recall, we are adding Ted Middleton as an inventor to these applications.

I am once again sending an overnight package to each of you containing the documents that require your signatures. Please return the signed documents in the enclosed pre-paid envelope as soon as possible. Your inability to return the signed Declarations before May 27 may jeopardize the validity of these soon-to-be patents.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:

Inventor(s):	*Stolorz,* Paul E.; et al.	**Group Art Unit:**	2451
Appl. No.:	10/259,497	**Examiner:**	WALSH, John
Filing Date:	09/30/2002	**Confirmation No.:**	5284
		Attorney Docket No.:	2711-0054

Title: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

INVENTOR'S STATEMENT UNDER 37 CFR § 1.48(A)(2)

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

Sir:

I understand that I was not named as an inventor on the above-identified patent application. That error in inventorship occurred without deceptive intention on my part.

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.

5/27/09
Date:

Ted Middleton

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:

Inventor(s):	*Stolorz,* Paul E.; et al.	**Group Art Unit:**	2451
Appl. No.:	10/259,497	**Examiner:**	WALSH, John
Filing Date:	09/30/2002	**Confirmation No.:**	5284
Attorney Docket No.:	2711-0054	**Date:**	May 27, 2009

Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**

REQUEST TO ADD INVENTOR UNDER 37 CFR 1.48(a)

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

Sir:

Applicant / Assignee respectfully requests that the above-identified application be amended under 37 CFR 1.48(a) to **add the following inventor**:

Ted Middleton
4086 Bending Oak Ct.
Moorpark, CA 93021, U.S.A.
US Citizenship

Submitted herewith are the following:

1. a **statement** from the person being added as an inventor that the error in inventorship occurred without deceptive intent on his part. (37 CFR 1.48(a)(2))

2. An oath or **declaration** by the actual inventors (including a Petition under 37 CFR 1.183 for waiver of requirements of Rule 1.64 for three non-signing inventors). (37 CFR 1.48(a)(3))

3. The **fee** set forth in 37 CFR 1.17(i) [$130] (37 CFR 1.48(a)(4))

4. **Consent of the Assignee** (Level 3 Communications, LLC) (37 CFR 1.48(a)(2) and 37 CFR 3.73(b))

Application of: Stolorz et al.
Serial No.: 10/259,497
REQUEST TO ADD INVENTOR UNDER 37 CFR 1.48(a)

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054.**	
The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/ Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached. **This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed.**	
CUSTOMER NUMBER 75948	Respectfully submitted, /Brian Siritzky/Reg. No. 37497 By: Brian Siritzky, Ph.D. Registration No.: 37,497
DAVIDSON BERQUIST JACKSON & GOWDEY LLP 4300 Wilson Blvd., 7th Floor, Arlington, Virginia 22203 Main: (703) 894-6400 ● FAX: (703) 894-6430	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:

Inventor(s):	*Stolorz,* Paul E.; et al.	**Group Art Unit:**	2451
Appl. No.:	10/259,497	**Examiner:**	WALSH, John
Filing Date:	09/30/2002	**Confirmation No.:**	5284
Attorney Docket No.:	2711-0054	**Date:**	May 27, 2009

Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**

PETITION UNDER 37 C.F.R. § 1.183

(filed with A request to add inventor under 37 CFR 1.48(a))

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

Sir:

Applicant respectfully petitions under 37 C.F.R. § 1.183 for waiver of the requirement of 37 C.F.R. § 1.64 that each of the actual inventors execute the oath or declaration in this application.

This Petition is being filed with a request under 37 C.F.R. § 1.48 to correct inventorship (to add an inventor). Assignee consent has been given for this request.

The issue fee is being paid today.

Included herewith are:

1. The ***Petition Fee*** under 37 C.F.R. § 1.17(f)
2. Proof of the pertinent facts relating to this petition (including a declaration of Mr. Jonathan Siekmann, Intellectual Property Counsel for the assignee, and exhibits 1-41 thereto); and
3. The ***last known addresses*** of the non-signing inventors.

STATEMENT OF FACTS

1. Level 3 Communications, LLC ("Level 3") is the assignee of Application No. 10/259,497 ("the '497 Application").
2. This Petition is being filed with a Request under 37 C.F.R. § 1.48 to Correct the Inventorship of this application (to add Ted Middleton as an inventor).
3. The '497 Application, as filed on September 30, 2002, named eight (8) joint inventors (Paul Stolorz, John Salmon, Michael Warren, Jeffrey Koller, Aric Hagberg, Maksim Yevmenkin, Mark Brady and David Pfitzner). Those eight inventors signed the *original* declaration.
4. Mssrs. Middleton, Warren, Koller, Yevmenkin, Brady and Pfitzner have each signed the new (supplemental) declaration required under 37 C.F.R. § 1.48(a)(3).
5. As described in greater detail below, after repeated requests by the Assignee, Mr. Stolorz, Mr. Salmon and Mr. Hagberg have not signed the new (supplemental) declaration.
6. Correct inventorship of this application is necessary to preserve the rights of the assignee, Level 3.

MR. STOLORZ

7. Repeated requests by Level 3 to Mr. Stolorz to sign the declaration for the '497 Application have been unsuccessful. Decl. of Siekmann at ¶¶ 1, 5-9, 12-16, 19-23, 26-28, 31, 32 and 35. Diligent attempts were made to contact Mr. Stolorz and to request that he sign the declaration for the '497 Application. Decl. of Siekmann at ¶¶ 1, 5-9, 12-16, 19-23, 26-28, 31, 32 and 35.
8. Mr. Stolorz was twice presented with a copy of the application papers and was asked numerous times to sign the corrected declaration. Decl. of Siekmann at ¶¶ 9, 22, 23, 28, 31 and 35.

9. To date, Mr. Stolorz has not provided Level 3 with a signed new (supplemental) declaration for the '497 Application.

10. Two United Parcel Service (UPS) letters were sent to Mr. Stolorz at his last known address (124 University Ave, Los Altos, CA 94022), on September 18, 2008, and on May 18, 2009. Decl. of Siekmann at ¶¶ 6, 9 and 28. The first letter included, inter alia, a copy of the continuation-in-part child application of the '497 Application (inclusive of all the subject matter of the '497 Application), a copy of the currently pending claim set of the '497 Application, and a copy of a corrected declaration (including Mr. Middleton as an inventor). Decl. of Siekmann at ¶ 9. The second letter included a copy of the first letter, a copy of the corrected declaration, and further instructed Mr. Stolorz to review the application documentation provided with the first letter. Decl. of Siekmann at ¶ 28.

11. Proof of delivery and receipt of these two letters to Mr. Stolorz are provided herewith. (See Exhibits 10, 19, 32 and 38 to Decl. of Siekmann, and see also Decl. of Siekmann at ¶¶ 9, 16, 28 and 32)

12. Mr. Stolorz and Mr. Siekmann exchanged many email messages relating to the declaration for this application. Decl. of Siekmann at ¶¶ 1, 5-8, 12-15, 19-23, 26, 27, 31 and 35. In these email exchanges Mr. Stolorz indicated his appreciation for Level 3's diligence in "following up on the [] application" and that he appreciated Level 3's desire "to get [the declaration paperwork] into the PTO system" and that he would "undertake to review anything [Level 3] sent [him] ASAP." Decl. of Siekmann at ¶¶ 6 and 14. Mr. Stolorz also indicated that he was in the process of reviewing pertinent documentation (i.e., the application, PAIR documentation, etc.) and that he was close to sending Level 3 the signed corrected declaration(s). Decl. of Siekmann at ¶¶ 19, 21 and 26. It should be noted that simultaneous

attempts were made to correct inventorship for continuation and continuation-in-part child applications of the '497 application.

MR. SALMON

13. Repeated requests by Level 3 to Mr. Salmon to sign the declaration for the '497 Application have been unsuccessful. Decl. of Siekmann at ¶¶ 1, 2, 10, 17, 22, 24, 29, 31, 33 and 35. Diligent attempts were made to contact Mr. Salmon and to request that he sign the declaration for the '497 Application. Decl. of Siekmann at ¶¶ 1, 2, 10, 17, 22, 24, 29, 31, 33 and 35.

14. Mr. Salmon was twice presented with a copy of the application papers and was asked numerous times to sign the corrected declaration. Decl. of Siekmann at ¶¶ 10, 22, 24, 29, 31 and 35.

15. To date, Mr. Salmon has not provided Level 3 with a signed new (supplemental) declaration for the '497 Application.

16. Two United Parcel Service (UPS) letters were sent to Mr. Salmon at his last known address (820 Hardscrabble Rd., Chappaqua, NY 10514), on September 18, 2008, and on May 18, 2009. Decl. of Siekmann at ¶¶ 2, 10 and 29. The first letter included, inter alia, a copy of the continuation-in-part child application of the '497 Application (inclusive of all the subject matter of the '497 Application), a copy of the currently pending claim set of the '497 Application, and a copy of a corrected declaration (including Mr. Middleton as an inventor). Decl. of Siekmann at ¶ 10. The second letter included a copy of the first letter, a copy of the corrected declaration, and further instructed Mr. Salmon to review the application documentation provided in the first letter. Decl. of Siekmann at ¶ 29.

17. Proof of delivery and receipt of these two letters to Mr. Salmon are provided herewith. (See Exhibits 12, 20, 34 and 39 to Decl. of Siekmann, and see also Decl. of Siekmann at ¶¶ 10, 17, 29 and 33)

MR. HAGBERG

18. Repeated requests by Level 3 to Mr. Hagberg to sign the declaration for the '497 Application have been unsuccessful. Decl. of Siekmann at ¶¶ 3, 4, 11, 18, 20, 22, 25, 30, 31, 34 and 35. Diligent attempts were made to contact Mr. Hagberg and to request that he sign the declaration for the '497 Application. Decl. of Siekmann at ¶¶ 3, 4, 11, 18, 20, 22, 25, 30, 31, 34 and 35.

19. Mr. Hagberg was twice presented with a copy of the application papers and was asked numerous times to sign the corrected declaration. Decl. of Siekmann at ¶¶ 11, 22, 25, 30, 31 and 35.

20. To date, Mr. Hagberg has not provided Level 3 with a signed new (supplemental) declaration for the '497 Application.

21. Two United Parcel Service (UPS) letters were sent to Mr. Hagberg at his last known address (36 Camino Chupadero, Santa Fe, NM 87506), on September 18, 2008, and on May 18, 2009. Decl. of Siekmann at ¶¶ 4, 11 and 30. The first letter included, inter alia, a copy of the continuation-in-part child application of the '497 Application (inclusive of all the subject matter of the '497 Application), a copy of the currently pending claim set of the '497 Application, and a copy of a corrected declaration (including Mr. Middleton as an inventor). Decl. of Siekmann at ¶ 11. The second letter included a copy of the first letter, a copy of the corrected declaration, and further instructed Mr. Hagberg to review the application documentation provided in the first letter. Decl. of Siekmann at ¶ 30.

22. Proof of delivery and receipt of these two letters to Mr. Hagberg are provided herewith. (See Exhibits 14, 21, 36 and 40 to Decl. of Siekmann, and see also Decl. of Siekmann at ¶¶ 11, 18, 30 and 34)

THE JOINING INVENTORS

23. Six (6) of the nine (9) named inventors (Mr. Warren, Mr. Koller, Mr. Yevmenkin, Mr. Brady, Mr. Pfitzner, and Mr. Middleton) have signed the declaration for the '497 Application.

THE LAST KNOWN ADDRESSES OF THE NONSIGNING INVENTORS

The last known addresses of the three (3) nonsigning inventors are as follows:

Paul Stolorz
124 University Ave
Los Altos, CA 94022
U.S.A.

John Salmon
820 Hardscrabble Rd.
Chappaqua, NY 10514
U.S.A.

Aric Hagberg
36 Camino Chupadero
Santa Fe, NM 87506
U.S.A.

CONCLUSION

Applicant/Assignee respectfully requests granting of this petition under 37 C.F.R. § 1.183 for waiver of the requirement of 37 C.F.R. § 1.64 that each of the actual inventors execute the oath or declaration in this application.

The attached corrected declaration signed by the available joint inventors includes signature blocks for the nonsigning inventors (left blank) and should be treated as having been signed by all the available joint inventors on behalf of the nonsigning inventors. ("An oath or declaration signed by all the available joint inventors with the signature block of the nonsigning inventor(s) left blank may be

treated as having been signed by all the available joint inventors on behalf of the nonsigning inventor(s), unless otherwise indicated." MPEP 409.03(a))

The PTO is requested to please contact the undersigned at the number provided should there be any deficiencies in this petition or associated filings.

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.	
The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/ Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached. **This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed.**	
CUSTOMER NUMBER 75948	Respectfully submitted, /Brian Siritzky/Reg. No. 37497 By: Brian Siritzky, Ph.D. Registration No.: 37,497
DAVIDSON BERQUIST JACKSON & GOWDEY LLP 4300 Wilson Blvd., 7th Floor, Arlington, Virginia 22203 Main: (703) 894-6400 ● FAX: (703) 894-6430	

Electronic Patent Application Fee Transmittal

Application Number:	10259497
Filing Date:	30-Sep-2002
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Filer:	Brian Siritzky
Attorney Docket Number:	2711-0054

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:				
Petition fee- 37 CFR 1.17(f) (Group I)	1462	1	400	400
Petition fee- 37 CFR 1.17(h) (Group III)	1464	1	130	130
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Utility Appl issue fee	1501	1	1510	1510
Publ. Fee- early, voluntary, or normal	1504	1	300	300
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**2340**

Electronic Acknowledgement Receipt

EFS ID:	5403667
Application Number:	10259497
International Application Number:	
Confirmation Number:	5284
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Customer Number:	75948
Filer:	Brian Siritzky
Filer Authorized By:	
Attorney Docket Number:	2711-0054
Receipt Date:	27-MAY-2009
Filing Date:	30-SEP-2002
Time Stamp:	18:32:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$2340
RAM confirmation Number	6306
Deposit Account	501860
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	20090527125245233.pdf	235979 0e9833fcd97e715c2ccab428e6ccc549f4cad3f1	no	1
Warnings:					
Information:					
2	Oath or Declaration filed	Declarations_binder.pdf	2734633 4b614f039b1353738d282e47da23bd42ebe16695	no	7
Warnings:					
Information:					
3	Consent of Assignee accompanying the declaration.	Consent_of_Assignee_signed.pdf	27225 1bed099b5911ab8c0aab8146a6b55aaa4ef8d74d	no	1
Warnings:					
Information:					
4	Assignee showing of ownership per 37 CFR 3.73(b).	Statement_Under_3_73_b.pdf	552651 ac772df7f4a0eaa6a750095c114921110117 58f5	no	3
Warnings:					
Information:					
5	Petition for review by the Office of Petitions.	Declaration_of_Jonathan_Siekmann.pdf	6122882 26244419134e9a598b1d36fdb6041dd3654a1798	no	89
Warnings:					
Information:					
6	Request under Rule 48 correcting inventorship	Middleton_Statement.pdf	32409 039eb06bc74fb3802764640fba50d10042d4e7ab	no	1
Warnings:					
Information:					
7	Request under Rule 48 correcting inventorship	Request_to_Add_Inventor.pdf	373035 ade7d570ece3d21c1f4605f1785d755341bf75ea	no	2
Warnings:					
Information:					
8	Petition for review by the Office of Petitions.	Petition_Under_37_CFR_1_183.pdf	448118 a9dab4be1f57d60d058aa2cdcfb57690248bb539	no	7

Warnings:					
Information:					
9	Fee Worksheet (PTO-875)	fee-info.pdf	35141 2a22f60a6459330a328b911889be065ad63f897d	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	10562073	

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.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

75948 7590 02/27/2009

DAVIDSON BERQUIST JACKSON & GOWDEY, LLP
ATTN: BRIAN SIRITZKY, Ph.D.
4300 WILSON BLVD., 7TH FLOOR
ARLINGTON, VA 22203

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	09/30/2002	Paul E. Stolorz	2711-0054	5284

TITLE OF INVENTION: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	05/27/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
WALSH, JOHN B	2451	709-238000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Davidson Berquist
2 Jackson & Gowdey LLP
3 Brian Siritzky

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Level 3 Communications, LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Broomfield, Colorado

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

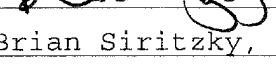
☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 501860 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature  Date May 27, 2009

Typed or printed name Brian Siritzky, Ph.D. Registration No. 37,497

This collection of information is required by 37 CFR 1.311. 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 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, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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.

RULE 63 (37 C.F.R. 1.63)
INVENTORS DECLARATION FOR PATENT APPLICATION
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

As a below named inventor, I hereby declare that my residence, mailing address and citizenship are as stated below next to my name, and I believe I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

the specification of which (**check** applicable **box(es)**):

☐ is attached hereto

☒ was filed on 09-30-2002 as U.S. Application Serial No. 10/259,497

☐ was filed as PCT International application No. _____ on _____.

and (if applicable to U.S. or PCT application) was amended on 08/31/2007.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose to the Patent Office all information known to me to be material to patentability as defined in 37 C.F.R. 1.56. I hereby claim foreign priority benefits under 35 U.S.C. 119/365 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 or, if no priority is claimed, before the filing date of this application:

Priority Foreign Application(s): **NONE**

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below.

Application Number	Day/Month/Year Filed
60/325,177	28/09/2001

I hereby claim the benefit under 35 U.S.C. 120/365 of all prior United States and PCT international applications listed above or below.

Prior U.S./PCT Application(s) -- Application Serial No.	Day/Month/Year Filed	Status: Patented, Pending, Abandoned

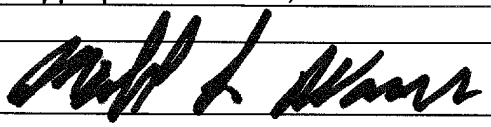
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, 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. And on behalf of the owner(s) hereof, I hereby ask that all communications in this matter be directed to: **DAVIDSON BERQUIST JACKSON & GOWDEY, LLP** at the address/phone numbers associated with customer number **75948**.

Inventor's Signature:			Date:
Inventor's Name:	**Paul E. STOLORZ**		
Citizenship:	Australia		
Residence:	City: Los Altos	State/Country:	CA / US
Mailing Address:	124 University Ave., Los Altos CA 94022		Zip Code: 94022

☒ Additional inventors are being named on the 2 supplemental sheets attached hereto.

Declaration supplemental sheet (1 of 2)

Inventor's Signature:			Date:
Inventor's Name:	**John** **K.** **SALMON**		
Citizenship:	US		
Residence:	City: Chappaqua	State/Country:	NY / US
Mailing Address:	820 Hardscrabble Rd., Chappaqua NY 10514, U.S.A.		Zip Code: 10514

Inventor's Signature:			Date: 9/22/2008
Inventor's Name:	**Michael** **S.** **WARREN**		
Citizenship:	US		
Residence:	City: Los Alamos	State/Country:	NM / US
Mailing Address:	4611 Esperanza, Los Alamos, NM 87545, U.S.A.		Zip Code: 87545

Inventor's Signature:			Date:
Inventor's Name:	**Jeffrey** **G.** **KOLLER**		
Citizenship:	US		
Residence:	City: Oxnard	State/Country:	CA / US
Mailing Address:	3549 Glen Abbey Lane, Oxnard, CA 93036, U.S.A.		Zip Code: 93036

Inventor's Signature:			Date:
Inventor's Name:	**Aric** **HAGBERG**		
Citizenship:	US		
Residence:	City: Santa Fe	State/Country:	NM / US
Mailing Address:	36 Camino Chupadero Santa Fe, NM 87506, U.S.A.		Zip Code: 87506

Inventor's Signature:			Date:
Inventor's Name:	**Maksim** **YEVMENKIN**		
Citizenship:	Russia		
Residence:	City: Los Altos	State/Country:	CA / US
Mailing Address:	821 Warwick Ave. Thousand Oaks, CA 91360, U.S.A.		Zip Code: 91360

☒ Additional inventors are named on the next sheet.

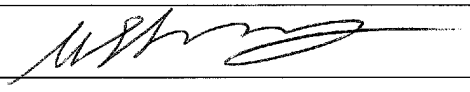
Declaration supplemental sheet (1 of 2)

Inventor's Signature:			Date:
Inventor's Name:	**John** **K.** **SALMON**		
Citizenship:	US		
Residence:	City: Chappaqua	State/Country:	NY / US
Mailing Address:	820 Hardscrabble Rd., Chappaqua NY 10514, U.S.A.		Zip Code: 10514

Inventor's Signature:			Date:
Inventor's Name:	**Michael** **S.** **WARREN**		
Citizenship:	US		
Residence:	City: Los Alamos	State/Country:	NM / US
Mailing Address:	4611 Esperanza, Los Alamos, NM 87545, U.S.A.		Zip Code: 87545

Inventor's Signature:			Date:
Inventor's Name:	**Jeffrey** **G.** **KOLLER**		
Citizenship:	US		
Residence:	City: Oxnard	State/Country:	CA / US
Mailing Address:	3549 Glen Abbey Lane, Oxnard, CA 93036, U.S.A.		Zip Code: 93036

Inventor's Signature:			Date:
Inventor's Name:	**Aric** **HAGBERG**		
Citizenship:	US		
Residence:	City: Santa Fe	State/Country:	NM / US
Mailing Address:	36 Camino Chupadero Santa Fe, NM 87506, U.S.A.		Zip Code: 87506

Inventor's Signature:			Date: 9/23/08
Inventor's Name:	**Maksim** **YEVMENKIN**		
Citizenship:	Russia THOUSAND OAKS		
Residence:	City: ~~Los Altos~~	State/Country:	CA / US
Mailing Address:	~~821 Warwick Ave.~~ 427 Sundance St. Thousand Oaks, CA 91360, U.S.A.		Zip Code: 91360

☒ Additional inventors are named on the next sheet.

Declaration supplemental sheet (1 of 2)

Inventor's Signature:			Date:
Inventor's Name:	**John** **K.** **SALMON**		
Citizenship:	US		
Residence:	City: Chappaqua	State/Country:	NY / US
Mailing Address:	820 Hardscrabble Rd., Chappaqua NY 10514, U.S.A.		Zip Code: 10514

Inventor's Signature:			Date:
Inventor's Name:	**Michael** **S.** **WARREN**		
Citizenship:	US		
Residence:	City: Los Alamos	State/Country:	NM / US
Mailing Address:	4611 Esperanza, Los Alamos, NM 87545, U.S.A.		Zip Code: 87545

Inventor's Signature:			Date: 10/2/08
Inventor's Name:	**Jeffrey** **G.** **KOLLER**		
Citizenship:	US		
Residence:	City: Oxnard	State/Country:	CA / US
Mailing Address:	3549 Glen Abbey Lane, Oxnard, CA 93036, U.S.A.		Zip Code: 93036

Inventor's Signature:			Date:
Inventor's Name:	**Aric** **HAGBERG**		
Citizenship:	US		
Residence:	City: Santa Fe	State/Country:	NM / US
Mailing Address:	36 Camino Chupadero Santa Fe, NM 87506, U.S.A.		Zip Code: 87506

Inventor's Signature:			Date:
Inventor's Name:	**Maksim** **YEVMENKIN**		
Citizenship:	Russia		
Residence:	City: Los Altos	State/Country:	CA / US
Mailing Address:	821 Warwick Ave. Thousand Oaks, CA 91360, U.S.A.		Zip Code: 91360

☒ Additional inventors are named on the next sheet.

Declaration supplemental sheet (2 of 2)

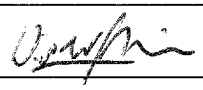
Inventor's Signature:	Mark Brady		Date: 10/7/08
Inventor's Name:	**Mark** **BRADY**		
Citizenship:	US		
Residence:	City: San Rafael	State/Country:	CA / US
Mailing Address:	615 Tarragon Dr. San Rafael, CA 94903, U.S.A.		Zip Code: 94903

Inventor's Signature:			Date:
Inventor's Name:	**David** **PFITZNER**		
Citizenship:	Australia		
Residence:	City: College Park	State/Country:	SA / Australia
Mailing Address:	1/40 Torrens Street College Park SA 5069 Australia		Zip Code: 5069

Inventor's Signature:			Date:
Inventor's Name:	**Ted** **MIDDLETON**		
Citizenship:	US		
Residence:	City: Moorpark	State/Country:	CA / US
Mailing Address:	4086 Bending Oak Ct. Moorpark, CA 93021, U.S.A.		Zip Code: 93021

Declaration supplemental sheet (2 of 2)

Inventor's Signature:			Date:
Inventor's Name:	**Mark** **BRADY**		
Citizenship:	US		
Residence:	City: San Rafael	State/Country:	CA / US
Mailing Address:	615 Tarragon Dr. San Rafael, CA 94903, U.S.A.		Zip Code: 94903

Inventor's Signature:			Date: 9/22/2008
Inventor's Name:	**David** **PFITZNER**		
Citizenship:	Australia		
Residence:	City: College Park	State/Country:	SA / Australia
Mailing Address:	1/40 Torrens Street College Park SA 5069 Australia		Zip Code: 5069

Inventor's Signature:			Date:
Inventor's Name:	**Ted** **MIDDLETON**		
Citizenship:	US		
Residence:	City: Moorpark	State/Country:	CA / US
Mailing Address:	4086 Bending Oak Ct. Moorpark, CA 93021, U.S.A.		Zip Code: 93021

Declaration supplemental sheet (2 of 2)

Inventor's Signature:			Date:
Inventor's Name:	**Mark** **BRADY**		
Citizenship:	US		
Residence:	City: San Rafael	State/Country:	CA / US
Mailing Address:	615 Tarragon Dr. San Rafael, CA 94903, U.S.A.		Zip Code: 94903

Inventor's Signature:			Date:
Inventor's Name:	**David** **PFITZNER**		
Citizenship:	Australia		
Residence:	City: College Park	State/Country:	SA / Australia
Mailing Address:	1/40 Torrens Street College Park SA 5069 Australia		Zip Code: 5069

Inventor's Signature:			Date: 11/7/08
Inventor's Name:	**Ted** **MIDDLETON**		
Citizenship:	US		
Residence:	City: Moorpark	State/Country:	CA / US
Mailing Address:	4086 Bending Oak Ct. Moorpark, CA 93021, U.S.A.		Zip Code: 93021

I IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:

Inventor(s):	*Stolorz,* Paul E.; et al.	**Group Art Unit:**	2451
Appl. No.:	10/259,497	**Examiner:**	WALSH, John
Filing Date:	09/30/2002	**Confirmation No.:**	5284
		Attorney Docket No.:	2711-0054

Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**

CONSENT OF ASSIGNEE

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

Sir:

Level 3 Communications, LLC, the assignee of the above-identified U.S. patent application by virtue of assignments recorded in the United States Patent & Trademark Office and/or attached hereto (Statement under 37 CFR 3.73(b) is submitted herewith), hereby consents to the addition of Ted Middleton as an inventor to this application.

May 27, 2009
Date

David Wier
Senior Patent Counsel
Level 3 Communications, LLC

STATEMENT UNDER 37 CFR 3.73(B)

Applicant: Level 3 Communications, LLC — Docket No. 2711-0054

Application No. 10/259,497 — Filed e: 09/30/2002

Entitled: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

Assignee: Level 3 Communications, LLC (Name of assignee) — A corporation (Type of Assignee: corporation, partnership, university, government agency, etc.)

States that it is:

1. ☒ the assignee of the entire right, title, and interest; or

2. ☐ an assignee of less than the entire right, title and interest.
(The extent (by percentage) of its ownership interest is %)

in the patent application / patent identified above by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application / patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel , Frame , or for which a copy thereof is attached.

OR

B. ☒ A chain of title from the inventor(s), of the patent application / patent identified above, to the current assignee shown below:

1.	From: INVENTORS. To: Digital Island, Inc. The document was recorded in the United States Patent and Trademark Office at Reel 013353 Frame 0957, or for which a copy thereof is attached.
2.	From: Digital Island, Inc. To: Cable & Wireless Internet Services, Inc. The document was recorded in the United States Patent and Trademark Office at Reel 013353 Frame 0917, or for which a copy thereof is attached.
3.	From: Cable & Wireless Internet Services, Inc. To: Savvis Asset Holdings, Inc. The document was recorded in the United States Patent and Trademark Office at Reel 017073 Frame 0142, or for which a copy thereof is attached.

☒ Additional documents in the chain of title are listed on a supplemental sheet.

☒ Copies of assignments or other documents in the chain of title are attached.

As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[Note: A separate copy (*i.e.,* a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Brian Siritzky/Reg. No. 37,497 — May 27, 2009

Signature — Date

Brian Siritzky, Ph.D. — 703-894-6405

Printed or Typed Name — Telephone Number

Title: Attorney, Registration No. 37497

STATEMENT UNDER 37 CFR 3.73(B) CONTINUED

Docket No. 2711-0054

4.	From: Savvis Asset Holdings, Inc. To: Savvis, Inc. The document was recorded in the United States Patent and Trademark Office at Reel 016038 Frame 0526, or for which a copy thereof is attached.
5.	From: Savvis, Inc. To: Savvis Communications Corporation The document was recorded in the United States Patent and Trademark Office at Reel 016004 Frame 0209, or for which a copy thereof is attached.
6.	From: Savvis Communications Corporation To: Mount Shasta Acquisition LLC The document was recorded in the United States Patent and Trademark Office at Reel 018847 Frame 0065, or for which a copy thereof is attached.
7.	From: Mount Shasta Acquisition LLC To: Level 3 Communications, LLC The document was recorded in the United States Patent and Trademark Office at Reel 018847 Frame 0077, or for which a copy thereof is attached.
8.	From: Ted Middleton To: Level 3 Communications, LLC The document was recorded in the United States Patent and Trademark Office at Reel _____ Frame ____, or for which a copy thereof is attached.

Attorney Docket No. 2711-**0054**

ASSIGNMENT of U.S. and Foreign Patent Rights to Level 3 Communications, LLC

(Inventors) **Ted MIDDLETON** of 4086 Bending Oak Ct., Moorpark, CA 93021

In consideration of the sum of one dollar ($1.00) and other good valuable considerations paid to each of the undersigned, the undersigned agree(s) to assign, and hereby does assign, transfer and set over to Level 3 Communications, LLC ("Level 3"), a corporation of Delaware, having an office and place of business at 1025 Eldorado Blvd., Broomfield, Colorado, the undersigned's entire right, title and interest in the invention, all applications filed therefor for patent in the United States and in foreign countries (including divisional applications, continuation applications, continued prosecution applications, continuation-in-part applications, substitute applications, renewal applications, reissue applications, reexamination applications, extensions, and all other patent applications that have been or shall be filed on the invention), all Letters Patent (including original patents, reissued patents, reexamination certificates, and extensions) which may be granted therefor in the United States and in foreign countries, and all rights of priority resulting from the filing of any such application, for the invention known as:
CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

for which the undersigned has already filed U.S. application Serial No. 10/259,497 on 09-30-2002.

The undersigned agree(s) to execute all papers and documents necessary in connection with the application or any interference which may be declared and any provisional-completion, utility, design, continuing or divisional applications thereof and also to execute separate assignments in connection with such applications as Level 3 may deem necessary or expedient and further to perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements.

The undersigned agree(s) to perform all affirmative acts which may be necessary to obtain a grant of valid United States and corresponding foreign patents to Level 3.

The undersigned hereby authorize(s) and request(s) the Commissioner of Patents to issue any and all Letters Patent of the United States resulting from said application or any division or divisions or continuing applications thereof to Level 3, as assignee of the entire interest, and hereby covenants that he has (they have) full right to convey the entire interest herein assigned, and that he has (they have) not executed and will not execute, any agreement in conflict herewith.

The undersigned hereby grant(s) the firm of Davidson Berquist Jackson & Gowdey, LLP the power to insert on this assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent Office for recordation of this document. It is understood and agreed that Level 3's attorneys Davidson Berquist Jackson & Gowdey LLP represent only Level 3 with respect to this invention.

In witness whereof, executed by the undersigned on the date(s) opposite the undersigned signature(s).

Date: 10/07/2008 Inventor: _____ Witness _____

Ted MIDDLETON

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 NUMBER	PATENT NUMBER	GROUP ART UNIT	FILE WRAPPER LOCATION
10/259,497		2451	21M1

OC000000038454548

Correspondence Address/Fee Address Change

The following fields have been set to Customer Number 83579 on 10/23/2009

- **Correspondence Address**
- **Power of Attorney Address**

The address of record for Customer Number 83579 is:

83579
LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

PART 1 - ATTORNEY/APPLICANT COPY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

POWER OF ATTORNEY, CORRESPONDENCE ADDRESS AND REVOCATION OF PRIOR POWERS

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

Sir:

Revocation: I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

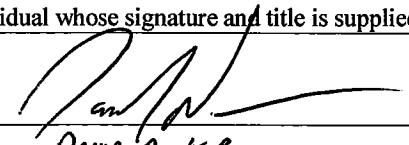
Power of Attorney: I hereby appoint the practitioners associated with customer number **83579**, individually and collectively, as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patents and patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Correspondence Address: Please recognize or change the correspondence address for the application/patent identified in the attached statement under 37 CFR 3.73(b) to the address associated with Customer Number **83579**.

Assignee Name and Address:

Level 3 Communications, LLC
1025 Eldorado Blvd.
Broomfield, Colorado 80021

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record The individual whose signature and title is supplied below is authorized to act on behalf of the assignee			
Signature		Date	10/27/09
Name	DAVID D. WIKER	Telephone	303-888-6166/720.888.3539
Title	SR. PATENT COUNSEL		

Electronic Acknowledgement Receipt

EFS ID:	6339331
Application Number:	10259497
International Application Number:	
Confirmation Number:	5284
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Customer Number:	83579
Filer:	Brian Siritzky
Filer Authorized By:	
Attorney Docket Number:	2711-0054
Receipt Date:	27-OCT-2009
Filing Date:	30-SEP-2002
Time Stamp:	15:25:39
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	Assignee showing of ownership per 37 CFR 3.73(b).	2711_0054_Stmt_under_37_CFR_3_73_b.pdf	156652 efe54d106f2f77e437edb255b18749bd6a349e41	no	2

Warnings:	
Information:	

2	Power of Attorney	Power_of_Attorney_83579_signed.pdf	46268 550f062854b29bca5ad8e4269c8154f9eb3649c7	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	202920

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.

STATEMENT UNDER 37 CFR 3.73(B)

Applicant: **Level 3 Communications, LLC** Docket No. 2711-0054

Application No. **10/259,497** Filed e: 09/30/2002

Entitled: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**

Assignee: **Level 3 Communications, LLC** A corporation

(Name of assignee) (Type of Assignee: corporation, partnership, university, government agency, etc.)

States that it is:

1. ☒ the assignee of the entire right, title, and interest; or

2. ☐ an assignee of less than the entire right, title and interest.
(The extent (by percentage) of its ownership interest is %)

in the patent application / patent identified above by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application / patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel , Frame , or for which a copy thereof is attached.

OR

B. ☒ A chain of title from the inventor(s), of the patent application / patent identified above, to the current assignee shown below:

1.	From: INVENTORS. To: Digital Island, Inc. The document was recorded in the United States Patent and Trademark Office at Reel 013353 Frame 0957.
2.	From: Digital Island, Inc. To: Cable & Wireless Internet Services, Inc. The document was recorded in the United States Patent and Trademark Office at Reel 013353 Frame 0917.
3.	From: Cable & Wireless Internet Services, Inc. To: Savvis Asset Holdings, Inc. The document was recorded in the United States Patent and Trademark Office at Reel 017073 Frame 0142.

☒ Additional documents in the chain of title are listed on a supplemental sheet.

☒ Copies of assignments or other documents in the chain of title are attached.

As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[Note: A separate copy (*i.e.,* a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Brian Siritzky/Reg. No. 37,497 October 27, 2009

Signature Date

Brian Siritzky, Ph.D. 703-894-6405

Printed or Typed Name Telephone Number

Attorney, Registration No. 37497

Title: _____

STATEMENT UNDER 37 CFR 3.73(B) CONTINUED

Application No. **10/259,497**
Docket No. 2711-0054

4.	From: Savvis Asset Holdings, Inc. To: Savvis, Inc. The document was recorded in the United States Patent and Trademark Office at Reel 016038 Frame 0526.
5.	From: Savvis, Inc. To: Savvis Communications Corporation The document was recorded in the United States Patent and Trademark Office at Reel 016004 Frame 0209.
6.	From: Savvis Communications Corporation To: Mount Shasta Acquisition LLC The document was recorded in the United States Patent and Trademark Office at Reel 018847 Frame 0065.
7.	From: Mount Shasta Acquisition LLC To: Level 3 Communications, LLC The document was recorded in the United States Patent and Trademark Office at Reel 018847 Frame 0077.
8.	From: Ted Middleton To: Level 3 Communications, LLC The document was recorded in the United States Patent and Trademark Office at Reel /Frame 022740 / 0672.

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 NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/259,497	09/30/2002	Paul E. Stolorz	2711-0054

CONFIRMATION NO. 5284

POA ACCEPTANCE LETTER

83579
LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

OC000000038504589

Date Mailed: 10/29/2009

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/27/2009.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/cbowen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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 NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/259,497	09/30/2002	Paul E. Stolorz	2711-0054

CONFIRMATION NO. 5284

POWER OF ATTORNEY NOTICE

83579
LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

OC000000038504554

Date Mailed: 10/29/2009

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/27/2009.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/cbowen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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

Bib Data Sheet

CONFIRMATION NO. 5284

SERIAL NUMBER	FILING OR 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/259,497	09/30/2002 RULE	709	2451	2711-0054

APPLICANTS

Paul E. Stolorz, Thousand Oaks, CA;
John K. Salmon, Altadena, CA;
Michael S. Warren, Santa Fe, NM;
Jeffrey Koller, Torrance, CA;
Aric Hagberg, Santa Fe, CA;
Maksim Yevmenkin, Thousand Oaks, CA;
Mark Brady, Thousand Oaks, CA;
David Pfitzner, Thousand Oaks, CA;

**** CONTINUING DATA ***************************

This appln claims benefit of 60/325,177 09/28/2001

**** FOREIGN APPLICATIONS *********************

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 10/28/2002

Foreign Priority claimed	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ yes ☐ no	CA	22	80	10

35 USC 119 (a-d) conditions met ☐ yes ☐ no ☐ Met after Allowance

Verified and Acknowledged _____ Examiner's Signature Initials

ADDRESS
83579

TITLE

CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

FILING FEE RECEIVED		
3508	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

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 NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
10/259,497	09/30/2002	2451	3508	2711-0054 (0093-US-U1)	80	10

CONFIRMATION NO. 5284

CORRECTED FILING RECEIPT

83579
LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

OC000000038127391

Date Mailed: 12/03/2009

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)

Paul E. Stolorz, Thousand Oaks, CA;
John K. Salmon, Altadena, CA;
Michael S. Warren, Santa Fe, NM;
Jeffrey Koller, Torrance, CA;
Aric Hagberg, Santa Fe, CA;
Maksim Yevmenkin, Thousand Oaks, CA;
Mark Brady, Thousand Oaks, CA;
David Pfitzner, Thousand Oaks, CA;

Assignment For Published Patent Application

Cable & Wireless Internet Services, Inc., San Francisco, CA

Power of Attorney: The patent practitioners associated with Customer Number 83579

Domestic Priority data as claimed by applicant

This appln claims benefit of 60/325,177 09/28/2001

Foreign Applications

If Required, Foreign Filing License Granted: 10/28/2002

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 10/259,497**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

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).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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 AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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

In re PATENT APPLICATION OF:	Attorney Docket: 0093-US-U1
Stolorz, Paul E. et al.	Group Art Unit: 2451
Application Serial No.: 10/259,497	Examiner: John B. Walsh
Application Filing Date: 09/30/2002	Confirmation No.: 5284
Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**	Date: January 7, 2010

PETITION TO WITHDRAW APPLICATION FROM ISSUE UNDER RULE 1.313(c)(2)

Mail Stop 313(c)
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please withdraw the above application from issuance under Rule 1.313(c)(2). Applicant is filing, contemporaneously with this petition, a *Request for Continued Examination* and an *Information Disclosure Statement*.

The Commissioner is authorized to charge our deposit account no. 501860 for the required fee.

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.

The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/Order Nos. shown above.

This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed.

CUSTOMER NUMBER

83579

Respectfully submitted,

/Brian Siritzky/Reg. No. 37,497

By:_____

Brian Siritzky, Ph.D.
Registration No.: 37,497
703.894.6405

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF:
Stolorz, Paul E. et al.
Application Serial No.: 10/259,497
Application Filing Date: 09/30/2002
Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**

Attorney Docket: 0093-US-U1
Group Art Unit: 2451
Examiner: John B. Walsh
Confirmation No.: 5284
Date: January 7, 2010

via EFS-Web

Mail Stop 313(c)
Hon. Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REQUEST FOR CONTINUED EXAMINATION (RCE)

This is a request for continued examination (RCE) under 37 CFR 1.114 of the above-identified application. Please continue the examination of this application.

Prerequisites
• This application was filed on/after June 8, 1995, is not abandoned, and no court action has been filed, or if filed, it has been terminated. • An issue fee has not been paid (unless a petition under Rule 313(c)(2) is also being filed – see item 4 below). • Prosecution has been closed as defined in Rule 114(b). • Reply to any outstanding action and Rule 17(e) fee must be enclosed.

This application is entitled under Rule 114 to withdrawal of any outstanding finality or of any allowance plus a new action by the Examiner. Consideration on the merits of each submission (e.g., IDS, Amendment, new arguments, new evidence, but not appeal/reply briefs themselves) filed herewith or before the new action is respectfully requested.

Please consider the following before the next Official Action:

1. Submission required under 37 CFR 1.114:						
a.	☐	**Previously submitted**. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked. Please ☐ enter ☐ do not enter the Amendment filed .				
	i.	☐	Consider the arguments in the appeal brief filed and/or reply brief filed			
	ii.	☐	Other:			
b.	☒	**Enclosed**				
	i.	☐	Amendment / Reply	**iii**	☒	Information Disclosure Statement (IDS)
	ii.	☐	Affidavit(s) / Declaration(s)	**iv**	☒	Other: Form PTO 1449

Continued on next page . . .

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: **Petition to Withdraw (under Rule 313(c)(2))**

3. After payment of issue fee:		
	☒	The issue fee has been paid, but this RCE is based on Rule 313(c)(2). See enclosed petition.
		☒ IDS Letter ☐ Cited Appln(s) ☐ Foreign Search Report/OA ☒ PTO-1449 ☐ Cited Documents

4. 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, any underpayment of fees, or credit any overpayments, to Deposit Account No. **501860**, order no. **2711-0054**.	
	i.	☒	RCE fee required under 37 CFR 1.17(e) in the amount of $810
	ii.	☐	Extension of time fee (37 CFR 1.136 and 1.17) [Petition for Extension of Time filed herewith]
	iii.	☒	Other **Fee under 37 CFR 1.17(h) for Petition to Withdraw (under Rule 313(c)(2))**
b.	☐	Check number in the amount of $ enclosed	

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.

The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached

This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed.

CUSTOMER NUMBER	Respectfully submitted,
83579	**/Brian Siritzky/Reg. No. 37,497** By:_____ Brian Siritzky, Ph.D. Registration No.: 37,497

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF:	Attorney Docket: 0093-US-U1
Stolorz, Paul E. et al.	Group Art Unit: 2451
Application Serial No.: 10/259,497	Examiner: John B. Walsh
Application Filing Date: 09/30/2002	Confirmation No.: 5284
Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**	Date: January 7, 2010

INFORMATION DISCLOSURE STATEMENT

via EFS-Web

Mail Stop 313(c)
Hon. Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. § 1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. One copy of each non-U.S. Patent reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The submission of any document herewith, which is not a statutory bar, is not intended that any such document constitutes prior art against any of the claims of the present application or is considered to be material to patentability as defined in 37 C.F.R. § 1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference against the claims of the present application.

This Information Disclosure Statement is being filed with a *Request For Continued Examination* (RCE). No certification or fee is required.

Please credit or debit Deposit Account No. 501860 as needed under 37 C.F.R. § 1.17(p) to ensure consideration of the disclosed information.

The Examiner's attention is directed to co-pending U.S. Patent Applications No. 10/976,648, filed 10-26-2007, and 11/932,162, filed 10-31-2007, which are directed to related technical subject matter. The identification of this U.S. Patent Application is not to be construed as a waiver of secrecy as to that application now or upon issuance of the present application as a patent. The Examiner is respectfully requested to consider the cited application and the art cited therein during examination.

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.
The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached **This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed**.

CUSTOMER NUMBER	Respectfully submitted,
83579	**/Brian Siritzky/Reg. No. 37,497** By:_____ Brian Siritzky, Ph.D. Registration No.: 37,497 703.894.6405

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 1 of 1		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
	1-1	US-7185052	2007/02/27	Day
	1-2			
	1-3			
	1-4			
	1-5			
	1-6			
	1-7			
	1-8			
	1-9			
	1-10			
	1-11			
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	1-14			
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	1-16			
	1-17			
	1-18			
	1-19			
	1-20			
	1-21			
	1-22			
	1-23			
	1-24			
	1-25			
	1-26			

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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.

Electronic Patent Application Fee Transmittal

Application Number:	10259497
Filing Date:	30-Sep-2002
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Filer:	Brian Siritzky
Attorney Docket Number:	0093-US-U1

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:				
Petition fee- 37 CFR 1.17(h) (Group III)	1464	1	130	130
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Request for continued examination	1801	1	810	810
		Total in USD ($)		**940**

Electronic Acknowledgement Receipt

EFS ID:	6768319
Application Number:	10259497
International Application Number:	
Confirmation Number:	5284
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Customer Number:	83579
Filer:	Brian Siritzky
Filer Authorized By:	
Attorney Docket Number:	0093-US-U1
Receipt Date:	07-JAN-2010
Filing Date:	30-SEP-2002
Time Stamp:	15:12:57
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$940
RAM confirmation Number	1450
Deposit Account	501860
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	**Document Description**	**File Name**	**File Size(Bytes)/ Message Digest**	**Multi Part /.zip**	**Pages (if appl.)**
1	Petition to Withdraw from Issue	PA_Petition_to_Withdraw_from_issue_for_RCE_filed_01_07_10.pdf	193874 e2fa90d6c821bfc33b3f4d303113bccc87873047	no	1
Warnings:					
Information:					
2	Request for Continued Examination (RCE)	PA_RCE_filed_01_07_10.pdf	260663 7be45e88e4d2c278c7f788894c126ff1923d1c1a	no	2
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
3	Transmittal Letter	PA_IDS_filed_w_RCE_01_07_10.pdf	215449 8467fb20fb6e498269acc216491a95e21cd8cd46	no	2
Warnings:					
Information:					
4	Information Disclosure Statement (IDS) Filed (SB/08)	PA_1449_filed_with_RCE_01_07_10.pdf	62990 bc5053aa992a941d62c6738d2d3e9216a6a2a957	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
5	Fee Worksheet (PTO-875)	fee-info.pdf	32424 a8f3f14138995e9e878ce56d39be4e0ec6303c9f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	765400		

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

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis MN 55402

In re Application of	:	
Paul E. Stolorz, et al.	:	
Application No. 10/259,497	:	DECISION GRANTING PETITION
Filed: September 30, 2002	:	UNDER 37 CFR 1.313(c)(2)
Attorney Docket No. 0093-US-U1	:	

This is a decision on the petition under 37 CFR 1.313(c)(2), filed January 7, 2010, to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED**.

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). *See* 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid on May 27, 2009 cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.[1]

Telephone inquiries should be directed to Terri Johnson at (571) 272-2991.

This application is being referred to Technology Center AU 2451 for processing of the request for continued examination under 37 CFR 1.114 and for consideration of the concurrently filed information disclosure statement.

Terri Johnson
Petitions Examiner
Office of Petitions

[1] *The request to apply the issue fee to the new Notice may be satisfied by completing and returning the new Part B – Fee(s) Transmittal Form (along with any balance due at the time of submission). Petitioner is advised that the Issue Fee Transmittal Form must be completed and timely submitted to avoid abandonment of the application.*

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 1 of 1		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	1-1	Office Action from Chinese Patent Office for application non. 02821371.8, Jan. 29, 2010, in Chinese with translation.	
	1-2	Office Action from Chinese Patent Office for application non. 02821371.8, Jan. 4, 2008, in Chinese with translation.	
	1-3	Office Action from Chinese Patent Office for application non. 02821371.8, May 8, 2009, in Chinese with translation.	
	1-4		
	1-5		
	1-6		
	1-7		

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abstract, T = Translation, PT = Partial Translation, SOR = Statement of Relevancy, PF = Patent Family.

Electronic Acknowledgement Receipt

EFS ID:	7209023
Application Number:	10259497
International Application Number:	
Confirmation Number:	5284
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Customer Number:	83579
Filer:	Brian Siritzky
Filer Authorized By:	
Attorney Docket Number:	0093-US-U1
Receipt Date:	15-MAR-2010
Filing Date:	30-SEP-2002
Time Stamp:	15:16:13
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	Transmittal Letter	PA_IDS_filed__03_15_10.pdf	191781 87a6693dd06bc8fafa72845fda5232fa12389fc5	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Filed (SB/08)	PA-1449_03_15_2010.pdf	63246 65a213f439fd681a279669fb8b179008ed505a65	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	NPL Documents	NP0001.pdf	2213727 8830d11c8241bef90a72af612434afdbb65821a4	no	13
Warnings:					
Information:					
4	NPL Documents	NP0002.pdf	1402338 5720915769fea9e395a266f045c8b9a00825c0be	no	8
Warnings:					
Information:					
5	NPL Documents	NP0000.pdf	2123614 c3f64bccee8c6841d69a4a38d9071b8cdfb77924	no	10
Warnings:					
Information:					
		Total Files Size (in bytes):	5994706		

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF:	Attorney Docket: 0093-US-U1
Stolorz, Paul E. et al.	Group Art Unit: 2451
Application Serial No.: 10/259,497	Examiner: John B. Walsh
Application Filing Date: 09/30/2002	Confirmation No.: 5284
Title: **CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT**	Date: March 15, 2010

INFORMATION DISCLOSURE STATEMENT

via EFS-Web
Hon. Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. § 1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. One copy of each non-U.S. Patent reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The submission of any document herewith, which is not a statutory bar, is not intended that any such document constitutes prior art against any of the claims of the present application or is considered to be material to patentability as defined in 37 C.F.R. § 1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference against the claims of the present application.

This Information Disclosure Statement cites a recent office action (**Jan. 29, 2010**) from a related Chinese patent application (No. 02821371.8). In addition, two earlier office actions (from May, 2009 and Jan. 2008) from that Chinese application are cited. If the Examiner has any questions about that application or

requires any additional information, he is respectfully requested to contact the undersigned at the number provided.

Please credit or debit Deposit Account No. 501860 as needed under 37 C.F.R. § 1.17(p) to ensure consideration of the disclosed information.

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.
The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached **This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed**.

CUSTOMER NUMBER	Respectfully submitted,
83579	**/Brian Siritzky/Reg. No. 37,497** By:_____ Brian Siritzky, Ph.D. Registration No.: 37,497 703.894.6405

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
DIW Apr-10

LEVEL 3 COMMUNICATIONS, LLC
C/O CPA GLOBAL
P.O. BOX 52050
MINNEAPOLIS MN 55402

MAILED

APR 05 2010

OFFICE OF PETITIONS

In re Application of :
Stolorz et al. :
Application Number: 10/259497 : ON PETITION
Filing Date: 09/30/2002 :
Attorney Docket Number: 0093-US-U1 :

This is a decision in reference to the petitions filed on May 27, 2009, which are treated as (a) a petition under 37 CFR 1.48(a)(1) requesting a person be added as a named inventor and (b) a petition under 37 CFR 1.183 requesting waiver of 37 CFR 1.64 which requires that a named inventor execute a supplemental declaration.

The petition is **DISMISSED**.

Applicant is given TWO MONTHS from the mailing date of this decision to reply, correcting the below-noted deficiencies. Any reply should be entitled "Request for Reconsideration of Petition Under 37 CFR 1.183 and 1.48," and should only address the deficiencies noted below, except that the reply may include an oath or declaration executed by the non-signing inventor. **FAILURE TO RESPOND WILL RESULT IN ABANDONMENT OF THE APPLICATION.** Extensions of time may be obtained in accordance with 37 CFR 1.136(a).

On September 30, 2002, the above-identified application was filed with a declaration naming Paul E. Stolorz, John K. Salmon, Michael S. Warren, Jeffrey Koller, Aric Hagberg, Maksim Yevmenkin, Mark Brady, and David Pfitzner as joint inventors.

On May 27, 2009, the present petitions were filed. Petitioners request that Ted Middleton be added as a named inventor under 37 CFR 1.48(a)(1). Petitioners also request waiver under 37 CFR 1.183 of 1.64 in that three named inventors, Stolorz, Salmon, and Hagberg, refuse to execute the supplemental declaration naming them as joint inventors.

Petition Under 37 CFR 1.48(a).

37 CFR 1.48(a) requires that an amendment to the named inventive entity be accompanied by:

(1) a petition including a statement from each person being added and each person being deleted as an inventor that the error occurred without deceptive intention on his or her part;

(2) an oath or declaration by each actual inventor or inventors as required by 37 CFR 1.63 or as permitted by 37 CFR 1.42, 1.43 or 1.47;

(3) the fee set forth in 37 CFR 1.17(i), and

(4) the written consent of any existing assignee, if any of the originally named inventors has executed an assignment.

The petition lacks item (2).

As described below, the petition lacks item (2) in that non-initialed and/or non - dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c). Specifically, there are non-initialed alterations in the space for joint inventor Yevmenkin's signature.

Petition Under 37 CFR 1.183 to waive 1.64.

Petitioners assert that inventors Stolorz, Salmon, and Hagberg have refused to sign the declaration naming them and the other listed inventors, and the person sought to be added as a joint inventor, as joint inventors.

Suspension of the rules under 37 CFR 1.183 may be granted in an "extraordinary situation, when justice requires." The facts presented on the record do not adequately establish an extraordinary situation. Petitioner has not sufficiently established any special circumstances of equities that would require suspension of the rules in the interests of justice.

This application bears an original Declaration executed by joint inventors Stolorz, Salmon, and Hagberg and, thus, the provisions of 37 CFR 1.47 do not apply with regard to Stolorz's, Salmon's, and Hagberg's signatures. Nevertheless, it is appropriate to apply the principles thereof to the situation at hand.

As stated above, the declaration is objected to in that it contains non-initialed and/or non-dated alterations with respect to joint inventor Yevmenkin. As such, the petition is dismissed without prejudice to reconsideration pending submission of a supplemental declaration without non-initialed and/or non-dated alterations.

It is further noted that the last letters mailed to Stolorz, Salmon, and Hagberg were mailed on May 18, 2009, and were delivered on May 19, 2009, eight (8) days before the subject petition was filed. Given the short time frame between the mailing of the letters asking for the declaration to be signed and returned, and the filing of the subject petition, petitioners should explain whether an executed supplemental declaration was received from any of the inventors after the filing of the subject petition.

Further correspondence with respect to this matter should be addressed as follows:

By mail: Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX: (571) 273-8300
Attn: Office of Petitions

By hand: Customer Service Window
Mail Stop Petition
Randolph Building
401 Dulany Street
Alexandria, VA 22314

A reply may also be filed using the EFS-Web System of the USPTO.

Telephone inquiries related to this decision should be directed to the undersigned at 571-272-3231.



Douglas I. Wood
Senior Petitions Attorney
Office of Petitions

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 1 of 4		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	STOLORZ, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. WALSH
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
	1-1	US-2004039798	2004/02/26	Hotz, et al.
	1-2	US-7373644	2008/05/13	Aborn
	1-3	US-7577754	2009/08/18	Garcia-Luna-Aceves, et al.
	1-4			
	1-5			
	1-6			
	1-7			
	1-8			
	1-9			
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	1-22			
	1-23			
	1-24			
	1-25			
	1-26			

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 2 of 4		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	STOLORZ, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. WALSH
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication Date	Name of Patentee or Applicant of Cited Document	Notes
	2-1	JP 10-70571	1998/03/10	IBM	
	2-2	JP 5-130144	1993/05/25	FUJITSU LTD	
	2-3	KR 1999-72167	1999/09/27	Stanford-Clark	
	2-4				
	2-5				
	2-6				
	2-7				
	2-8				
	2-9				
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	2-21				
	2-22				
	2-23				
	2-24				
	2-25				
	2-26				

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abstract, T = Translation, PT = Partial Translation, SOR = Statement of Relevancy, PF = Patent Family.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 3 of 4		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	STOLORZ, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. WALSH
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	3-1	Claims (amended) filed by applicant in Japanese Patent Application No. 2003-531370, Jan. 17, 2008 (English translation provided by foreign associate) [12 pgs.]	
	3-2	Claims (amended) filed by applicant in KIPO for Korean Patent Application No. KR 10 2004 7004613, July 24, 2009 (English translation provided by foreign associate) [10 pgs.]	
	3-3	European Patent Application No. 02799672.7, file history as of April 23, 2010 (downloaded from EPO).	
	3-4	International Preliminary Examination Report (IPER), Form PCT/IPEA/409, for PCT/US02/30921, October, 2005 [5 pgs.]	
	3-5	International Search Report (ISR), Form PCT/ISA/210, for PCT/US02/30921, Jan. 28, 2004 [5 pgs.]	
	3-6	Japanese Patent Office (JPO) "Notice of Reasons for Rejection", for Japanese Patent Application No. 2003-531370, July 17, 2007, "Organized Translation" provided by foreign associate [2 pgs.]	
	3-7	Japanese Patent Publication JP 10-70571,June, 1997, International Business Machines Corporation, English translation provided with Office Action [34 pgs.]	

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abstract, T = Translation, PT = Partial Translation, SOR = Statement of Relevancy, PF = Patent Family.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 4 of 4	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	STOLORZ, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. WALSH
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	4-1	Japanese Patent Publication JP 5-130144, Published 1993-05-25, Fujitsu Ltd., English translation provided with Office Action [9 pgs.]	
	4-2	Korean Intellectual Property Office (KIPO), Notice of Preliminary Rejection (Non-Final)) for Korean Patent Application No. KR 10 2004 7004613, April 24, 2009, English translation (provided by foreign associate) [5 pgs.]	
	4-3		
	4-4		
	4-5		
	4-6		
	4-7		

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abstract, T = Translation, PT = Partial Translation, SOR = Statement of Relevancy, PF = Patent Family.

Electronic Acknowledgement Receipt

EFS ID:	7483702
Application Number:	10259497
International Application Number:	
Confirmation Number:	5284
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Customer Number:	83579
Filer:	Brian Siritzky
Filer Authorized By:	
Attorney Docket Number:	0093-US-U1
Receipt Date:	26-APR-2010
Filing Date:	30-SEP-2002
Time Stamp:	12:12:07
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	Transmittal Letter	PA_IDS_filed_04_26_10.pdf	223036 3648f0a766aeee0f7ec3afd96eab20c7f82dc2c9	no	4

Warnings:	
Information:	

2	Foreign Reference	F0000.pdf	10582606 43567b74ff84956ec2f6451648fe73d3864a66ef	no	60
Warnings:					
Information:					
3	Foreign Reference	F0001.pdf	2457200 ec8566fa7bddd42efe3bcce9fdd31deae021565e	no	14
Warnings:					
Information:					
4	NPL Documents	NP0001.pdf	2224644 9dcd0018e7d8628e2cbcf3cc732674a31bcbad0f	no	10
Warnings:					
Information:					
5	NPL Documents	NP0002.pdf	10342909 7f5237c81343661a051c7c9968c9c2f16b6967f4	no	263
Warnings:					
Information:					
6	NPL Documents	NP0003.pdf	198054 da32a0a1fbb504f5f0f8c10cb391e8d1559b28b4	no	5
Warnings:					
Information:					
7	NPL Documents	NP0004.pdf	255621 a7a4a3a1f087358bffe828d99f070bc68f219068	no	5
Warnings:					
Information:					
8	NPL Documents	NP0005.pdf	94580 f4808e15eb54c15e5aaa264a48f3c92d506824f3	no	2
Warnings:					
Information:					
9	NPL Documents	NP0006.pdf	10582606 43567b74ff84956ec2f6451648fe73d3864a66ef	no	60
Warnings:					
Information:					
10	NPL Documents	NP0007.pdf	2435715 09460212fb8a8a968dba997e7a95328fd3d25b97	no	14
Warnings:					
Information:					

11	NPL Documents	NP0008.pdf	3159404 8c7d6d8d3395cb8e4a0468be53220741789aaad8	no	5
Warnings:					
Information:					
12	Information Disclosure Statement (IDS) Filed (SB/08)	PA_1449_with_IDS_filed_04_26_10.pdf	631108 9e76c5faeeaa31f32e0781720007dc2b73a4e199	no	4
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
13	NPL Documents	Claims_xlate_in_JP_2003_531370_ITM_.pdf	3070065 8dc04f536be2f64d0d36cba04b83fbd35a949a64	no	12
Warnings:					
Information:					
		Total Files Size (in bytes):	46257548		

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF: STOLORZ, Paul E. et al.	Attorney Docket: 0093-US-U1
	Group Art Unit: 2451
Application Serial No.: 10/259,497	Examiner: John B. Walsh
Application Filing Date: 09/30/2002	Confirmation No.: 5284
Title: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT	Date: April 26, 2010

INFORMATION DISCLOSURE STATEMENT

via EFS-Web
Hon. Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. § 1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. One copy of each non-U.S. Patent reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The submission of any document herewith, which is not a statutory bar, is not intended that any such document constitutes prior art against any of the claims of the present application or is considered to be material to patentability as defined in 37 C.F.R. § 1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference against the claims of the present application.

This IDS is intended to be in full compliance with the rules, but should the Examiner find any part of its requirement content to have been omitted, prompt notice to that effect is earnestly solicited, along with additional time under Rule 97(f), to enable Applicant to comply fully.

RELATED APPLICATIONS

The Examiner's attention is again directed to co-pending U.S. Patent Applications No. 10/976,648, filed 10-26-2007, and 11/932,162, filed 10-31-2007, which are directed to related technical subject matter. The identification of this U.S. Patent Application is not to be construed as a waiver of secrecy as to that application now or upon issuance of the present application as a patent. The Examiner is respectfully requested to consider the cited application and the art cited therein during examination.

The Examiner's attention is also directed to the following non-U.S. Patents and patent applications which are directed to related technical subject matter:

Office Code	Reference / Application Number	Status
PCT	PCT/US02/30921	expired
CN	02821371.8	pending
EP	2002799672	pending, published: July 14, 2004
JP	2003531370	issued as JP 4160506, Granted July 25, 2008
KR	1020047004613	Published: 14.09.2004, Granted: 11.11.2009 Korean Patent No. 10-093190

Documents from these applications have been previously submitted in this application and / or are being submitted herewith.

In a recent Office Action (04/05/2010) in related U.S. application no. 11/932,162, the Examiner cited the following three U.S. Patents:

Number	Name
US-7,577,754	Garcia-Luna-Aceves et al.
US-7,373,644	Aborn, Justin
US-7,103,645	Leighton et al.

US 7,103,645 (Leighton) was previously cited to the PTO in this case (in an IDS filed May 31, 2007, cite no. 6-24 on Sheet 6 of the form 1449). The reference was considered by the Examiner in this case on June 14, 2007.

In addition, in the 04/05/2010 Office Action in 11/932,162, the Examiner stated:

> The applicant's IDS of March 15, 2010 [in US 11/932,162] cited an Office Action from the Chinese Patent Office. That Action cited an EP reference that has not been provided. A search for that reference, resulted in references that cited the particular EP reference which are being made of record.

Applicant believes that the EP reference referred to by the Examiner is EP 0817 444 A2 (hereinafter "EP '444"). EP '444 was cited in an IDS in this application (IDS filed Aug. 31, 2007, cite no. 8-4 on sheet 8 of the form 1449), and was considered by the Examiner on Sept. 19, 2007.

Applicant has previously provided the Office with a Search Report dated April 17, 2008 for related European Patent Application No. EP 02799672.7. That Search Report was cited in the IDS in this application filed May 12, 2008 (ref. 4-1 on sheet 4 of the form 1449, cited as "Communication (1 page) and European Search Report (with Annex) for Appln. No. EP 02799672.7, dated April 17, 2008"). That Search Report was considered by the Examiner in this application on June 12, 2008. That European Search Report cited, *inter alia*, EP 0 817 444.

Additionally, EP '444 corresponds to US 6,154,777 which was cited in this application in the IDS filed Aug. 31, 2007, cite no. 6-16 (on sheet 16 of the form 1449), considered by the Examiner on Sept. 19, 2007.

If the Examiner has any questions about any of these applications or requires any additional information, he is respectfully requested to contact the undersigned.

Please credit or debit Deposit Account No. 501860 as needed under 37 C.F.R. § 1.17(p) to ensure consideration of the disclosed information.

Contingent IDS Request Under Rule 97(c): Should a first Office Action on the merits issue with a mailing date which precedes or is the same as the filing date of this IDS, please consider this a Request under Rule 97(c), charge the IDS fee (per rule 17(p)) to our Deposit Account No. 501860 under Order No. 2711-0096 and proceed to consider this IDS under Rule 97(c).

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.
The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached **This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed.**

CUSTOMER NUMBER	Respectfully submitted,
83579	**/Brian Siritzky/Reg. No. 37,497** By:_____ Brian Siritzky, Ph.D. Registration No.: 37,497 703.894.6405

PATENT COOPERATION TREATY

REC'D 03 OCT 2005
WIPO PCT

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

REC'D 03 OCT 2005
WIPO PCT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 18404/141808	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US02/30921	International filing date *(day/month/year)* 30 September 2002 (30.09.2002)	Priority date *(day/month/year)* 28 September 2001 (28.09.2001)
International Patent Classification (IPC) or national classification and IPC IPC(7): G06F 15/16 and US Cl.: 709/230		
Applicant CABLE & WIRELESS INTERNET SERVICE, INC.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of ___ sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☒ Non-establishment of report with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
25 April 2003 (25.04.2003)	18 September 2005 (18.09.2005)
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/ US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Saleh Najjar Telephone No. (571) 272-3900

Form PCT/IPEA/409 (cover sheet)(July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/30921

I. Basis of the report

1. With regard to the **elements** of the international application:*

☒ the international application as originally filed.

☒ the description:
pages 1-39 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☒ the claims:
pages 40-62, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☒ the drawings:
pages 1-22, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages NONE

☐ the claims, Nos. NONE

☐ the drawings, sheets/~~fig~~ NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*
*** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

Form PCT/IPEA/409 (Box I) (July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/30921

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The question whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been and will not be examined in respect of:

☐ the entire international application,

☒ claims Nos. 15, 20-28, 33, 36-41, 46, 47, 52-62, 67, 70-80

because:

☐ the said international application, or the said claim Nos. _____ relate to the following subject matter which does not require international preliminary examination *(specify)*:

☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. _____ are so unclear that no meaningful opinion could be formed *(specify)*:

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 15,20-28,33,36-41,46,47,52-62,67 and 70-80

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

Form PCT/IPEA/409 (Box III) (July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US02/30921

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims Please See Continuation Sheet	YES
	Claims Please See Continuation Sheet	NO
Inventive Step (IS)	Claims Please See Continuation Sheet	YES
	Claims Please See Continuation Sheet	NO
Industrial Applicability (IA)	Claims Please See Continuation Sheet	YES
	Claims Please See Continuation Sheet	NO

2. CITATIONS AND EXPLANATIONS

Claims 1-14, 16-19, 29-32, 34-35, 42-45, 48-51, 63-66, 68 and 69 meet the criteria set out in PCT Article 33(2)-(3), because the prior art (EP 0 817 444 A, US 6,282,574 B1, WO 00/52594 A) does not teach or fairly suggest a framework for delivery of Internet content comprising: a subscriber server network; and at least one domain name server constructed and adapted to provide policy-based domain name service, wherein, in response to a request to resolve a hostname, the domain name server attempts to resolve the hostname to at least one address corresponding a server in the subscriber server network *based on at least one policy consideration.*

Claims 1-14, 16-19, 29-32, 34-35, 42-45, 48-51, 63-66, 68 and 69 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

V.1. Reasoned Statements:
The opinion as to Novelty was positive (Yes)with respect to claims 1-14, 16-19, 29-32, 34-35, 42-45, 48-51, 63-66, 68, 69
The opinion as to Novelty was negative (No) with respect to claims NONE
The opinion as to Inventive Step was positive (Yes)with respect to claims 1-14, 16-19, 29-32, 34-35, 42-45, 48-51, 63-66, 68, 69
The opinion as to Inventive Step was negative(NO) with respect to claims NONE
The opinion as to Industrial Applicability was positive (YES) with respect to claims 1-14, 16-19, 29-32, 34-35, 42-45, 48-51, 63-66, 68, 69
The opinion as to Industrial Applicability was negative(NO) with respect to claims NONE

INTERNATIONAL SEARCH REPORT

Interna l Application No
PCT/US 02/30921

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04L29/12

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 817 444 A (SUN MICROSYSTEMS INC) 7 January 1998 (1998-01-07) abstract figure 3 column 1, line 1 - column 3, line 21 column 5, line 6 - column 7, line 58	1-14, 16-19, 29-32, 34,35, 42-45, 48-51, 63-66, 68,69
X	US 6 282 574 B1 (VOIT ERIC A) 28 August 2001 (2001-08-28) column 4, line 40 - line 50	1

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

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

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

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 November 2003	28. 01. 04

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Raible, M

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Interna | Application No
PCT/US 02/30921

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/52594 A (JOFFE RODNEY L ;LACHMAN RONALD (US); ULTRADNS INC (US); HOTZ MICHA) 8 September 2000 (2000-09-08) page 4, line 1 - page 7, line 6 page 16, line 17 - line 25 -----	1

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Int onal application No.
PCT/US 02/30921

Box I ***Observations where certain claims were found unsearchable*** **(Continuation of item 1 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such *an extent that no meaningful International Search can be carried out, specifically:*

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

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

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-14,16-19,29-32,34-35,42-45,48-51,63-66,68,69

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-14,16-19,29-32,34-35,42-45,48-51,63-66,68,69

   Method and system for policy dependent name to address resolution

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2. claims: 15,20-28,33,36-41,46,47,52-62,67,70-80

   Method and system for administration and monitoring of a policy based name server network

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INTERNATIONAL SEARCH REPORT

...rmation on patent family members

Internat Application No
PCT/US 02/30921

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0817444 A	07-01-1998	US 6154777 A	28-11-2000
		EP 0817444 A2	07-01-1998
		JP 10126445 A	15-05-1998
US 6282574 B1	28-08-2001	US 6104711 A	15-08-2000
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		US 6205139 B1	20-03-2001
		US 6215790 B1	10-04-2001
		US 6157636 A	05-12-2000
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		WO 0052594 A2	08-09-2000

Form PCT/ISA/210 (patent family annex) (July 1992)

(19)日本国特許庁（ＪＰ）　(12) **公開特許公報（Ａ）**　(11)特許出願公開番号

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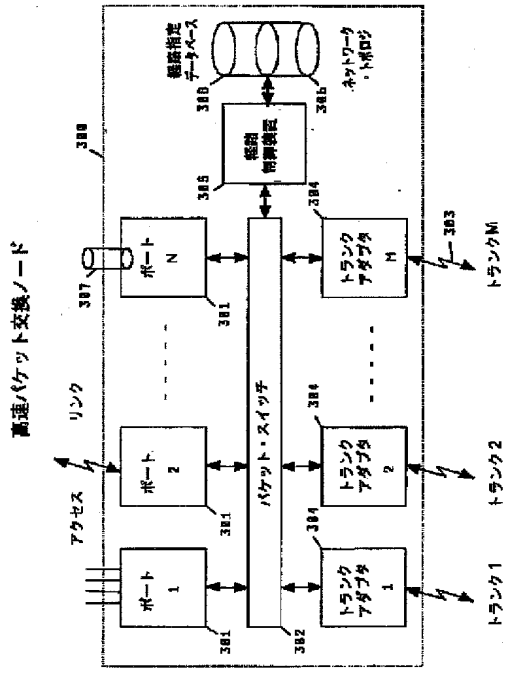
最終頁に続く

(54)【発明の名称】　最適パス決定方法

(57)【要約】

【課題】　本発明は、高速パケット交換ネットワークに関し、特に起点ノードと宛先ノードとの間の接続を確立するための時間を最小限にするための方法およびシステムに関する。

【解決手段】　ネットワーク・ノードから発生した接続の多くは同じ宛先ネットワーク・ノードまで流れる。したがって、同じノードに向かういくつかの接続についてすでに計算した同じパスを再使用すると、重大な利益が得られる可能性がある。接続が要求された時点で計算されたパスは、経路指定データベースに記録され、ネットワークで変更が発生するたびに更新される。さらに、障害時または優先使用時の非中断パス・スイッチをサポートするための代替パスと、潜在的宛先ノードに向かう新しいパスは、接続セットアップ・プロセスがアイドル状態のときに計算し格納することができる。この最後の動作は、処理優先順位が低く、接続要求がない場合に、背景で実行される。



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【特許請求の範囲】
【請求項１】伝送リンク（２０９）によって相互接続された複数のノード（２０１～２０８）を含むパケット交換通信ネットワーク内で起点ノードと宛先ノードとの間の最適パスを決定する方法において、前記方法が、
各接続要求ごとに、経路指定データベース内で前記接続要求を満足する事前計算パスを選択するステップと、
接続要求を満足する事前計算パスが経路指定データベース内にすでに格納されていない場合に、前記接続要求を満足するパスを計算し、前記パスを経路指定データベース内に格納するステップと、
定期的に、またはネットワーク内の少なくとも１つの所定の事象に応じて、経路指定データベースに格納されたパスを再計算するステップとを含むことを特徴とする方法。
【請求項２】ネットワーク内の前記所定の事象が、
経路指定要求と、
トラフィック変動と、
ネットワーク構成変更とを含むことを特徴とする、請求項１に記載の方法。
【請求項３】経路指定データベースに格納された各事前計算パスごとに、同じ起点ノードと同じ宛先ノードを備えた少なくとも１つの代替パスを計算するステップをさらに含むことを特徴とする、請求項１または２に記載の方法。
【請求項４】事前計算パスと比較して、起点ノードからの別の発信リンクと宛先ノードへの別の着信リンクとを使って代替パスが計算されることを特徴とする、請求項３に記載の方法。
【請求項５】起点ノードから可能なすべての宛先ノードへのパスを計算するステップをさらに含むことを特徴とする、請求項１ないし４のいずれか一項に記載の方法。
【請求項６】選択を行わずに所定の期間後に経路指定データベースから事前計算パスが除去されることを特徴とする、請求項１ないし５のいずれか一項に記載の方法。
【請求項７】定期的に、またはネットワーク内の少なくとも１つの所定の事象に応じて、経路指定データベースに格納されたパスを再計算するステップと、
経路指定データベースに格納された各事前計算パスごとに、同じ起点ノードと同じ宛先ノードを備えた少なくとも１つの代替パスを計算するステップと、
起点ノードと可能なすべての宛先ノードとの間のパスを計算するステップと、
事前計算パスを除去するステップとが、接続要求がない場合に実行されることを特徴とする、請求項１ないし６のいずれか一項に記載の方法。
【請求項８】前記経路指定データベースが、ネットワーク構成およびトラフィック特性を含むトポロジ・データベースに接続され、ネットワーク制御メッセージによって更新され、

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複数の項目を備えたパス・テーブルであって、各項目が起点ノードと宛先ノードとの間の事前計算経路指定パスを表し、
－　宛先ノードのＩＤと
－　パスの特性と
－　起点ノードから始まるパス上の第１のリンクのＩＤとを含む、パス・テーブルと、
複数の項目を備えたリンク・テーブルであって、各項目がパス・テーブルに格納された事前計算パス上のリンクを表し、
－　リンクのＩＤと
－　リンクの特性と
－　リンクが属すパスのＩＤと
－　起点ノードから始まるパスに沿って次のリンクのＩＤとを含む、リンク・テーブルとを含むことを特徴とする、請求項１ないし７のいずれか一項に記載の方法。
【請求項９】請求項１ないし８のいずれか一項に記載の方法を実施するためのノード（３００）。
【請求項１０】請求項９に記載のノード（３００）を少なくとも１つ含む、パケット交換通信ネットワーク。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、高速パケット交換ネットワークに関し、より具体的には、大規模通信ネットワーク内の起点ノードと宛先ノードとの間の最適経路指定パスを選択するための時間を最小限にするための方法およびプロセスに関する。
【０００２】
【従来の技術】
高速パケット交換ネットワーク
データ伝送は、特にアプリケーションに集中し、基本シフトを顧客のトラフィック・プロファイルに統合することによって発展している。ワークステーションの発達、ローカル・エリア・ネットワークの相互接続、ワークステーションとスーパー・コンピュータとの分散処理、新しいアプリケーション、場合によっては競合する様々な構造の統合（すなわち、階層対対等、広域ネットワーク対ローカル・エリア・ネットワーク、音声対データ）によって推進され、データ・プロファイルは、消費帯域幅が増え、バースト化および非決定論性が高まり、より高い接続性が必要になっている。上記に基づき、チャネル接続ホスト、ビジネスおよびエンジニアリング・ワークステーション、端末、小規模から中規模のファイル・サーバ間でローカル・エリア・ネットワーク通信、音声、ビデオ、トラフィックを伝達可能な、高速ネットワークによる分散コンピューティング・アプリケーションをサポートする必要性が強くなっている。このような高速マルチプロトコル・ネットワークのビジョンは、高速パケット交換ネットワーク・アーキテクチャの出現の推進力であり、そのアーキテクチャではデータ、音声、ビデオ

情報がディジタル・コード化され、小さいパケットに分割され、複数のノードとリンクからなる共通セットにより伝送される。

【０００３】非常に高速の回線上で混合トラフィック・ストリームを効率よく伝送することは、このような新しいネットワーク・アーキテクチャの場合、パフォーマンスや消費資源に関する１組の要件を意味するが、これについては以下のように要約することができる。すなわち、スループットの高さ、パケット処理時間の短さ、広範囲の接続オプションをサポートするための柔軟性の高さ、フローおよび輻輳制御の効率の良さである。

【０００４】スループットおよび処理時間

高速パケット交換ネットワークの主要要件の１つは、リアルタイム送達制約を満足し、音声およびビデオの伝送に必要な高ノーダル・スループットを達成するために、端末間遅延を低減することである。リンク速度の上昇は、それに比例した通信ノードの処理速度の上昇に匹敵しているわけではなく、高速ネットワークの基本的な課題は、処理速度を最小限にし、高速／低エラー率技術を完全に利用することであり、新しい高帯域ネットワーク・アーキテクチャから得られる伝送および制御機能の多くは端末間で実行される。フロー制御と、特にパス選択および帯域幅管理プロセスは、中間ノードの認識と機能の両方を低減するネットワークのアクセス・ポイントによって管理される。

【０００５】接続性

高速ネットワーク内のノードは、完全な接続性を提供しなければならない。これは、ベンダまたはプロトコルとは無関係にユーザの装置の接続と、エンド・ユーザを他の装置と接続させる能力とを含む。このネットワークは、データ、音声、ビデオ、ファックス、グラフィック、または画像など、いかなるタイプのトラフィックもサポートしなければならない。また、ノードは、一般通信事業者のすべての施設を利用でき、複数のプロトコルに適合可能でなければならない。必要なすべての変換は、自動であり、エンド・ユーザにとって透過でなければならない。

【０００６】輻輳およびフロー制御

通信ネットワークは、効率のよいパケット伝送を確保するために自由に資源を制限している。効率のよい帯域幅管理は、高速ネットワークを完全に利用するために不可欠なものである。１バイト当たりの伝送コストは年々減少し続けているが、帯域幅の需要が増すので、伝送コストは引き続き、今後の電気通信ネットワークを運用するための主要費用を表す可能性がある。したがって、ネットワーク帯域幅を管理するために、フローおよび輻輳制御プロセス、帯域幅予約メカニズム、経路指定アルゴリズムを設計する際に相当な労力が費やされてきた。理想的なネットワークは、ネットワークに提供されるトラフィックに正比例する有用なトラフィックをそれも最大伝送容量に達するまで伝送できなければならない。この限界を超えると、ネットワークは、需要がどの程度であっても、その最大容量で動作しなければならない。

【０００７】経路指定モード

通信ネットワークの一般的な問題は、ソースと宛先ノードとの間のパスを見つけることである。ネットワークがデータグラムを使用している場合、パス選択は各パケットごとに個別に行わなければならない。仮想回線では、接続（またはセッション）の確立時に一度だけパス決定が行われる。いずれの場合も、競合しやすい多数の要件を満足しなければならないので、経路指定アルゴリズムの選択は容易ではない。しかし、経路指定アルゴリズムは、使用状況のタイプによって変動する可能性のある基準に応じて、最適にネットワークを活用できるようにするものでなければならない。多くの場合、ネットワークは、パケット伝送時間を最小限にし、最大数のパケットを転送するように実現されている。それ以外の場合の目的は、通信コストを低減すること、または壊滅的な回線やノードの障害またはトラフィックのピークの場合に正しく機能できる確実なネットワークを開発することである。

【０００８】制約が様々なので、あふれ経路指定、ランダムまたは確率的経路指定、決定論的経路指定など、多種多様な経路指定のタイプがある。この最後の経路指定技法は、固定または適応経路指定、集中または分散経路指定、ノード単位または端末間経路指定、コネクション型またはコネクションレス型経路指定など、特定のモードに応じて実施することができる。

【０００９】適応経路指定

すべての経路指定規則が一度に確立される固定経路指定とは対照的に、適応経路指定の目的は、最適化基準をいつでも満足することである。たとえば、リンク上のトラフィックの瞬間状態に応じて、テーブルが永続的に更新される。

【００１０】分散経路指定

ネットワークの特性が変動する場合、トラフィックおよびトポロジに応じて経路指定テーブルを定期的に更新する責任を１つのノードに割り当てることにより、経路指定を適応させることが可能である。集中経路指定と呼ばれるこの方法の主な欠点は、重要な補助トラフィックを発生し、ネットワークの良好な機能を１つのノードのみに従属させることである。これに対して、集中経路指定では、テーブルをリフレッシュするときに何らかの問題を発生する可能性がある。というのは、前記テーブルはすべてのノードが同時に受け取ることができないからである。その解決策は、各ノードのレベルでテーブルを分散化することである。分散経路指定は、隣接ノード同士がそれぞれの経路指定テーブルを更新するためにトラフィックおよびネットワーク条件に関するメッセージを交換する方法である。

【００１１】端末間経路指定
適応経路指定と分散経路指定はどちらも現在は、多くの高速ネットワークで一緒に使用されている。
【００１２】処理時間を最小限にし、高速／低エラー率技術を完全に利用するため、高帯域ネットワークから得られる伝送および制御機能は端末間で実行される。高速高性能（低エラー）リンクではホップごとのエラー回復や再伝送が一切考えられていないので、通過ノードが個々の伝送接続を認識する必要はない。起点ノードは、ネットワークを通じてパケットがたどらなければならない経路の計算を担当する。パケットの経路指定により、以下のような２通りの態様が提示され、それに関して広範囲の実施方法が存在する。
１．所与の接続用の経路がどのようなものでなければならないかを決定すること。
２．交換ノード内で実際にパケットを交換すること。
【００１３】コネクション型経路指定
ネットワークの明確な特徴の１つは、エンド・ユーザ間の「コネクション」の有無である。コネクションレス型またはコネクション型ネットワークを構築する方法は数多く存在する。多くの場合、様々な経路指定モードを使用するパケットは、同じデータ伝送機構を共用することができる。高速接続の多くは、ユーザが要求する帯域幅とサービス品質を保証するために、予約パス上で確立される。ネットワーク内のパスは、起点ノードによる各接続要求に応答して計算される。計算したパスは、ネットワーク接続の要件を特徴づけるパラメータと、各ネットワーク・ノード内に維持されるリンク容量および負荷情報とに基づくものである。起点ノードは、エンド・ノードに予約要求を送る。帯域幅要求パケットは選択したパスに沿って流れるので、各通過ノードは、それが新しい接続を受け入れるのに十分な容量を備えているのかどうかを判定する。接続が受け入れられる場合、要求した帯域幅が予約される。変更は、制御メッセージにより、ネットワークのすべてのノードに反映される。接続が確立すると、パケットを送るたびにパケット・ヘッダ内に宛先アドレスを入れる必要がなくなる。必要なのは、このパケット用としてどの接続を使用すべきかを指定するためのＩＤだけである。パケット・オーバヘッドが低いので、コネクション型経路指定技法は、非常に短いパケットの伝送（たとえば、リアルタイム音声接続）に特に適合している。この技法では、接続テーブルを各ノードで動的にセットアップし、維持しなければならず、この制限により、データグラム伝送が非常に非効率的なものになる。ネットワーク・ノードが個々の接続でフローを調整できるので、コネクション型ネットワークでのフローおよび輻輳制御の実施は、コネクションレス型ネットワークの場合より容易である。しかし、リンクまたはノードが動作不能になる（停止する）と、その影響を受けたリンクまたはノードを通過する接続は、通常、失われる。したがって、別の経路により、新しい接続を確立しなければならない。これは時間がかかるので、エンド・ユーザ・レベルでは接続を中断させる恐れがある。これに対して、コネクションレス型ネットワークは、通常、リンクまたはノード障害の周囲で自動的にトラフィックを経路指定し直す。
【００１４】パス選択
パス選択プロセスの役割は、接続が要求されるたびにネットワーク上でユーザにとって最適のパスを決定することである。これは、ネットワーク内の全体的なスループットを最適化しながら、それぞれのサービス品質要件を保証するためにユーザにネットワーク資源を割り振ることを意味する。この機能はもっぱら起点ノード内で行われる。ユーザは様々なサービス品質パラメータを指定することができるが、一部はリアルタイム送達制約を満足するためのものであり、一部は非リアルタイム・データ・トラフィック転送に関するものである。起点ノードは、新しい接続を媒介し、新しい接続が必要とするレベルのサービスを提供することができる宛先ノードへのパスを計算する。パス選択アルゴリズムは、ネットワーク全体内部（ノードとリンク）の現行トラフィック負荷を記述するデータを使用する。このようなデータは、ネットワークの各ノード内に位置するトポロジ・データベース内に格納される。すべての要件を満たすために適当なパスが一切見つからない場合、接続は拒否される。起点ノードが適当なパスを見つけると、選択した経路で転送されるセットアップ・メッセージが生成され、そのセットアップ・メッセージの転送先になる各リンク用の資源割振りを更新する。
【００１５】高いスループットに合うように、接続確立時に一度だけ、パスが選択され、資源が予約される。パス選択アルゴリズムは、ユーザ（サービス品質要件、ユーザのトラフィック特性）と現行ネットワーク・トポロジおよび帯域幅割振りの両方による様々な制約を考慮している。さらに、このアルゴリズムは、ホップ数が最も少なく、リンク間のトラフィックの均等分散を達成する傾向のあるパスを選択することにより、ネットワーク・スループットを最大限にする。適切なパスが選択されると、ネットワーク接続確立プロセスが行われ、その後、パスに沿った資源が予約される。
【００１６】接続セットアップ遅延
パスを選択し、接続をセットアップすると、ネットワーク・ノードで相当な処理オーバヘッドを要する可能性があり、相当な遅延を発生する可能性がある。複数の接続をサポートするエンド・ノードは同時に要求をセットアップするので、接続セットアップ・プロセスのボトルネックを回避するために何らかのスケジューリングを行うことは容易なことである。しかし、それにもかかわらず、接続を確立するための時間は膨大になる可能性がある。永続接続の場合、セットアップ遅延はおそらくそれ

ほど意味のあるものではない。しかし、リアルタイムの接続サービスの場合、これは非常に重要なパラメータである。というのは、一部の接続はタイムアウトを実行する装置で終了するからである。

【００１７】この遅延は、障害時または優先使用時のバス切替えの観点からも重要なものである。障害が発生したリンクまたはノードを使用している多くの接続を経路指定し直すと、膨大な数の新しいバス・セットアップを同時に行うことになる恐れがある。代替経路を介して複数の新しい接続を同時に確立するには時間がかかり、通常、エンド・ユーザ・レベルで接続が中断する。非中断パス・スイッチ・メカニズムでは、以下のように想定している。

－　第１に、物理ネットワークは、障害事象によって影響を受けたネットワーク接続に対応するために十分な残余容量を備えている。

－　第２に、エンド・ユーザ・レベルで接続を保持するために、パス選択遅延が最小限になっている。

【００１８】大規模ネットワークは非常に動的なので、ネットワークの最新イメージを考慮するために、新しい接続が確立するたびにパス選択アルゴリズムを実行することが理想的である。実際には、このような計算は膨大な量の処理時間を必要とするはずなので、接続の持続中に位置調整されることはめったにない。セットアップ時または障害が発生したときに大量のパス選択をサポートするために非常に効率のよいプロセッサを使用し、それを何時間もの間、アイドル状態に保つことは、資源とお金の無駄であると思われる。これに対して、リンクとノードの状況が継続的に変化するときにネットワークの完全なイメージに基づいてパスを選択することは有用ではない。帯域幅予約の必要性が増えるほど、パスを見つけるために必要な精度が低下する可能性がある。

【００１９】大規模高速パケット交換ネットワークでは、多数の接続セットアップ動作をサポートすることは、パフォーマンスと消費資源の点でいくつかの要件を意味する。これは、以下のように要約することができる。

－　起点ノード、または起点ノード用の経路計算を行うノードは、非常に短時間の間にサービス品質（遅延、損失、確率・・・）を保証して着信パケットをどこへ経路指定するかを決定できなければならない。この計算は、各接続要求ごとに最適パスを選択するために十分に迅速でなければならない。

－　ノードまたはリンク障害の場合、起点ノードは、エンド・ユーザ・レベルでトラフィックを中断せずに、代替接続を確立できなければならない。

－　ノード内の処理時間は最小限でなければならない。

－　起点ノード内のネットワーク資源、指定のパスに沿ったネットワーク資源、ネットワーク全体内部のネットワーク資源は、最適化しなければならない。

【００２０】接続セットアップ遅延を最小限にしながら、ノード資源（処理容量）を最適化するため、ネットワーク内の起点ノードから宛先ノードへの経路は、接続要求とは無関係に事前計算することができる。この事前計算は、接続セットアップ・プロセスがアイドル状態のときに背景で実行される。接続が要求されると、パス選択プロセスは、まず、事前計算経路を探索する。すなわち、事前計算パスが見つからない場合のみ、パス選択アルゴリズムがトリガされる。接続を確立し、ネットワーク内のパケットを経路指定するために、パスが計算され使用される。前記パスは事前選択したパスのリストにも格納される。

【００２１】全体的なスループットの点でネットワーク資源を最適化するため、パス選択プロセスでは、リンク上の現行トラフィック条件を考慮している。その結果、事前計算パスは、ネットワーク上の負荷変動に応じて、継続的に更新しなければならない。

【００２２】リンク障害の場合、エンド・ユーザ接続を中断せずに代替パス上のトラフィックを経路指定し直すことが重要である。一般に、リンクが宛先ノードに近くなるほど、この宛先ノードに向かってリンクが媒介する接続が増加する。起点または宛先ノードに隣接するリンク上で障害が発生すると、多数の接続の中断が必要になる可能性があり、いくつかの事前選択経路が無効になる場合がある。その解決策は、あらゆる宛先ノードについて複数の経路を事前計算し、各経路が起点ノードおよび宛先ノードに隣接する別々のリンクを使用することである。

【００２３】

【発明が解決しようとする課題】したがって、ネットワーク資源を最適化しながら、サービス品質の点で接続要件を満足する経路をできるだけ高速に決定するための方法を提供しなければならない。

【００２４】

【課題を解決するための手段】本発明は、伝送リンクで相互接続された複数のノードを含むパケット交換通信ネットワークに関する。本発明の目的は、アクセス・ノード内の接続セットアップ遅延を最小限にすることにあり、特に、アクセス・ノードと宛先ノードとの間のネットワーク全体で最適パスを選択するための時間を最小限にすることにある。ネットワーク内の各ノードは、データ・パケットを受信し送信するための１つまたは複数の通信アダプタと、ネットワーク資源を割り振り、制御し、管理するための経路制御装置と、ネットワーク制御メッセージによって更新されたネットワーク構成およびトラフィック特性を格納するためのトポロジ・データベースと、トポロジ・データベースと同時に更新され、それぞれの特性とともに選択または計算されたパスを格納するための経路指定データベースとを含む。

【００２５】各接続要求ごとに、請求の範囲の方法およ

びシステムは以下のステップを含む。
＊　各接続要求ごとに、経路指定データベース内で前記接続要求を満足する事前計算パスを選択するステップと、
＊　接続要求を満足する事前計算パスが経路指定データベース内にすでに格納されていない場合に、前記接続要求を満足するパスを計算し、前記パスを経路指定データベース内に格納するステップである。
【００２６】接続要求がない場合、本発明の方法およびシステムは以下の追加ステップを含む。
＊　定期的に、またはトラフィック変動、ネットワーク構成変更などの所定の事象に応じて、経路指定データベースに格納されたパスを再計算するステップと、
＊　経路指定データベースに格納された各事前計算パスごとに、同じ起点ノードと同じ宛先ノードを備えた少なくとも１つの代替パスを計算するステップと、
＊　起点ノードから可能なすべての宛先ノードへのパスを計算するステップと、
＊　選択を行わずに所定の期間後に経路指定データベースから事前計算パスを除去するステップである。
【００２７】
【発明の実施の形態】
高速通信
図２に示すように、通信システムの典型的なモデルは、専用回線、通信事業者提供サービス、公衆データ網を使用する高性能ネットワーク（２００）により通信する、いくつかのユーザ・ネットワーク（２１２）からできている。各ユーザ・ネットワークは、エンタープライズ・サーバ（２１３）として使用する大型コンピュータ、ＬＡＮ（ローカル・エリア・ネットワーク２１４）上に接続されたワークステーションまたはパーソナル・コンピュータを使用するユーザ・グループ、アプリケーション・サーバ（２１５）、ＰＢＸ（構内交換機２１６）、ビデオ・サーバ（２１７）を相互接続する１組の通信プロセッサおよびリンク（２１１）として記述することができる。このようなユーザ・ネットワークは、様々な施設に分散しているが、広域伝送機構により相互接続する必要があり、データ転送を構成するために様々な手法を使用することができる。アーキテクチャによっては、各ネットワーク・ノードでデータ整合性の検査が必要であり、その結果、伝送速度が低下するものもある。本質的に高速データ転送を求めているアーキテクチャもある。そのため、ノード内の伝送、経路指定、切替えの技法は、可能な最高速度で最終的な宛先に向かって流れるパケットを処理するように最適化される。
【００２８】本発明は、本質的には後者のカテゴリに属し、より具体的には以下に詳述する高速パケット交換ネットワーク・アーキテクチャに属す。
【００２９】高性能パケット交換ネットワーク
図２の一般的な図は、８つのノード（２０１～２０８）を含む高速パケット交換伝送システムを示し、各ノードはトランク（２０９）と呼ばれる高速通信回線により相互接続されている。ユーザから高速ネットワークへのアクセス（２１０）は、周辺部に位置するアクセス・ノード（２０２～２０５）によって実現される。このようなアクセス・ノードは１つまたは複数のポートを含み、各ポートはネットワークへの標準インタフェースをサポートする外部装置を接続し、他の外部装置との間でネットワーク上を流れるユーザ・データの流れを伝送するのに必要な変換を実行するためのアクセス・ポイントを提供する。一例として、アクセス・ノード（２０２）は、３つのポートによりそれぞれ構内交換機（ＰＢＸ）、アプリケーション・サーバ、ハブとのインタフェースを取り、隣接通過ノード（２０１）、（２０５）、（２０８）によりネットワークを介して通信する。
【００３０】交換ノード
各ネットワーク・ノード（２０１～２０８）は、着信データ・パケットが近隣通過ノードに向かって発信トランク上で選択的に経路指定される、経路指定点を含む。このような経路決定は、データ・パケットのヘッダに含まれる情報に応じて行われる。基本パケット経路指定機能に加え、ネットワーク・ノードは以下のような補助サービスを提供する。
＊　ノード内で発信されたパケット用の経路指定パスの決定
＊　ネットワーク・ユーザおよび資源に関する情報の取出しや更新のようなディレクトリ・サービス
＊　リンク使用状況情報を含む、物理ネットワーク・トポロジの一貫したビューの管理
＊　ネットワークのアクセス・ポイントにおける資源の予約
【００３１】本発明によれば、このような補助サービスとしては以下のものがある。
＊　ノード内の経路指定パスの格納
＊　このようなパスの更新
【００３２】各ポートは複数のユーザ処理装置に接続され、各ユーザ装置は他のユーザ・システムに伝送すべきディジタル・データのソースか、または他のユーザ・システムから受信したディジタル・データを消費するためのデータ受信装置か、または通常はその両方を含む。ユーザ・プロトコルの解釈と、ユーザ・データをパケット・ネットワーク（２００）上で適切に伝送するためにフォーマットされたパケットへの変換と、このようなパケットを経路指定するためのヘッダの生成は、ポート内で動作しているアクセス・エージェントによって実行される。このヘッダは、制御、経路指定、冗長検査の各フィールドでできている。
＊　経路指定フィールドは、そのアドレス指定先である宛先ノードまでネットワーク（２００）を介してパケットを経路指定するのに必要なすべての情報を含んでい

る。このフィールドは、指定されている経路指定モード（コネクション型またはコネクションレス型経路指定モード・・・）に応じて、いくつかのフォーマットを取ることができる。

＊　制御フィールドは、特に、経路指定フィールドを解釈する際に使用するプロトコルのコード化ＩＤを含む。

＊　冗長検査フィールドは、ヘッダ自体にエラーがあるかどうかを検査するために使用する。エラーが検出された場合、そのパケットは廃棄される。

【００３３】経路指定点

図３は、図２に示すネットワーク・ノード（２０１～２０８）に見られるような典型的な経路指定点（３００）の一般的なブロック図を示している。経路指定点は、その経路指定点に到達するパケットが入力される高速パケット・スイッチ（３０２）を含む。このようなパケットは以下のように受信する。

＊　トランク・アダプタ（３０４）を介して高速伝送リンク（３０３）上の他のノードから受信する。

＊　ポート（３０１）と呼ばれるアプリケーション・アダプタを介してユーザから受信する。

【００３４】パケット・ヘッダ内の情報を使用して、アダプタ（３０４、３０１）は、ローカル・ユーザ・ネットワーク（３０７）に向かってまたはそのノードから出る伝送リンク（３０３）に向かってスイッチ（３０２）によりどのパケットを経路指定すべきかを決定する。アダプタ（３０１および３０４）は、スイッチ（３０２）上でのその立上げの前後にパケットを待ち行列化するための待ち行列化回路を含む。

【００３５】経路制御装置（３０５）は、ユーザによって指定された所与の１組のサービス品質を満足し、通信パスを完成するために使用するネットワーク資源の量を最小限にするために、ネットワーク（２００）を通る最適パスを計算する。その後、この制御装置は、経路指定点で生成されたパケットのヘッダを構築する。最適化基準としては、中間ノードの数、接続要求の特性、パス内のリンク（トランク）の能力および使用状況、中間ノードの数などがある。本発明によれば、最適経路はさらに再使用するために経路指定データベース（３０８）に格納される。

【００３６】経路指定に必要な情報、ならびにノードおよびそのノードに接続された伝送リンクに関する情報は、いずれもネットワーク・トポロジ・データベース（３０６）に含まれている。定常状態条件下では、あらゆる経路指定点はネットワークについて同じビューを有する。新しいリンクが活動化され、新しいノードがネットワークに追加されたとき、リンクまたはノードが除去されたとき、またはリンク負荷が大幅に変化したときに、ネットワーク・トポロジ情報が更新される。このような情報は、パス選択に必要な最新のトポロジ情報を提供するために、他のすべての経路制御装置との間で制御メッセージにより交換される（このようなデータベース更新は、ネットワークのエンド・ユーザ間で交換されるデータ・パケットによく似たパケット上で伝達される）。ネットワーク・トポロジが連続更新によってすべてのノードで現行状態に維持されることにより、エンド・ユーザの論理接続（セッション）を中断せずにネットワークの動的再構成が可能になる。

【００３７】パケット経路指定点への着信伝送リンクは、ローカル・ユーザ・ネットワーク内の外部装置からのリンク（２１０）または隣接ネットワーク・ノードからのリンク（トランク）（２０９）を含むことができる。いずれの場合も、経路指定点は、各データ・パケットを受信し、パケット・ヘッダ内の情報が示す別の経路指定点にそれを転送するために同じように機能する。高速パケット交換ネットワークは、単一パケットの期間中を除き、いかなる伝送またはノード機構もその通信パス専用にせず、２つのエンド・ユーザ・アプリケーション間の通信を可能にするように機能する。このようにして、パケット・ネットワークの通信機構の使用状況は、各通信パス用の専用伝送リンクの場合に可能と思われるトラフィックより大幅に多いトラフィックを伝達するように最適化される。

【００３８】ネットワーク管理

ネットワーク制御機能

ネットワーク制御機能とは、物理ネットワークの資源を制御し、割り振り、管理するものである。各経路指定点は、経路制御装置（３０５）内に１組の前述の機能を備え、ユーザ・アプリケーション間の接続の確立と管理を促進するためにそれを使用する。ネットワーク制御機能としては、特に以下のものがある。

＊　ディレクトリ・サービス

－　ネットワーク・ユーザおよび資源に関する情報を取り出し、管理する

＊　帯域幅管理

－　帯域幅予約および保守メッセージを処理する

－　リンク上の現行予約レベルを監視する

＊　パス選択

－　接続要件および現行リンク使用状況レベルを考慮して、新しい接続ごとに最良パスを選択する

＊　制御スパン・ツリー

－　ネットワーク・ノード間で経路指定ツリーを確立し、管理するための

－　それを使用して、リンク使用状況を含む制御情報を（同時に）分散する

－　新しいネットワーク構成またはリンク／ノード障害を含むノードのトポロジ・データベースを更新する

＊　トポロジ更新

－　スパン・ツリーを使用して、あらゆるノードの論理および物理ネットワークに関する情報（リンク使用状況情報を含む）を分散し、管理する

＊　輻輳制御
－　呼出しセットアップ時に確立されたネットワーク・ユーザとネットワークとの間の帯域幅予約合意を実施する
－　実際の帯域幅を推定し、必要な場合には接続の持続中に予約を調整する
【００３９】トポロジ・データベース（ＴＤＢ）
トポロジ・データベースは、ノード、リンク、その特性、帯域幅の割振りに関する情報を含んでいる。トポロジ情報は、ネットワークの各ノード内に複写される。リンクおよびノードを追加または削除した場合、あるいはその特性が変化した場合、各ノードのトポロジ・データベースの正しさはアルゴリズムによって保証される。データベースは以下のものを含む。
＊　ノードおよびリンクの物理特性のような静的情報を含む、ネットワークの物理トポロジ
＊　ノードおよびリンクの状態
＊　現行帯域幅（使用中および予約中）、リアルタイム測定などのような動的特性を含む、リンク使用状況
【００４０】トポロジ・データベースの一般的な構成については図５に示す。ネットワーク内の各資源であるノード（５０１）またはリンク（５０２）には、データベース内の項目が１つずつ関連付けられている。特に、各リンク項目は以下の特性を含む。
＊　（５０３）リンク物理特性：
－　伝送媒体および速度
－　サポートされている経路指定モード
－　最大パケット・サイズ
－　リンク・バッファ容量
－　伝播遅延
－　サポートされている帯域幅予約・・・
＊　（５０４）リンク状態：
－　オンライン（リンクはユーザ接続を受け入れることができる）
－　静止（リンクは追加のユーザ接続を受け入れることができないが、既存の接続は継続する）
－　オフライン（リンクはユーザ接続を受け入れることができず、既存の接続は取り消される）・・・
＊　（５０５）リンク使用状況：
－　リアルタイム測定
－　予約帯域幅・・・
【００４１】図６は、トポロジ・データベースに格納されている情報の一部を１つの表に示したものである。リンクのすべての特性は各ノードでリストされるが、本出願では一部についてのみ説明する。
＊　全容量（ｂｐｓ）C_{ij}
トポロジ・データベースは、各リンクごとにその全容量を含む。値C_{ij}は、ノードｉとｊとの間のリンク上で使用可能な全帯域幅を表す。
＊　予約可能部分（％）ｒｆ
予想通り、伝送リンクの重大特性の１つは、リンク容量のうち、有効に使用可能な部分である。以下の２つの理由により、リンクには理論上の最大負荷（帯域幅）まで負荷をかけることはできない。
－　第１に、ネットワーク制御機能用の帯域幅をとっておくため
－　第２に、様々なトラフィック・ソースによる短期間の帯域幅違反の場合に喪失の確率と静止遅延を低い状態に維持するため
リンクの予約可能部分ｒｆは、全容量C_{ij}のうち、妥当な品質の伝送を維持するためにノードｉとｊとの間のリンク上で予約可能な実効割合である。C_{ij}がリンクの全容量である場合、このリンクの予約可能容量は$R_{ij}=rf\times C_{ij}$になる。
【数１】

$$(\hat{C}_{ij} \leq R_{ij} \leq C_{ij})$$

注：　多くのネットワーク・アーキテクチャの場合、ユーザ・トラフィック用に明示的に予約できるのは、リンクの全帯域幅C_{ij}のうちの８５％程度である（ｒｆ＜０．８５）。
＊　全予約同等容量（ｂｐｓ）
【数２】

$$\hat{C}_{R,ij}$$

ノードｉとｊとの間のリンク上の接続ｋの場合、パケット喪失を低くするかまたは一切解消するための最も単純な方法は、ユーザが要求した帯域幅全体を予約することである。しかし、ユーザ・トラフィックがバースト状態である場合、この手法はネットワーク上で大量の帯域幅を浪費する可能性がある。資源を節約するため、実際に予約される帯域幅の量は「同等容量」
【数３】

$$\hat{C}_{k,ij}$$

と等しくなり、前記同等容量はソース特性およびネットワーク状況の関数である。帯域幅予約は、ユーザが要求する平均帯域幅と接続の最大容量との間になる。
【数４】

$$\hat{C}_{R,ij} = \hat{C}^{K}_{R,ij} = \sum_{k=1}^{K} \hat{C}_{k,ij}$$

＝予約同等容量の合計という値は、すでに確立しているＫ個の接続によってノードｉとｊとの間のリンク上に予約される全帯域幅を表す。この既存リンクの同等容量
【数５】

$$\hat{C}_{R,ij}$$

と$rf\times C_{ij}$という全予約可能容量との差が新しい予約接続によって要求される帯域幅より小さい場合、このリ

ンクを選択することができない。しかし、明示的な帯域幅予約が一切不要であるような非予約接続の場合には、このリンクを選択することもできる。

注：　同等容量は、リンク上を移動するすべての接続（おそらく特性は様々である）の集約を表す「リンク・メトリックス」と呼ばれる値から計算される。リンク・メトリックスは、トポロジ更新同報通信を介して他のノードに分散される。

＊　非予約トラフィックによる全使用帯域幅（ｂｐｓ）$M_{NR,ij}$

$M_{NR,ij}$という値は、ノードｉとｊとの間のリンク上で測定した、非予約トラフィックが現在使用している負荷または帯域幅の合計を表す。

＊　最大パケット・サイズ（バイト）mps_{ij}

mps_{ij}は、ノードｉとｊとの間のリンクによってサポートされる最大パケット・サイズとして定義される。

＊　全使用帯域幅（ｂｐｓ）

【数６】

$$\hat{C}_{T,ij}$$

ノードｉとｊとの間のリンク上の全使用帯域幅

【数７】

$$\hat{C}_{T,ij}$$

は、全予約帯域幅

【数８】

$$\hat{C}_{T,ij}$$

と非予約トラフィックが使用する測定帯域幅$M_{NR,ij}$とを加えることによって計算される。

【００４２】帯域幅管理

ユーザは様々なサービス品質を要求する。様々なサービス・レベルを提供するため、様々なタイプのネットワーク接続が確立される。１つの接続は、それぞれソース・ユーザとターゲット・ユーザとを表す起点アクセス・ノードと宛先アクセス・ノードとの間のネットワーク内のパスとして定義される。ネットワーク接続は、予約または非予約として分類することができる。予約ネットワーク接続では、選択したパスに沿ってあらかじめ帯域幅を割り振る必要がある。

【００４３】高速接続の多くは、ユーザが要求したサービス品質と帯域幅を保証するために予約パス上で確立される。ネットワーク上のこのパスは、現行リンク使用状況を含む、そのトポロジ・データベース内の情報を使用して、起点ノードによって計算される。次に、起点ノードは選択したパスに沿って予約要求を送信し、中間ノード（予約が可能である場合）はこの追加予約容量をその合計に追加する。このような変更は、中間ノードによって送信されるトポロジ同報通信更新に反映される。中間ノードはその隣接リンク上の各接続の状況を認識する必要がない。中間ノードが獲得したパケットが多すぎる場合、一般に予期せぬバースト性により、中間ノードはそのパケットを廃棄するだけである（ユーザはこのような廃棄から回復するようなサービスを選択することができる）。

【００４４】ノード・タイプに応じて、帯域幅管理の機能は以下のようになる。

＊　起点ノード内

－　接続優先順位を含む接続パラメータとネットワーク状況に応じて、可能な限り最良の経路を識別すること

－　接続セットアップ時にネットワーク接続が要求する帯域幅を予約し、接続の持続中にこの帯域幅を管理すること

－　要求を満足するために必要な資源がネットワーク内にない場合に接続を拒否すること

通過ノード内

－　リンク上の帯域幅予約を管理すること

【００４５】接続セットアップ

図１に示す接続セットアップおよび帯域幅予約プロセスは、以下のステップを含む。

＊　（１０１）起点および宛先ネットワーク・アドレスと、データ・フロー特性（ビット伝送速度、バースト性）を含む１組のパラメータを介して、ユーザによって接続要求が指定される。

＊　（１０２）パス選択プロセスは、トポロジ・データベースから得られるパラメータを使用して、１つのパスと、そのパスの各リンクごとに１つずつの１組の接続要求が決定する。

＊　（１０３）帯域幅予約プロセスは、接続要求を使用して、そのパスの各リンク上の帯域幅を予約する。このプロセスは、起点（アクセス）ノード（１００）とパス上の通過ノード（１０７）と宛先ノード（１０８）との間の情報交換（１０９）を含む。

＊　（１０４）通過ノードおよびエンド・ノードからの帯域幅予約応答は、呼出し受付または呼出し拒否（１１０）を生成する。

＊　（１０５）リンク・メトリック更新プロセスは、呼出し受付の場合に変更したリンク・メトリックスを更新する。この情報（１１１）は、同報通信アルゴリズムにより、制御スパン・ツリーを介してネットワーク内の各ノードのトポロジ・データベースに送られる。

＊　（１０６）輻輳制御セットアップは、呼出しを受け付けた場合に、ネットワーク接続特性を調整する。

【００４６】パス選択

パス選択プロセスの目的は、ユーザのサービス品質要件が満足されることを保証し、ネットワーク全体のスループットを最適化するために、ネットワーク資源を接続に割り振る最良の方法を決定することである。パス選択プロセスは、その上で２地点間接続が確立され、必要であれば一部の帯域幅が予約されるネットワーク上のパスを

要求側ユーザに供給しなければならない。パス選択アルゴリズムでは、入力パラメータとして、一方ではユーザ要件を、もう一方ではトポロジ・データベースに保管されているネットワーク・リンクとノードの状況を使用する。

【００４７】選択基準：　パス選択プロセスは、接続が要求されているノード内で完全に行われる。これは、トポロジ・データベースを利用し、重要度の順に以下の基準のそれぞれに基づいて「最良パス」を選択する。

＊　サービス品質：接続のサービス品質要件は、接続の持続期間中全体にわたって満足しなければならない。ネットワークのパフォーマンスを決定する変数は数多く存在する。しかし、サービス品質は、ネットワークが提供するサービスに対するユーザの認識を記述する、１組の測定可能な数量として定義することができる。サービス品質パラメータの一部は以下の通りである。

－　接続セットアップ遅延
－　接続ブロック確率
－　喪失確率
－　エラー確率
－　端末間通過遅延
－　端末間遅延変動
－　・・・

たとえば、パケット喪失確率または端末間通過遅延など、このような品質の一部はパスの計算方法に影響を及ぼす。計算したパスに沿った伝播遅延の合計は、端末間通過遅延指定に違反してはならない。

＊　最小ホップ：パスは、接続のサービス品質要件をサポートするために実現可能な最小数のリンクから構成しなければならないので、ネットワーク資源の量ならびに接続をサポートするための処理コストが最小限になる。パス計算は、接続が要求された時点のリンク使用状況に基づいて行われる。

＊　負荷平衡：最小ホップ・パスのうち、パス選択時のネットワーク条件に基づいて、「重負荷」リンクを備えたパスより、「軽負荷」リンクを備えたパスの方が好ましい。リンクの負荷は顧客の基準によって決まる。すなわち、リンク上で実際に測定したトラフィックの量に比例して増加する、リンクの全予約帯域幅の関数にすることができる。パスの負荷（指定のパス上のリンクの負荷の合計）が重要な選択基準である場合、負荷が軽い方のパスが選択される。

【００４８】第１の要件を満足することはパス選択の重要な要因であり、残りの２つの機能はネットワークを通過するトラフィックを最適化するために使用する。

【００４９】パス計算：　パス選択プロセスは、入力情報をすべて収集し、新しいネットワーク接続の同等容量をまず計算する。次に起点から宛先ノード（複数も可）までのネットワーク上の潜在的パスが計算される。トポロジ・データベースを使用して、潜在的パスに対するリンクの適合を判定する。このアルゴリズムは、新しい潜在的パスを構築し、ホップごとにリンクとノードを追加し、ユーザ要件が満足されていることを各ステージで検査する。

【００５０】それぞれのステージでは、リンクが潜在的パスに追加されるので、このアルゴリズムは、新しいリンクが資源予約要件を満足するために十分な帯域幅を備えていることを判定する。また、このアルゴリズムは、新しいリンクの追加によって全パスがユーザのサービス品質要件を満足できるようになることも各ステージで検査する。アルゴリズムは様々なトラフィック・クラスごとに異なっている。たとえば、端末間遅延変動（ジッタ）要件は、非リアルタイムよりリアルタイム・グラフィック計算にとってより重要なものである。

【００５１】追加要件：　パス選択プロセスが新しいネットワーク接続に適した潜在的パスをいくつか見つけ、そのすべてがサービス品質要件を満たしている場合、このプロセスは、ホップが最小数のパスを最適パスとして選択する。これは、最小ホップ・パスの結果、ネットワーク内の予約帯域幅の量が最小になり、そのため、ネットワーク資源が保存され、コストが低減されるからである。

【００５２】パス選択プロセスが新しいネットワーク接続に適した最小ホップ・パスをいくつか検出し、そのすべてがサービス品質要件を満たしている場合、このプロセスは、重負荷リンクより「軽負荷」リンクを備えたパスを選択する。この計算の際には、トポロジ・データベースからのリンク使用状況が使用される。

【００５３】経路指定データベース構造

経路指定データベース（４００）の一般的な構成については図４に示す。経路指定データベースは以下のように２つのテーブルに分割されている。

＊　経路指定パスを記録するためのパス・テーブル（４１０）

＊　前記パス・テーブル（４１０）に格納された前記経路指定パスに関連するリンクを記録するためのリンク・テーブル（４２０）

【００５４】好ましい実施例のパス・テーブルとリンク・テーブルは、Niklaus Wirthによる"Algorithms + Data Structures = Programs"（２６４～２７４ページ、Prentice-Hall Inc）というタイトルの資料に記載されているように、オーバフロー域における直接連鎖を備えたハッシュ・テーブルとして実現されている。

【００５５】パス・テーブル

本出願では、パス・テーブル（４１０）に格納されたパラメータの一部についてのみ説明する。パス・テーブルの各項目は、特定のサービス品質およびトラフィック要件を満足する、ネットワーク内の起点ノードと宛先ノードとの間のパスを表す。

＊　宛先ノード（４１２）

パス上の最後のノードのＩＤ
＊　パス特性（４１３）
－　最大パケット・サイズ：　様々な遅延特性（リアルタイム特性、非リアルタイム特性、非予約遅延特性）のそれぞれについて計算したパス上のすべてのリンクによってサポートされる最大パケット・サイズのうちの最小値
－　最大遅延：　様々な遅延特性（回線エミュレーション・リアルタイム特性、非リアルタイム特性、遅延特性）のそれぞれについて計算したパス上の各リンクの転送遅延の合計
－　最大遅延変動（ジッタ）：　様々な遅延特性（リアルタイム特性、非リアルタイム特性、遅延特性）のそれぞれについて計算したパス上の各リンクの最大遅延変動の合計
－　喪失確率：　様々な遅延特性（リアルタイム特性、非リアルタイム特性、最善努力遅延特性）のそれぞれについて計算したパス内のすべてのリンクの喪失確率の合計。喪失確率は、（喪失情報）／（全転送情報）という割合によって推定することができる。喪失情報とは、起点ノードから送信された情報のうち、ネットワーク条件（輻輳、トラフィック管理、エラー・・・）のために所期の宛先に到着しない情報である。
－　最小化基準：　そのタイプに応じて、接続はそのサービス品質要件、特に以下の点でその遅延要件を主張することができる。
・　制限なし端末間遅延：　可能なすべてのパスのうち、端末間遅延が最小のパスが選択される。
・　最大絶対端末間遅延：　選択されたパスは、その端末間遅延が接続の持続期間中、指定の値未満になることを保証する。このタイプのリンク遅延定数は、多くの場合、厳重な端末間遅延要件を備えたリアルタイム・トラフィックに使用する。
・　最大端末間遅延変動（最大ジッタ）：　あるサービスに関連する遅延が変動する量は「遅延ジッタ」とも呼ばれる。一部のタイプのサービスの場合、予測可能であれば、すなわち、遅延ジッタが少量に維持されていれば、相当な遅延も受け入れられる。その他のサービス（たとえば、音声サービス）の場合、遅延と遅延ジッタの両方を少量に維持する必要がある。
・　プレイアウト・バッファ付き最大端末間遅延：　等時性トラフィック（たとえば、音声）を含むアプリケーションの場合、遅延変動の影響を平滑化し、定期的にパケットがユーザに送信されることを確認するために、宛先ノードではプレイアウト・バッファが必要である。プレイアウト遅延の量は、取り消すべき最大端末間遅延変動（ジッタ）と等しくなるように選択される。プレイアウト遅延は端末間遅延の一因になる。
－　セキュリティ・レベル（暗号化）サポート：　多くの組織は、その内部通信が盗聴によって妨害されるのではないかと心配している。通信が妨害される可能性を最小限にするため、いくつかの対策を講じることができる。たとえば、光ファイバなど、妨害しにくい通信リンクを使用するか、または暗号化装置を使用することなどである。しかし、このようなセキュリティ対策は、それを使用することによって追加の費用や不便が発生する可能性があるので、すべてのサービスに必要なわけではない。したがって、あるサービス用のセキュリティ要件を指定するためにそのサービスを確立する際の要件がある。一般に、あるサービスのセキュリティの必要性は、セキュリティ・レベルを使用して指定される。
－　ホップ・カウント：　パス内のリンクの数。パス選択プロセスは、要求された各接続のサービス品質要件をサポートするパスのうち、できるだけリンクの数が少ないパスを計算する。しかし、選択したパス内のホップの数に上限を設けることが望ましい場合もある。これは、そのパスを使用する際のコストが容認できないほど高くなるような、所与の最大数のホップが存在することを意味する。好ましい実施例のパス選択アルゴリズムは、ホップの数を増やしながらパス候補を検査し、指定したホップの最大数に達したときに停止する。サービス品質要件を満足する最小ホップ・パスが複数個見つかった場合、パス選択時のネットワーク条件に基づいて、「重負荷」リンクを備えたパスより、「軽負荷」リンクを備えたパスの方が好ましい。多くの場合、この条件は、ネットワークの全体的なスループットを最大限にする傾向がある。
－　帯域幅予約サポート：　ネットワーク接続は、そのネットワーク資源ニーズに基づいて、主に以下のように分類される。
・　予約ネットワーク接続。予約ネットワーク接続では、ネットワーク接続が正常に確立する前に一部のネットワーク資源の予約が必要である。ネットワーク接続に必要なネットワーク資源を割り振ることができない場合、ネットワーク接続の確立が失敗に終わる。特に重要なことは、帯域幅を予約する予約ネットワーク接続である。というのは、このようなタイプのネットワーク接続は所定のサービス品質を提供できるからである。
・　非予約ネットワーク接続。非帯域幅予約トラフィックは、遅延可能であり、平均帯域幅が低く、持続期間が非常に短い可能性があり、そのバースト特性は未知の場合がある。非予約トラフィックには最低遅延が割り当てられるので、中間ノードでそのバッファがオーバフローすると、ネットワークは非予約パケットを消去する。これは、転送遅延と喪失確率が非予約接続に保証されたサービス品質の一部にならない理由である。コネクションレス型経路指定モードは予約もサービス品質も必要としないパケットを経路指定するには非常に効率がよいが、コネクション型経路指定モードは予約とサービス品質が期待され提供されるときにパケットを経路指定できるよ

うになっている。
－　リアルタイム・トラフィック・サポート：　各タイプのネットワーク・トラフィックには独自の特定の特性があるので、それぞれ別々に扱う必要がある。トラフィック・タイプは以下のように要約することができる。
・　たとえば、対話式ビデオなど、遅延と喪失に敏感なトラフィック
・　たとえば、音声など、遅延には敏感であるが、ある程度の喪失は許容するトラフィック
・　たとえば、最新のデータグラム・サービスなど、遅延と喪失のどちらも許容するトラフィック
・　たとえば、多くのデータベース更新など、遅延は許容するが、喪失には敏感なトラフィック
パケット喪失および平均遅延に加え、（音声などの）リアルタイム・アプリケーションは、起点と宛先との間のパケット・ストリームの遅延の変動（ジッタ）に敏感である。統合ネットワーク内の各種トラフィック（またはアプリケーション）の遅延喪失およびジッタ要件を満足するには、まとめて多重化したときに１つのタイプのトラフィックが別のタイプのトラフィックに提供されるサービスを劣化させないように、対応する機能をアーキテクチャ内で定義する必要がある。
－　回線エミュレーション・サポート：　回線エミュレーションは、一定速度の音声およびビデオ・アプリケーションなどを対象とするものである。これは、ノード上のアクセス・リンク・インタフェース間のシリアル・ビット・ストリームの伝送を行うものであり、多くの通信事業者から得られる専用回線スタイルのサービスと同様のサービスをサポートするために使用する。回線エミュレーションでは以下のものが必要である。
・　起点および宛先における一定のビット伝送速度
・　起点と宛先とのタイミング関係
・　サービスのエンド・ユーザ間の接続
－　ＡＴＭネットワーク接続サポート：　現行の高速パケット交換ネットワーク・アーキテクチャは、様々な論理リンク・タイプをサポートすることができる。しかし、ネットワーク内のノード間の接続のためのリンク・タイプの選択は、通信事業者から得られるサービス、必要なリンク速度などによって決まる。
・　非同期転送モード・リンク（ＡＴＭ）は、専用回線にするか、またはＡＴＭ伝送サービスによって提供されるＡＴＭ接続にすることができる。データは、５バイトのＡＴＭヘッダと４８バイトのペイロードが付いた固定長（５３バイト）セルに入れてＡＴＭリンク上で転送される。ＡＴＭリンクは、ＡＴＭ伝送サービスによって提供される永続仮想パス接続によってノード間が接続される場合に使用する。
・　可変長パケット・リンクは、可変長パケットの伝送をサポートする様々な専用または交換リンク接続（Ｔ１、Ｔ３、Ｅ１など）にすることができる。ネットワーク内のトラフィックの大部分が可変長である場合、可変長パケット・リンクを使用しなければならない。というのは、可変長パケット・リンクは、可変長パケット・トラフィック（たとえば、フレーム・リレー）を伝送する場合、必要とするオーバヘッドが大幅に少ないからである。
・　アーキテクチャによっては、ノードが隣接ノードへのＡＴＭリンクと可変長パケット・リンクとの組合せをサポートし、ユーザ・データは制限なしに一連のＡＴＭリンクおよび可変長パケット・リンクによりネットワーク上を転送できる場合もある。このようなリンクの組合せは、専用ＡＴＭネットワークを構築するため、すなわち、ＡＴＭ接続装置にＡＴＭ伝送サービスを提供するために使用することができる。
－　経路指定サポート：　データ・パケットは、ヘッダに含まれる経路指定情報に応じて、経路指定され、通過ノードに待ち行列化される。高速ネットワークでは、いくつかの経路指定モードを使用することができる。ほとんどの場合、様々なモードを使用するパケットが同一データ伝送機構を共用することができる。
・　自動ネットワーク経路指定（ＡＮＲ）は、コネクションレス型ネットワーク用に分散経路指定を具体的に実現したものである。アクセス・ノードは、そのパケットがネットワーク内でたどらなければならない経路の計算を担当する。各パケットは、その経路指定フィールド内に、ネットワーク上を移動するときにパケットが通過するリンクのラベルのリストを含んでいる。ＡＮＲは、中間ノードでの接続セットアップ活動が一切不要なので、真のデータグラム・サービスに適している。可変長パケットと、コピー機能および逆パス累積などの任意の機能がサポートされる。
・　ラベル・スワッピングはコネクション型ネットワークで使用する。リンク上で送信される各パケットには、このパケットが属す論理接続を識別する任意の数値を含むヘッダが付いている。ラベル・スワッピングでは、各ノードで接続テーブルをセットアップし、動的に管理することが必要である。ＡＴＭとは対照的に、ラベル・スワッピングは、可変長パケットと、逆パス累積などの任意の機能と、より複雑な喪失優先順位構造をサポートする。
・　非同期転送モード（ＡＴＭ）はラベル・スワッピング転送モードと似ているが、ヘッダ構造、固定サイズ・パケット（４８バイトのペイロードと５バイトのヘッダ）のサポート、２レベル仮想接続階層（仮想チャネル接続ＶＣＣと仮想パス接続ＶＰＣ）の使用などを含む、一部の機能は除く。
－　空き帯域幅：　そのパスに沿ったすべてのリンクの使用可能帯域幅のうちの最小値。ノードｉとｊとの間のリンクl_{ij}上で使用可能な帯域幅は
【数９】

$$C_{ij}\ rf-\hat{C}_{R,ij}$$

である。

＊　第１のリンク（４１４）

そのパス上の第１のリンクのＩＤ（たとえば、リンク・テーブル内の第１のリンクのアドレス）

＊　存続時間（４１５）

このパラメータは、古くなった情報を経路指定データベースから除去するために使用する。経路指定データベース内の各パスの「存続時間」カウンタは毎日１回減分される。カウンタが０に達すると、対応するパスは古くなったものと見なされ、経路指定データベースから除去される。パスを選択するたびに、そのカウンタはその最大値にリセットされる。不要情報収集手順に関する詳細については図１３を参照されたい。

【００５６】リンク・テーブル

本出願では、リンク・テーブル（４２０）に格納されたパラメータの一部についてのみ説明する。リンク・テーブルの各項目は、ノードｉとｊとの間のリンクl_{ij}を表す。

＊　トポロジ・データベース内のリンクＩＤ（４２２）：リンクＩＤ（たとえば、ＴＤＢ内のリンクのアドレス）は、トポロジ・データベース（５０２）に格納されたリンク特性（物理特性、状態、使用状況）に直接アクセスするための手段である。

＊　リンク特性（４２３）：

－　リアルタイムおよび非リアルタイム遅延優先順位用の様々な保留優先順位レベルで格納された割振り帯域幅

【数１０】

$$\hat{C}_{R,ij}$$

（非予約遅延優先順位では帯域幅は一切割り振られない）

注：　保留優先順位は、接続が確立した後のその接続の優先使用優先順位である。これに対して、要求側優先順位は、他の接続を優先使用するためのネットワーク接続の能力を定義するものである。既存の接続は、その保留優先順位を使用して、優先使用からその接続を守る。

－　リアルタイムおよび非リアルタイム遅延優先順位で計算された、要求側接続ｋの同等容量

【数１１】

$$\hat{C}_{k,ij}$$

＊　親パス（４２４）

リンクに関連し、パス・テーブルに格納されたパスのＩＤ（たとえば、親パスのパス・テーブル内のアドレス）

＊　パス内の次のリンク（４２５）

そのパスに沿って次のリンクがある場合のそのリンクのＩＤ（たとえば、パス上の次のリンクのリンク・テーブル内のアドレス）

【００５７】経路指定データベース手順

不要情報収集

不要情報収集手順は、古くなった情報を経路指定データベースから除去するために使用する。好ましい実施例では、この手順は定期的に（たとえば、毎日）実行される。図１３は、「不要情報収集」手順の一般的な流れ図を示している。

＊　（１３００）：　手順の開始

＊　（１３０１）：　経路指定データベースに格納された第１のパスが抽出される。

＊　（１３０２）：　このパスに関連する「存続時間」カウンタが減分される。

＊　（１３０３）：　そのパスが古くなったかどうかを判定するために、「存続時間」カウンタの値がテストされる。

－　（１３０４）：　「存続時間」カウンタの値が０になっている場合、そのパスは経路指定データベースから除去され、手順はステップ（１３０５）に移行する。

－　「存続時間」カウンタの値が０になっていない場合、手順はステップ（１３０５）に移行する。

＊　（１３０５）：　テストにより、他のパスが経路指定データベースに格納されているかどうかを判定する。

－　他のパスが一切格納されていない場合、手順は完了し、停止ステップ（１３０６）で終了する。

－　（１３０７）：　他のパスが格納されている場合、経路指定データベースに格納されている次のパスが抽出され、手順はステップ（１３０２）に移行する。

【００５８】パス探索

図７は、「パス探索」手順の一般的な流れ図を示している。この手順は接続セットアップ中に呼び出される。パス選択が接続要求を受け取ると、この手順は経路指定データベースを走査し、この要求を満足する少なくとも１つのパスがあるかどうかを判定する。宛先ノードをＺとし、選択したパスのリストをＳＰとする。

＊　（７００）：　手順の開始

＊　（７０１）：　パス・テーブルの探索により、要求された宛先ノードＺ用のパスがすでに格納されているかどうかを判定する。

－　パス・テーブルにパスが一切格納されていない場合、パスを計算しなければならない。その場合、パス探索手順は完了し、停止ステップ（７０２）で終了する。次にパス選択プロセスは、図８に示すパス格納手順により経路指定データベースに格納されるパスを決定する。

－　（７０３）：　少なくとも１つのパスがすでに格納されている場合、格納されている第１のパスｐがパス・テーブルから抽出される。

＊　（７０４）：　テストにより、パス・テーブルに格納されたパスｐの特性（４１３）が要求を満足するかどうかを判定する。

－　パスの特性（４１３）が要求を満足しない場合、手

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順はステップ（７０５）に移行する。
－　（７０６）：　パスの特性が要求を満足する場合、パスｐの第１のリンク$l_{i,j}$がリンク・テーブルから抽出される。
＊　（７０７）：　テストにより、ノードｉとｊとの間のリンクが以下の点で新しい接続ｋをサポートできるかどうかを判定する。
・　新しい接続が要求する帯域幅：
【数１２】

$$\hat{C}_{k,ij}$$

・　リンク上の割振り帯域幅：
【数１３】

$$\hat{C}_{R,ij}$$

－　リンクが新しい接続ｋをサポートできない場合、手順はステップ（７０５）に移行する。
－　リンクが新しい接続ｋをサポートできる場合、手順はステップ（７０８）に移行する。
＊　（７０８）：　テストにより、パスｐ内に走査すべきリンクがそれ以上存在するかどうかを判定する。
－　（７０９）：　走査すべきリンクがそれ以上存在する場合、パスｐ内の次のリンク$l_{i,j}$がリンク・テーブルから抽出され、手順はステップ（７０７）に移行する。
－　（７１０）：　走査すべきリンクがそれ以上存在しない場合、パスｐは要求を満足し、選択したパスのリストＳＰに格納される。手順はステップ（７０５）に移行する。
＊　（７０５）：　テストにより、要求された宛先ノードＺにより、それ以上パスが格納されているかどうかを判定する。
－　（７１１）：　それ以上のパスが格納されている場合、次のパスｐがパス・テーブルから抽出され、手順はステップ（７０４）に移行する。
－　それ以上のパスが格納されていない場合、手順はステップ（７１２）に移行する。
＊　（７１２）：　テストにより、選択したパスのリストＳＰが空であるかどうかを判定する。
－　リストが空である場合、使用可能なパスは一切ない。その場合、手順は完了し、停止ステップ（７０２）で終了する。次にパス選択プロセスは、図８に示すパス格納手順により経路指定データベースに格納されるパスを決定する。
－　（７１３）：　リストが空ではない場合、ＳＰ内の最短パス（長さが最も小さい）が選択される。長さのタイプが同じであるいくつかのパスがＳＰ内に存在する場合、ネットワーク上で負荷平衡を実行するために、最大空き帯域幅を有するパスが選択される。次にプロセスが完了し、停止ステップ（７１４）で終了する。
【００５９】パス格納

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図８は、「パス格納」手順の一般的な流れ図を示している。この手順は、パス選択によって処理された各パス計算の終了時に呼び出される。
＊　（８００）：　手順の開始
＊　（８０１）：　テストにより、計算したパスがすでに経路指定データベースに格納されているかどうかを判定する。
－　パスがすでに格納されている場合、手順は完了し、停止ステップ（８０２）で終了する。
－　パスがまだ格納されていない場合、手順はステップ（８０３）に移行する。
＊　（８０３）：　テストにより、経路指定データベースに新しいパスを格納するための空き項目がメモリ内にあるかどうかを判定する。
－　（８０４）：　空き項目が一切ない場合、空き帯域幅が最低のパスが経路指定データベースから除去され、手順はステップ（８０５）に移行する。
－　空き項目がある場合、手順はステップ（８０５）に移行する。
＊　（８０５）：　関連リンクがリンク・テーブル（４２０）に格納される。リンク項目は、パス上の次のリンク（４２５）のアドレスとともにまとめて連鎖される。パスは、リンク・テーブル（４２０）内の連鎖の第１の項目（４１４）のアドレスにより、前記連鎖にリンクされる。
＊　（８０６）：　パスに関連するリンクがトポロジ・データベースに登録される。トポロジ・データベースは、以下の時点のたびに経路指定データベースに通知する。
－　パス上のリンクがもはや動作不能になる
－　パスのリンク上の帯域幅予約が変更される
登録要求を受け取ると、経路指定データベースが停止するようにそれに通知するまで、トポロジ・データベースはこれらの情報を送信する。リンクが経路指定データベースから削除されると、登録が取り消される。このメカニズムにより、最新の経路指定データベースを維持することができる。「リンク更新」手順に関する詳細については、図１２を参照されたい。
＊　（８０７）：　パス特性（４１３）はトポロジ・データベースに含まれる情報によって更新される。次に手順は完了し、停止ステップ（８０８）で終了する。
【００６０】経路指定データベース更新
「経路指定データベース更新」プロセスは、潜在的パスまたは代替パスを用意するため、またはパス・テーブル（４１０）にすでに格納されているパスを更新するために、定期的かつ予防的に実行される背景タスクである。このプロセスは、接続セットアップ・プロセスに過負荷にならないようにするために、接続要求がない場合に実行される。このプロセスは以下の３つの手順を含む。
１．「代替パス計算」

２．「潜在的パス計算」
３．「パス再計算」
【００６１】経路指定データベース更新プロセスが始まると、代替パス計算手順が最初に呼び出される。経路指定データベースに格納されたすべてのパスを走査して、そのそれぞれについて代替パスを計算しなければならないかどうかの判定が完了すると、潜在的パス計算手順が実行される。
【００６２】トポロジ・データベースに格納されたすべてのノードを走査して、そのそれぞれについて潜在的パスを計算しなければならないかどうかの判定が完了すると、パス再計算手順が実行される。
【００６３】経路指定データベースに格納されたすべてのパスの再計算が完了すると、もう一度、代替パス計算手順が実行される。これは、呼び出されるたびに１つのパスを計算する永久プロセスである。
【００６４】代替パス計算
経路指定データベースにすでに格納されているパスが所与の宛先ノードについて固有のものである場合、代替パス計算が実行される。この計算は、同じパス特性を使って行われる。しかし、経路指定データベースにすでに格納されているパスと同じ第１のリンクと最後のリンクを使用しないようにするために、起点ノードからの発信リンクと宛先ノードへの着信リンクは選択されない。このようなリンクの１つに障害が発生した場合、非常に短期間の間に多くの接続を経路指定し直すことが可能になる。代替パスは前もって用意され、いつでも使用できる状態になっている。
【００６５】図９は、代替パス計算手順の一般的な流れ図を示している。走査すべき現行パスをＰとし、経路指定データベース更新プロセスがもう一度呼び出されるときに実行すべき次の手順をＮＰＲとする。
＊　（９００）：　手順の開始
＊　（９０１）：　テストにより、パスＰがその宛先にとって固有のものであるかどうかを判定する。
－　パスが固有のものではない場合、手順はステップ（９０２）に移行する。
－　（９０３）：　パスが固有のものである場合、代替パスが計算され、図８に詳細を示したパス格納手順を使用して経路指定データベースに格納される。次に、プロセスはステップ（９０４）に移行する。
＊　（９０４）：　テストにより、経路指定データベース内に走査すべきパスがそれ以上存在するかどうかを判定する。
－　（９０５）：　走査すべきパスがそれ以上存在する場合、Ｐは経路指定データベースに格納された次のパスを指し示す。次に格納されているパスは、経路指定データベース更新プロセスが次に呼び出されたときに走査すべき現行パスになる。次に手順は完了し、停止ステップ（９０７）で終了する。
－　（９０６）：　走査すべきパスがそれ以上存在しない場合、Ｐは経路指定データベースに格納された第１のパスを指し示し、ＮＰＲは潜在的パス計算手順を指し示す。次にプロセスは完了し、停止ステップ（９０７）で終了する。
＊　（９０２）：　テストにより、経路指定データベース内に走査すべきパスがそれ以上存在するかどうかを判定する。
－　（９０８）：　走査すべきパスがそれ以上存在する場合、Ｐは経路指定データベースに格納された次のパスを指し示し、手順はステップ（９０１）に移行する。
－　（９０９）：　走査すべきパスがそれ以上存在しない場合、Ｐは経路指定データベースに格納された第１のパスを指し示し、ＮＰＲは潜在的パス計算手順を指し示す。手順はステップ（９１０）に移行する。
＊　（９１０）：　図１０に示す潜在的パス計算手順が実行される。
【００６６】潜在的パス計算
経路指定データベースに格納された任意のパス内の宛先ノードとして選択されていないノードを決定するために、トポロジ・データベースが走査される。このようなノードが見つかった場合、デフォルト・パラメータを使ってパスが計算される。
【００６７】図１０は、潜在的パス計算手順の一般的な流れ図を示している。走査すべき現行ノードをＮとし、経路指定データベース更新プロセスがもう一度呼び出されるときに実行すべき次の手順をＮＰＲとする。
＊　（１０００）：　手順の開始
＊　（１００１）：　テストにより、ノードＮが経路指定データベースに格納された少なくとも１つのパス用の宛先であるかどうかを判定する。
－　ＹＥＳの場合、手順はステップ（１００２）に移行する。
－　（１００３）：　ＮＯの場合、Ｎへの潜在的パスが計算される。新しいパスは、図８に示すパス格納手順を使用して経路指定データベースに格納される。手順はステップ（１００４）に移行する。
＊　（１００４）：　テストにより、トポロジ・データベース内に走査すべきノードがそれ以上存在するかどうかを判定する。
－　（１００５）：　走査すべきノードがそれ以上存在する場合、Ｎはトポロジ・データベースに格納された次のノードを指し示す。次のノードは、経路指定データベース更新手順がもう一度呼び出されるときに走査すべき現行ノードになる。次にプロセスは完了し、停止ステップ（１００７）で終了する。
－　（１００６）：　走査すべきノードがそれ以上存在しない場合、Ｎはトポロジ・データベースに格納された第１のノードを指し示し、ＮＰＲはパス再計算手順を指し示す。次にプロセスは完了し、停止ステップ（１００

７）で終了する。
＊　（１００２）：　テストにより、トポロジ・データベース内に走査すべきノードがそれ以上存在するかどうかを判定する。
－　（１００８）：　走査すべきノードがそれ以上存在する場合、Ｎはトポロジ・データベースに格納された次のノードを指し示す。次に手順は、もう一度ステップ（１００１）に移行する。
－　（１００９）：　走査すべきノードがそれ以上存在しない場合、Ｎはトポロジ・データベースに格納された第１のノードを指し示し、ＮＰＲはパス再計算手順を指し示す。手順はステップ（１０１０）に移行する。
＊　（１０１０）：　図１１に示すパス再計算手順が実行される。
【００６８】パス再計算
経路指定データベースに格納されているパスは、（それらが依然として最良のものであるかどうかを判定するために）パス・テーブル（４１０）に格納されているパス特性を使って再計算される。より優れたパスが別に見つかった場合、そのパスが経路指定データベースに追加される。図１１は、パス再計算手順の一般的な流れ図を示している。走査すべき現行パスをＰとし、経路指定データベース更新プロセスがもう一度呼び出されるときに実行すべき次の手順をＮＰＲとする。
＊　（１１００）：　手順の開始
＊　（１１０１）：　格納されている特性とデフォルト・パラメータを使って、パスＰが再計算される。新しいパスは、図８に示すパス格納手順を使用して経路指定データベースに格納される。
＊　（１１０２）：　テストにより、経路指定データベース内に走査すべきパスがそれ以上存在するかどうかを判定する。
－　（１１０３）：　走査すべきパスがそれ以上存在する場合、Ｐは経路指定データベースに格納されている次のパスに初期設定される。次のパスは、経路指定データベース更新手順がもう一度呼び出されるときに走査すべき現行パスになる。次にプロセスは完了し、停止ステップ（１１０４）で終了する。
－　（１１０５）：　走査すべきパスがそれ以上存在しない場合、Ｐは経路指定データベースに格納されている第１のパスに初期設定され、ＮＰＲは代替パス計算手順に初期設定される。次に手順は完了し、停止ステップ（１１０４）で終了する。
【００６９】リンク更新
図１２は、リンク更新手順の一般的な流れ図を示している。この手順は、経路指定データベースに格納されているリンクに関係する構成更新が行われるときにトポロジ・データベースによって呼び出される。
＊　（１２００）：　手順の開始
＊　（１２０１）：　テストにより、構成更新がリンク状態の変更（リンク上の障害）に関係するかどうかを判定する。
－　ＮＯの場合、手順はステップ（１２０２）に移行する。
－　（１２０３）：　ＹＥＳの場合、その障害リンクの登録がトポロジ・データベースで取り消される。
＊　（１２０４）：　テストにより、障害リンクと並列のリンク（同じノードを接続するリンク）が使用可能かどうかを判定する。
－　（１２０５）：　リンクが一切使用可能ではない場合、リンク・テーブル（４２０）内のすべてのリンク発生と、パス・テーブル（４１０）内でそのリンクを使用するすべてのパスが削除される。手順は完了し、停止ステップ（１２０９）で終了する。
－　（１２０６）：　リンクが使用可能である場合、障害リンクは、パス・テーブルに格納されているすべてのパス内の並列リンクに置き換えられる。手順はステップ（１２０７）に移行する。
＊　（１２０７）：　並列リンクがトポロジ・データベースに登録される。
＊　（１２０８）：　並列リンク特性（４２３）を使ってパスが更新される。次にプロセスは完了し、停止ステップ（１２０９）で終了する。
＊　（１２０２）：　テストにより、構成更新がリンク帯域幅予約変更に関係するかどうかを判定する。
－　ＮＯの場合、プロセスは完了し、停止ステップ（１２０９）で終了する。
－　（１２１０）：　ＹＥＳの場合、すべてのリンク発生（割振り帯域幅（４２３））とそのリンクを使用するすべてのパス（空き帯域幅（４１３））が経路指定データベースで更新される。次にプロセスは完了し、停止ステップ（１２０９）で終了する。
【００７０】結論
接続が要求された時点で計算されたパスは、経路指定データベースに記録され、ネットワークで変更が発生するたびに更新される。さらに、障害時または優先使用時の非中断パス・スイッチをサポートするための代替パスと、潜在的宛先ノードに向かう新しいパスは、接続セットアップ・プロセスがアイドル状態のときに計算し格納することができる。この最後の動作は、処理優先順位が低く、接続要求がない場合に、背景で実行される。
【００７１】まとめとして、本発明の構成に関して以下の事項を開示する。
【００７２】（１）伝送リンク（２０９）によって相互接続された複数のノード（２０１～２０８）を含むパケット交換通信ネットワーク内で起点ノードと宛先ノードとの間の最適パスを決定する方法において、前記方法が、各接続要求ごとに、経路指定データベース内で前記接続要求を満足する事前計算パスを選択するステップと、接続要求を満足する事前計算パスが経路指定データ

ベース内にすでに格納されていない場合に、前記接続要求を満足するパスを計算し、前記パスを経路指定データベース内に格納するステップと、定期的に、またはネットワーク内の少なくとも１つの所定の事象に応じて、経路指定データベースに格納されたパスを再計算するステップとを含むことを特徴とする方法。

（２）ネットワーク内の前記所定の事象が、経路指定要求と、トラフィック変動と、ネットワーク構成変更とを含むことを特徴とする、上記（１）に記載の方法。

（３）経路指定データベースに格納された各事前計算パスごとに、同じ起点ノードと同じ宛先ノードを備えた少なくとも１つの代替パスを計算するステップをさらに含むことを特徴とする、上記（１）または（２）に記載の方法。

（４）事前計算パスと比較して、起点ノードからの別の発信リンクと宛先ノードへの別の着信リンクとを使って代替パスが計算されることを特徴とする、上記（３）に記載の方法。

（５）起点ノードから可能なすべての宛先ノードへのパスを計算するステップをさらに含むことを特徴とする、上記（１）ないし（４）のいずれか一項に記載の方法。

（６）選択を行わずに所定の期間後に経路指定データベースから事前計算パスが除去されることを特徴とする、上記（１）ないし（５）のいずれか一項に記載の方法。

（７）定期的に、またはネットワーク内の少なくとも１つの所定の事象に応じて、経路指定データベースに格納されたパスを再計算するステップと、経路指定データベースに格納された各事前計算パスごとに、同じ起点ノードと同じ宛先ノードを備えた少なくとも１つの代替パスを計算するステップと、起点ノードと可能なすべての宛先ノードとの間のパスを計算するステップと、事前計算パスを除去するステップとが、接続要求がない場合に実行されることを特徴とする、上記（１）ないし（６）のいずれか一項に記載の方法。

（８）前記経路指定データベースが、ネットワーク構成およびトラフィック特性を含むトポロジ・データベースに接続され、ネットワーク制御メッセージによって更新され、複数の項目を備えたパス・テーブルであって、各項目が起点ノードと宛先ノードとの間の事前計算経路指定パスを表し、

－　宛先ノードのＩＤと

－　パスの特性と

－　起点ノードから始まるパス上の第１のリンクのＩＤとを含む、パス・テーブルと、複数の項目を備えたリンク・テーブルであって、各項目がパス・テーブルに格納された事前計算パス上のリンクを表し、

－　リンクのＩＤと

－　リンクの特性と

－　リンクが属すパスのＩＤと

－　起点ノードから始まるパスに沿って次のリンクのＩＤとを含む、リンク・テーブルとを含むことを特徴とする、上記（１）ないし（７）のいずれか一項に記載の方法。

（９）上記（１）ないし（８）のいずれか一項に記載の方法を実施するためのノード（３００）。

（１０）上記（９）に記載のノード（３００）を少なくとも１つ含む、パケット交換通信ネットワーク。

【図面の簡単な説明】

【図１】本発明による呼出しセットアップ・プロセスを示す図である。

【図２】本発明の請求範囲のアクセス・ノードおよび通過ノードを含む高速パケット交換ネットワークの典型的なモデルを示す図である。

【図３】本発明による高速経路指定点を示す図である。

【図４】本発明による経路指定データベース構造を示す図である。

【図５】トポロジ・データベース構造を示す図である。

【図６】トポロジ・データベースに格納されたリンク特性を示す図である。

【図７】本発明によるパス探索手順の詳細な流れ図である。

【図８】本発明によるパス格納手順の詳細な流れ図である。

【図９】本発明による代替パス計算手順の詳細な流れ図である。

【図１０】本発明による潜在パス計算手順の詳細な流れ図である。

【図１１】本発明によるパス再計算手順の詳細な流れ図である。

【図１２】本発明によるリンク更新手順の詳細な流れ図である。

【図１３】本発明による不要情報収集手順の詳細な流れ図である。

【符号の説明】

３０１　ポート１、ポート２、ポートＮ

３０２　パケット・スイッチ

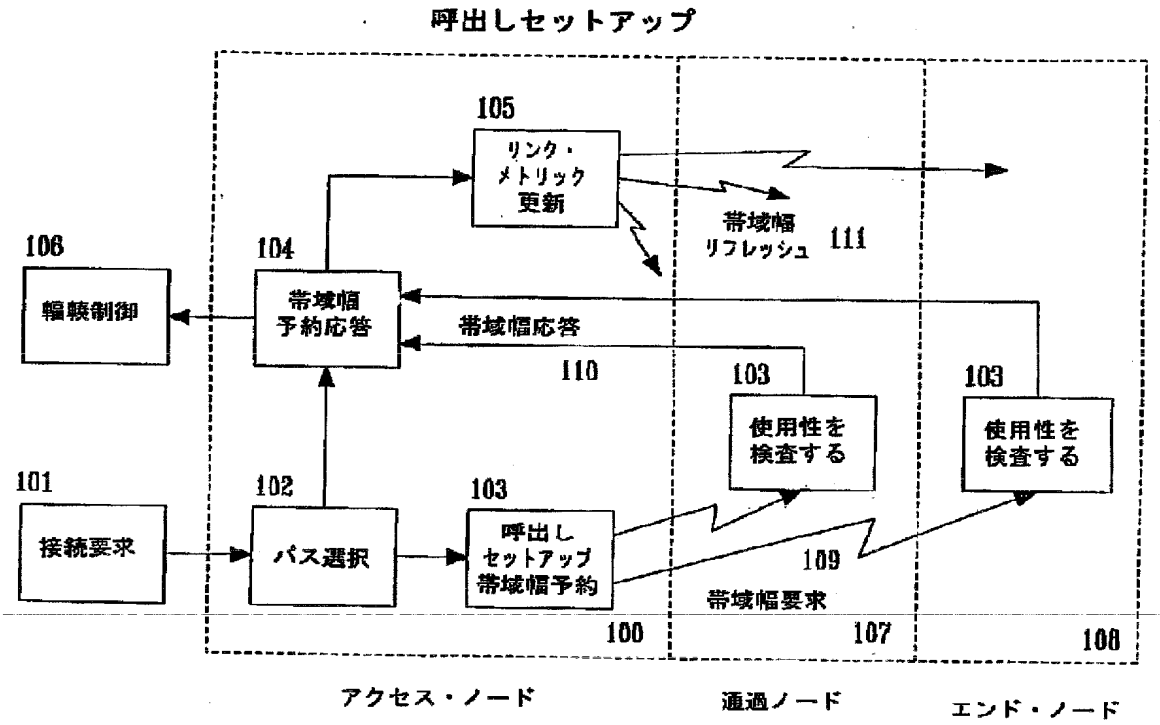
３０４　トランク・アダプタ１、トランク・アダプタ２、トランク・アダプタＭ

３０５　経路制御装置

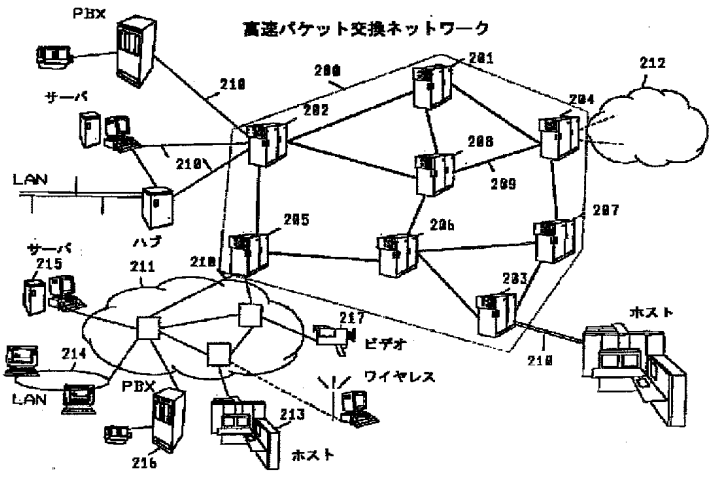
３０６　ネットワーク・トポロジ

３０８　経路指定データベース

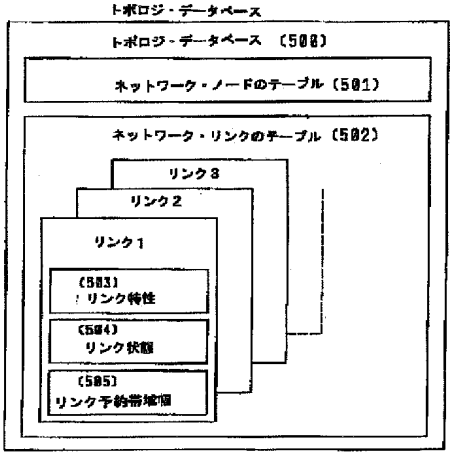
【図１】


呼出しセットアップ
105
リンク・
メトリック
更新
帯域幅
リフレッシュ
111
106
輻輳制御
104
帯域幅
予約応答
帯域幅応答
110
103
使用性を
検査する
103
使用性を
検査する
101
接続要求
102
パス選択
103
呼出し
セットアップ
帯域幅予約
109
帯域幅要求
100
107
108
アクセス・ノード
通過ノード
エンド・ノード

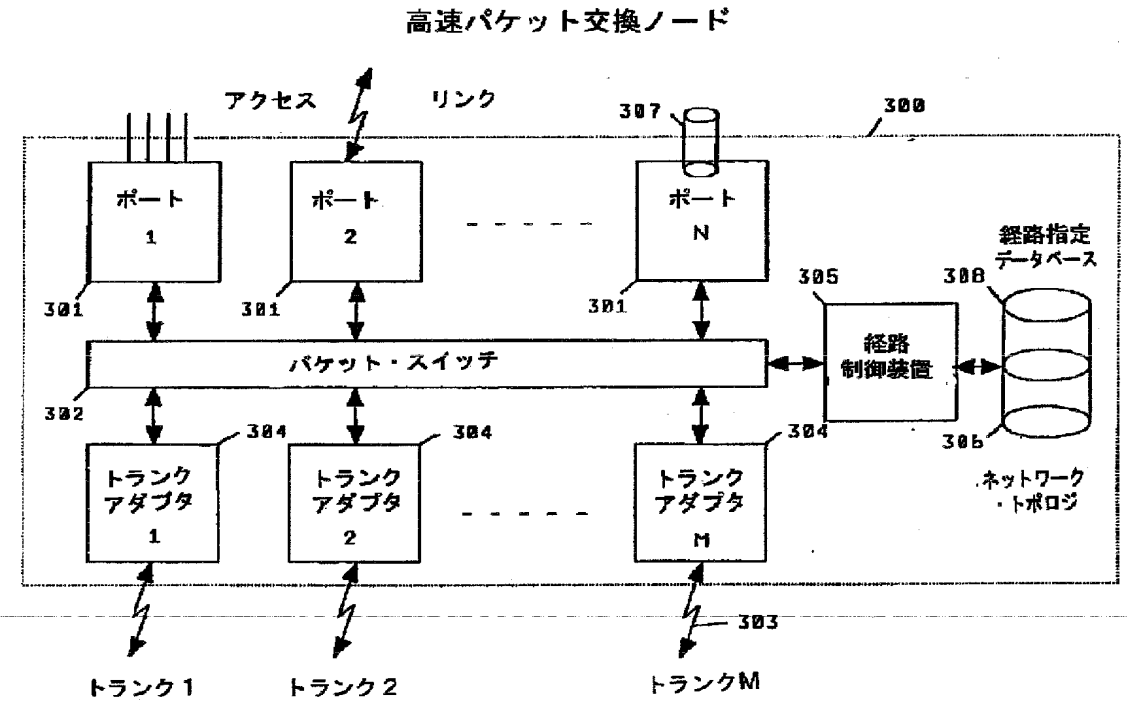
【図２】


PBX
高速パケット交換ネットワーク
サーバ
LAN
ハブ
サーバ
LAN
PBX
ビデオ
ワイヤレス
ホスト
ホスト

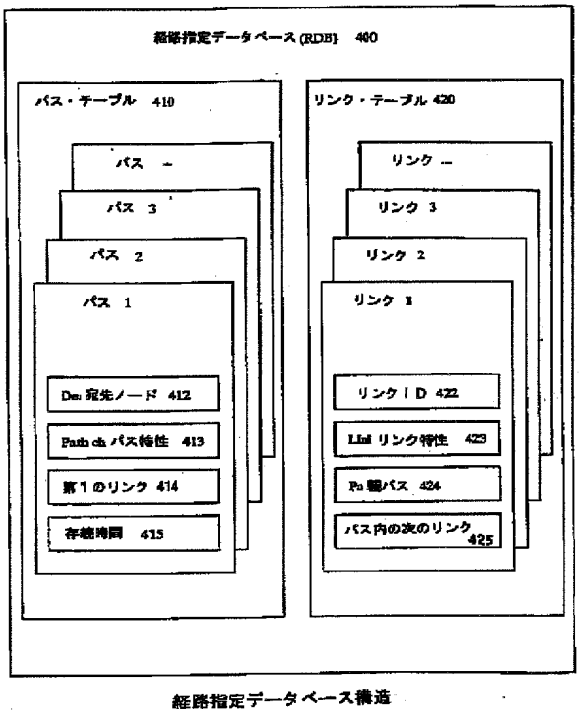
【図５】


トポロジ・データベース
トポロジ・データベース (500)
ネットワーク・ノードのテーブル (501)
ネットワーク・リンクのテーブル (502)
リンク３
リンク２
リンク１
(503)
リンク特性
(504)
リンク状態
(505)
リンク予約帯域幅

【図３】



【図４】



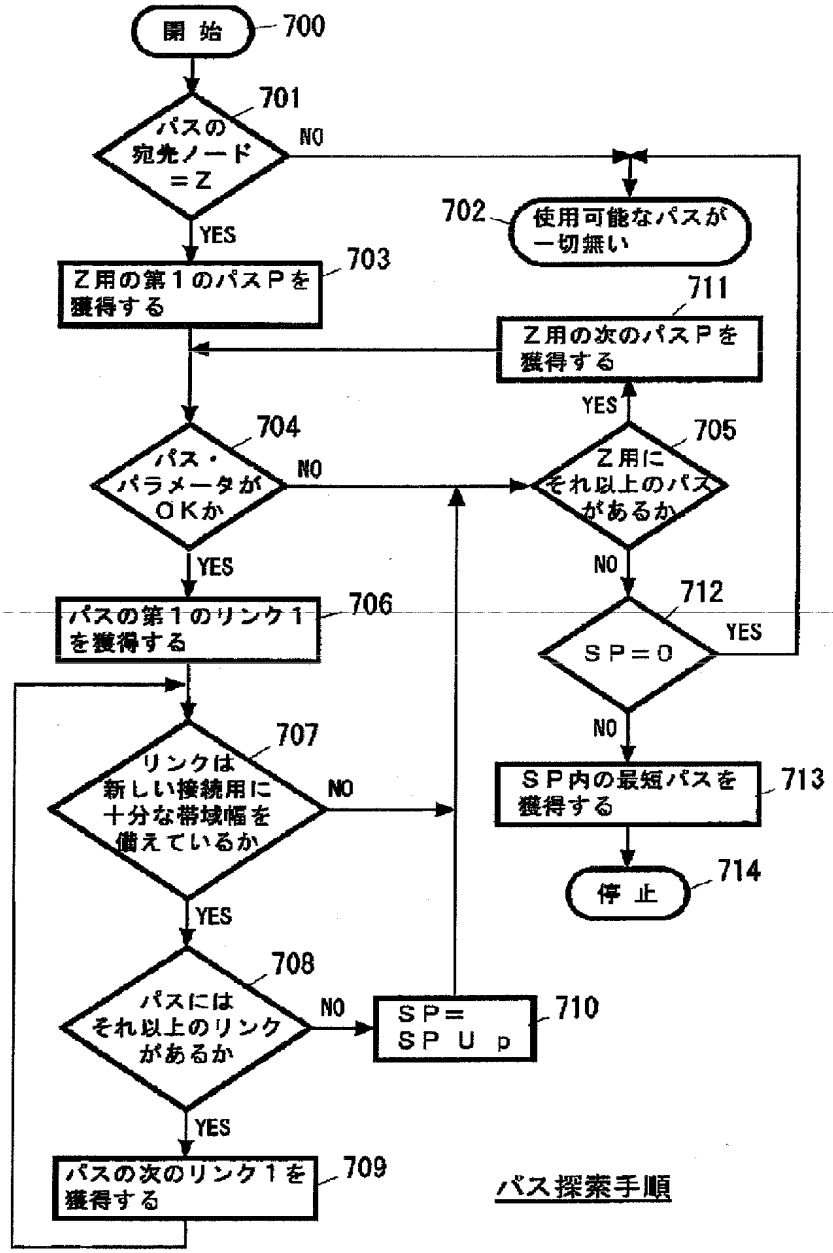
経路指定データベース構造

【図６】

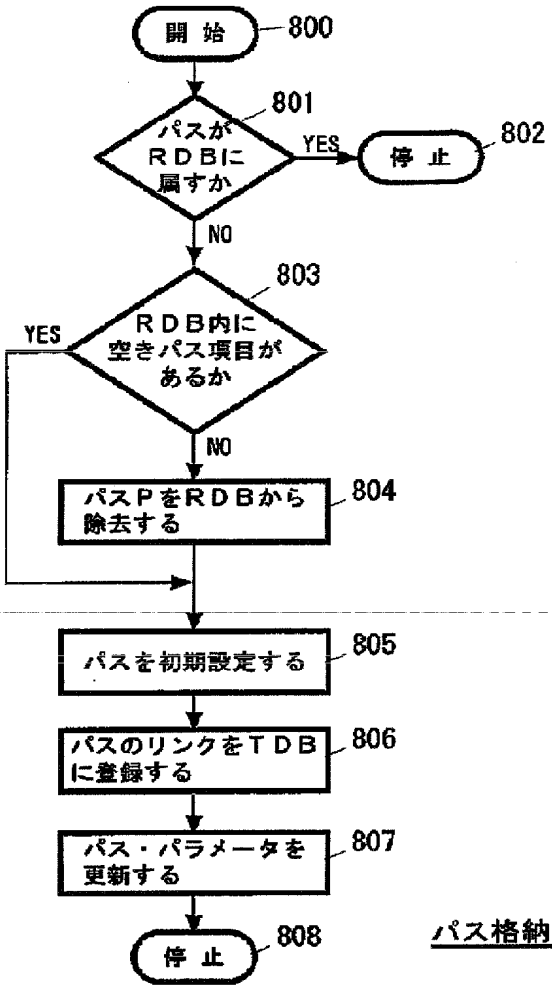
トポロジ・データベース
リンク特性

特性		リンク値			
名前	DI 説 明	A	B	…	N
C	全容量（ｐｂｓ）	C_A	C_B	…	C_N
rf	予約可能部分（%）	rf_A	rf_B	…	rf_N
$\hat{C}_R$	全予約帯域幅（ｂｐｓ）	$\hat{C}_{R,A}$	$\hat{C}_{R,B}$	…	$\hat{C}_{R,N}$
M_{NR}	ＮＲトラフィックによる全容量帯域幅（ｂｐｓ）	$M_{NR,A}$	$M_{NR,B}$	…	$M_{NR,N}$
mps	最大パケット・サイズ（バイト）	mps_A	mps_B	…	mps_N

【図７】

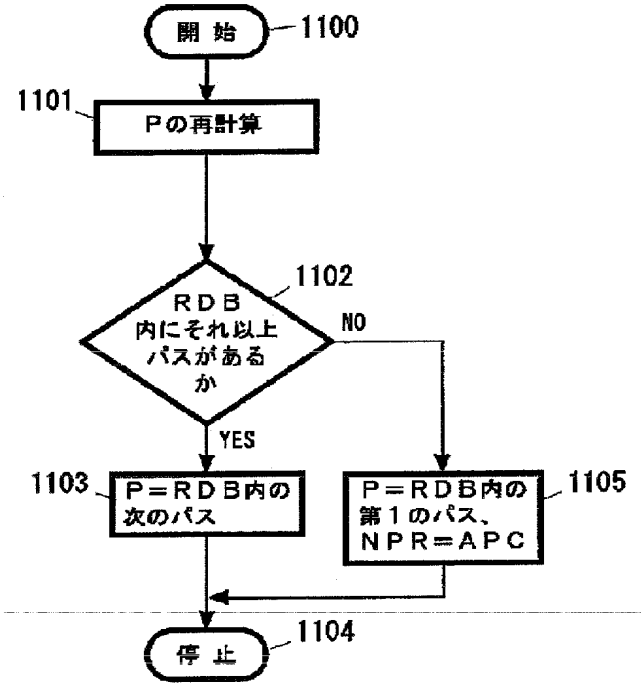

開 始
700
パスの宛先ノード＝Z
701
NO
YES
使用可能なパスが一切無い
702
Z用の第１のパスＰを獲得する
703
Z用の次のパスＰを獲得する
711
YES
パス・パラメータがＯＫか
704
NO
Z用にそれ以上のパスがあるか
705
YES
NO
パスの第１のリンク１を獲得する
706
ＳＰ＝０
712
YES
NO
リンクは新しい接続用に十分な帯域幅を備えているか
707
NO
ＳＰ内の最短パスを獲得する
713
YES
停 止
714
パスにはそれ以上のリンクがあるか
708
NO
ＳＰ＝ＳＰ Ｕｐ
710
YES
パスの次のリンク１を獲得する
709
パス探索手順

【図８】



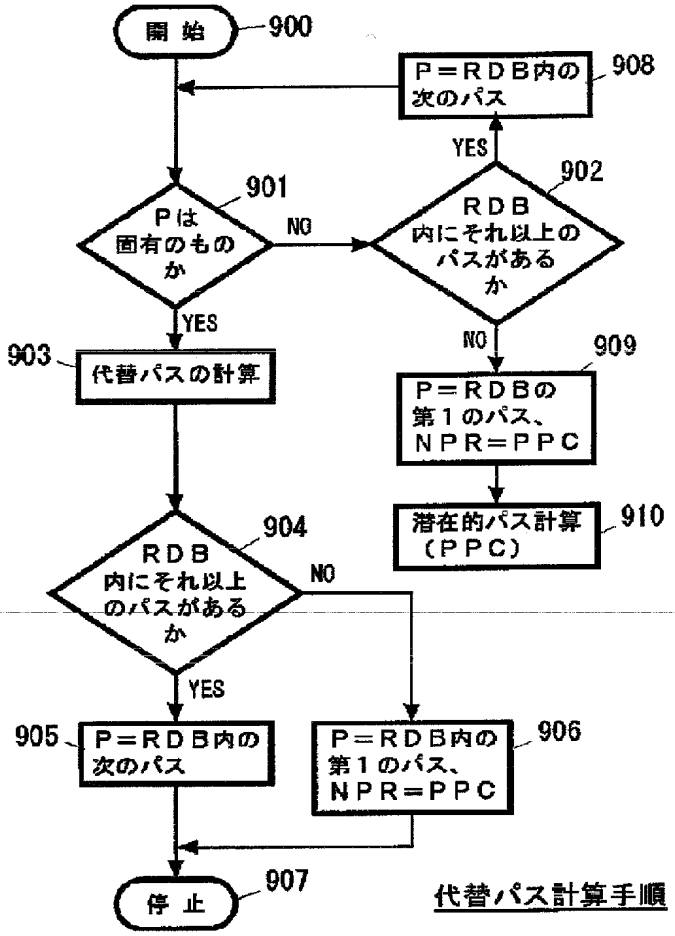
パス格納手順

【図１１】



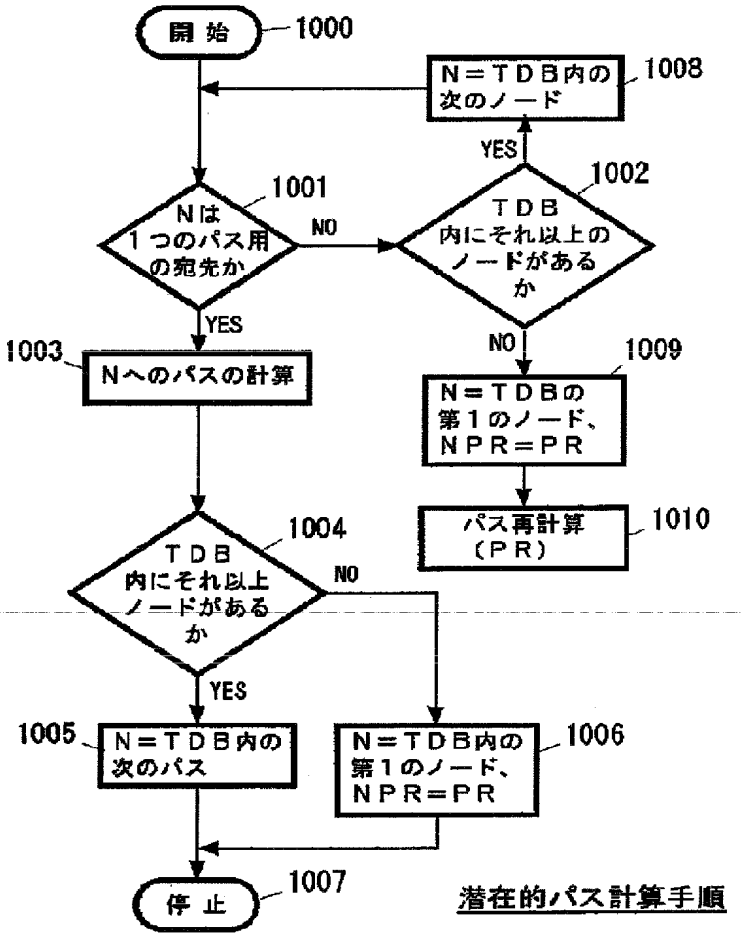
パス再計算手順

【図９】


開 始
900
P＝ＲＤＢ内の次のパス
908
YES
902
ＲＤＢ内にそれ以上のパスがあるか
NO
901
Pは固有のものか
NO
YES
903
代替パスの計算
NO
909
P＝ＲＤＢの第１のパス、ＮＰＲ＝ＰＰＣ
潜在的パス計算（ＰＰＣ）
910
904
ＲＤＢ内にそれ以上のパスがあるか
NO
YES
905
P＝ＲＤＢ内の次のパス
P＝ＲＤＢ内の第１のパス、ＮＰＲ＝ＰＰＣ
906
停 止
907

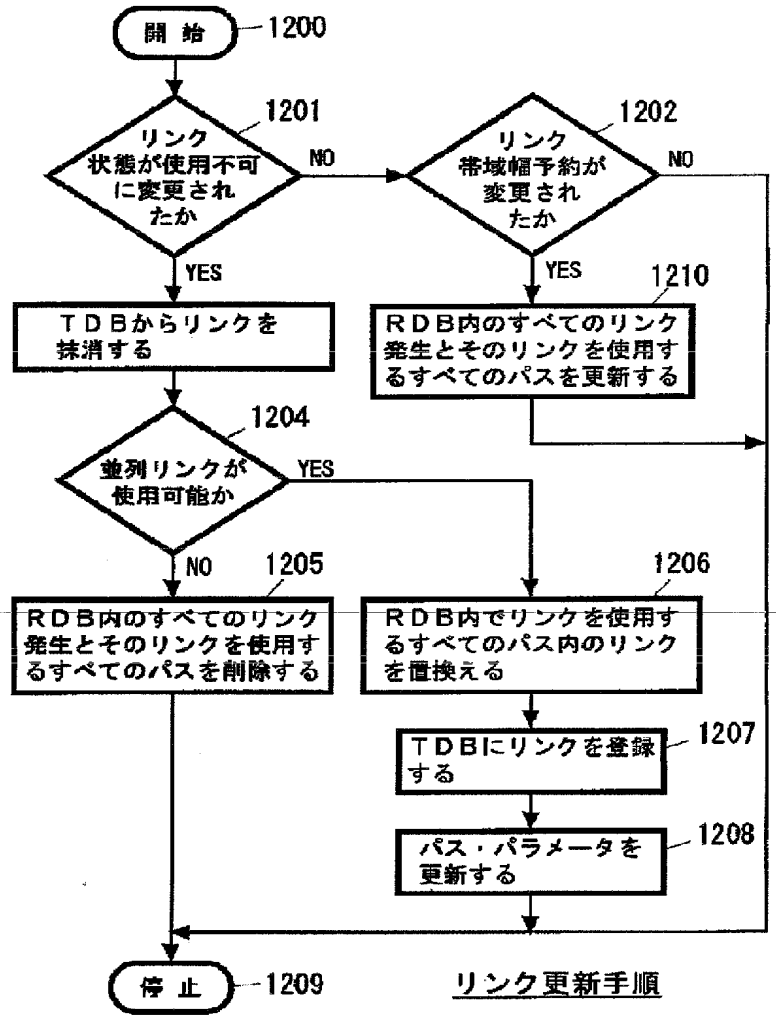
代替パス計算手順

【図１０】



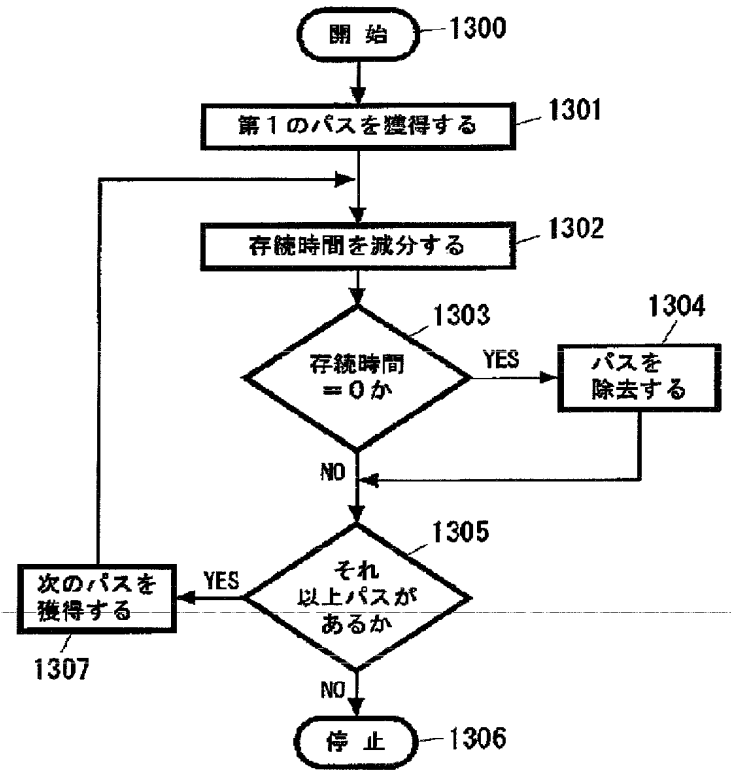
潜在的パス計算手順

【図１２】


開 始
1200
リンク状態が使用不可に変更されたか
1201
NO
YES
リンク帯域幅予約が変更されたか
1202
NO
YES
ＴＤＢからリンクを抹消する
ＲＤＢ内のすべてのリンク発生とそのリンクを使用するすべてのパスを更新する
1210
並列リンクが使用可能か
1204
YES
NO
ＲＤＢ内のすべてのリンク発生とそのリンクを使用するすべてのパスを削除する
1205
ＲＤＢ内でリンクを使用するすべてのパス内のリンクを置換える
1206
ＴＤＢにリンクを登録する
1207
パス・パラメータを更新する
1208
停 止
1209

リンク更新手順

【図１３】



不要情報収集手順

フロントページの続き

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1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1]A method characterized by comprising the following of determining an optimum path between a starting node and a destination node in a packet switched communication network containing two or more nodes (201–208) by which interconnection was carried out in a transfer link (209).
A step as which said method chooses a precomputation path for which said connection request is satisfied within a routing database for every connection request.
A step which calculates a path with which it is satisfied of said connection request, and stores said path in a routing database when a precomputation path with which it is satisfied of a connection request is not already stored in a routing database.
A step which re–calculates periodically a path stored in a routing database according to at least one predetermined phenomenon in a network.

[Claim 2]A method comprising according to claim 1:
Said predetermined phenomenon in a network is a routing demand.
Traffic fluctuation.
Network composition change.

[Claim 3]A method according to claim 1 or 2 by which a step which calculates at least one alternate path provided with the same destination node as the same starting node for each [which was stored in a routing database] precomputation path of every being included further.
[Claim 4]A method according to claim 3 characterized by calculating an alternate path

using another dispatch link from a starting node, and another mail arrival link to a destination node as compared with a precomputation path.
[Claim 5]A method according to any one of claims 1 to 4 by which a step which calculates a path from a starting node to all the possible destination nodes being included further.
[Claim 6]A method according to any one of claims 1 to 5, wherein a precomputation path is removed from a routing database after a predetermined period, without choosing.
[Claim 7]A step which re-calculates periodically a path stored in a routing database according to at least one predetermined phenomenon in a network, A step which calculates at least one alternate path provided with the same destination node as the same starting node for each [which was stored in a routing database] precomputation path of every, A method according to any one of claims 1 to 6 when a step which calculates a path between a starting node and all the possible destination nodes, and a step which removes a precomputation path do not have a connection request, wherein it is performed.
[Claim 8]A path table which said routing database was connected to a topology database including network composition and traffic characteristics, was updated by network control message, and was provided with two or more items, comprising: Each item expresses a precomputation routing path between a starting node and a destination node. - ID of a destination node - The characteristic of a path - A path table containing ID of a link of the 1st on a path which begins from a starting node It is the link table provided with two or more items, and a link on a precomputation path with which each item was stored in a path table is expressed. - ID of a link - The characteristic of a link - ID of a path with which a link belongs - A path which begins from a starting node is met and it is ID of the following link.

[Claim 9]A node (300) for enforcing a method according to any one of claims 1 to 8.
[Claim 10]A packet switched communication network containing at least one node (300) according to claim 9.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention relates to the method and process for more specifically making time for choosing the optimal-routing path between the starting node in a large-scale communication network, and a destination node into the minimum about a high-speed packet switching network.
[0002]
[Description of the Prior Art]
Especially high-speed packet-switching network-data transmission was concentrated on application, and it is developed by unifying a basic shift to a customer's traffic profile. Development of a workstation, the interconnection of a local area network, The distributed processing of a workstation and a supercomputer, new application, Integration of various structures of competing depending on the case (that is, a hierarchy opposite pair etc.) It is promoted by a wide area network versus a local area network, and a sound versus data, a data profile's consumption bandwidth increases, burst-izing and indeterminism nature increase, and higher connectivity is needed. Based on the above, a channel connection host, business, and an engineering workstation, The necessity that local area network communication, a sound, video, and traffic can be transmitted between middle-scale file servers from a terminal and a small scale and support the distributed computing application by a high-speed network is strong. The vision of such a high-speed multi-protocol network is the impelling force of an appearance of the high-speed packet switching network architecture.
In the architecture, data, a sound, and video information are digital-code-ized, are divided into a small packet, and are transmitted with the common set which consists of two or more nodes and links.

[0003]In the case of such new network architecture, 1 set of requirements about performance or consumption resources are meant, but transmitting a mixed traffic stream efficiently on a very high-speed circuit can be summarized as follows about this. That is, it is the goodness of the efficiency of the height of the pliability for supporting the height of a throughput, the shortness of packet processing time, and a wide range connection option, a flow, and congestion control.
[0004]One of the main requirements for a throughput and a processing time high-speed packet switching network is reducing delay between terminals, in order to

satisfy real-time delivery restrictions and to attain a sound and a high nodal throughput required for transmission of video. It is the rise of a link rate not being necessarily equal to the rise of the processing speed of the communication node proportional to it, and fundamental SUBJECT of a high-speed network making processing speed the minimum, and using thoroughly a high speed / low-error-rate art. Many of transmissions and the control facilities which are obtained from new high bandwidth network architecture are performed between terminals.
With a flow control, especially path selection and a bandwidth managing process are managed by the access point of the network which reduces both recognition of an intermediate node, and a function.
[0005]The node in a connectivity high-speed network must provide perfect connectivity. This contains connection of a user's device and the capability to connect an end user to other devices, regardless of a vendor or a protocol. This network must also support what types, such as data, a sound, video, fax, graphics, or a picture, of traffic. The node can use all the facilities of a common carrier, and must be able to suit two or more protocols. All the required conversion must be automatic and must be penetrations for an end user.
[0006]Congestion and a flow control communication network have restricted resources freely, in order to secure efficient packet transmission. Efficient bandwidth management is indispensable in order to use a high-speed network thoroughly. Although the transmission cost per byte is continuing decreasing every year, since the demand of bandwidth increases, a transmission cost may express the main expenses for employing a future telecommunications network succeedingly. Therefore, in order to manage network band width, the considerable labor has been spent when designing a flow and a congestion control process, a bandwidth request-to-print-out-files mechanism, and a routing algorithm. The ideal network must be able to transmit the useful traffic in direct proportion to the traffic with which a network is provided until it also reaches the maximum transmission capacity. If this limit is exceeded, the network must operate by that maximum capacity, even if demand is how much.
[0007]The general problem of a routing mode communication network is finding the path between sauce and a destination node. When the network is using datagram, path selection must be individually performed for every packet. In a virtual connection, path deciding is performed only once at the time of establishment of connection (or session). Since the requirements for a large number which compete easily must be satisfied in any case, selection of a routing algorithm is not easy. However, the routing algorithm must be a thing which enables it to utilize a network the optimal according

to the standard which may be changed with the type of an operating condition. In many cases, a network makes a packet transmission time the minimum, and it is realized so that the packet of the maximum number may be transmitted. The purpose in the case of being other is to develop the positive network which can function correctly in the case of the obstacle of reducing communication cost or a destructive circuit, or a node, or the peak of traffic.

[0008]Since restrictions are various, there is a type of various routing, such as overflow routing, random or probable routing, and deterministic routing. Routing technique of this last can be enforced according to the specific modes, such as immobilization or adaptation routing, concentration or distributed route specification, a node unit or routing between terminals, a connection oriented type, or connectionless type routing.

[0009]In contrast with fixed routing in which the routing rule of all adaptation routing is established at once, the purpose of adaptation routing is to satisfy optimization criteria always. For example, according to the instantaneous state of the traffic on a link, a table is updated permanently.

[0010]When changing the characteristic of a distributed route specification network, it is possible to adapt routing by assigning the responsibility which updates a routing table periodically according to traffic and topology to one node. The main faults of this method called intensive routing are generating important auxiliary traffic and subordinating a network good function only to one node. On the other hand, in intensive routing, when a table is refreshed, a certain problem may be generated. It is because all nodes cannot receive said table simultaneously. The solution is decentralizing a table on the level of each node. Distributed route specification is the method of exchanging the message about traffic and network conditions, in order for adjacent nodes to update each routing table.

[0011]Both of terminal routing adaptation routing and distributed route specification are used together in many high-speed networks now.

[0012]In order to make processing time into the minimum and to use thoroughly a high speed / low-error-rate art, transmission and the control facility which are obtained from a high bandwidth network are performed between terminals. Since no error recovery and retransmission for every hop are considered by a high-speed high performance (low error) link, a transit node does not need to recognize each transmission connection. A starting node takes charge of calculation of the course which a packet must follow through a network. Two kinds of following modes are shown by routing of a packet, and a wide range practice exists about it.

1. Determine what kind of thing the course for given connection must be.
2. Actually exchange packets within a switching node.

[0013]One of the clear features of a connection-oriented routing network is the existence of the "connection" between end users. Many methods of building a connectionless type or a connection-oriented network exist. In many cases, the packet which uses various routing modes can share the same data-communications mechanism. Many of high-speed connection is established on a reserved path, in order to guarantee the bandwidth and the quality of service which a user demands. The path in a network is calculated by answering each connection request by a starting node. The calculated path is based on the parameter by which the requirements for network connection are characterized, and the link capacity and load information which are maintained in each network node. A starting node sends a reservation request to an end node. Since a bandwidth request packet flows along with the selected path, each transit node judges whether it is having sufficient capacity for it to accept new connection. The demanded bandwidth is reserved when connection is accepted. Change is reflected in all the network nodes by the control message. Whenever it sends a packet, it becomes unnecessary to put in a destination address in a packet header, if connection is established. Only ID for specifying which connection should be used as this object for packets is required. Since the packet overhead is low, connection-oriented routing technique conforms especially to transmission (for example, real time audio connection) of a very short packet. In this technique, by each node, a connection table must be set up dynamically, and must be maintained, and datagram transmission becomes a very inefficient thing by this restriction. Since a network node can adjust a flow by each connection, the flow in a connection-oriented network and implementation of congestion control are easier than the case of a connectionless type network. however, a link or a node -- impossible of operation -- becoming (it stops) -- the connection which passes the link or node which received the influence is usually lost.Therefore, new connection must be established according to another course. Since this requires time, there is a possibility of interrupting connection, in an end user level. On the other hand, a connectionless type network usually reroutes traffic automatically around a link or a node failure.

[0014]The role of a path selection path selection process is determining the path optimal for a user on a network, whenever connection is required. Optimizing the overall throughput in a network, this means assigning a user a network resource, in order to guarantee each requirement for a quality of service. This function is chiefly performed within a starting node. Although the user can specify various

quality-of-service parameters, it is for a part satisfying real-time delivery restrictions, and a part is related with non-real-time-data traffic transmission. A starting node carries new connection and calculates the path to the destination node which can provide service of the level which new connection needs. A path selection algorithm uses the data which describes the present traffic load inside the whole network (a node and a link). Such data is stored in the topology database located in each network node. Connection is refused when a suitable path is not found at all, in order to satisfy all the requirements. If a starting node finds a suitable path, the setup message transmitted in the selected course will be generated, and the resource allocation for each link which becomes the destination of the setup message will be updated.

[0015]At the time of connection establishment, only once, a path is chosen and resources are reserved so that a high throughput may be suited. The path selection algorithm is taking into consideration various restrictions by both a user (the requirements for a quality of service, a user's traffic characteristics), the present network topology, and bandwidth assignment. This algorithm has few hop numbers and makes a network throughput the maximum by choosing a path with the tendency to attain equivalent distribution of the traffic during a link. If a suitable path is chosen, a network connection establishment process will be performed and the resources which met the path will be reserved after that.

[0016]If a connection setup delay path is chosen and connection is set up, a network node may take a considerable processing overhead and considerable delay may be generated. Since the end node which supports two or more connection sets up a demand simultaneously, in order to avoid the bottleneck of a connection setup process, it is easy to perform a certain scheduling. However, nevertheless, the time for establishing connection may become huge. In permanent connection, probably, setup delay is not so much meaningful. However, in the case of the connection service of real time, this is a very important parameter. It is because a part of connection is ended with the device which performs timeout.

[0017]This delay is important also from a viewpoint of the path change at the time of an obstacle or priority use. When many connection which is using the link or node which the obstacle generated is rerouted, there is a possibility that a huge number of new path setups may be performed simultaneously. Establishing two or more new connection simultaneously via an alternate route takes time, and connection is usually interrupted by an end user level. In the uninterrupted path switch mechanism, it assumes as follows.

- The physical network is provided [1st] with remaining landfill capacity sufficient

since it corresponds to the network connection influenced according to the obstacle phenomenon.

- In order to hold [2nd] connection with an end user level, path selection delay is the minimum.

[0018]As for a large scale network, since it is dramatically dynamic, in order to take the network newest image into consideration, it is ideal to perform a path selection algorithm, whenever new connection is established. Actually, since such calculation should need a huge quantity of processing time, it does not justify rash during continuation of connection. It seems that it is the futility of resources and money to use a dramatically efficient processor in order to support a lot of path selection, when the time of a setup or an obstacle occurs, and to maintain it at an idle state between between things when. On the other hand, when the situation of a link and a node changes continuously, it is not useful to choose a path based on a network perfect image. Accuracy required in order to find a path may fall, so that the necessity for a bandwidth request to print out files increases.

[0019]In a large-scale high-speed packet switching network, supporting much connection setup operation means some requirements with the point of performance and consumption resources. This can be summarized as follows.

- A starting node or the node which performs the path computation for starting nodes must be able to determine where guarantee a quality of service (delay, a loss, probability ...) between short time dramatically, and an incoming packet is routed. This calculation must be quick enough, in order to choose an optimum path for every connection request.
- In the case of a node or a link fault, the starting node must be able to establish alternative connection, without interrupting traffic for an end user level.
- The processing time in a node must be the minimum.
- The network resource in a starting node, the network resource which met the appointed path, and the network resource inside the whole network must be optimized.

[0020]Since node resources (treatment capacity) are optimized making connection setup delay into the minimum, regardless of a connection request, precomputation of the course from the starting node in a network to a destination node can be carried out. This precomputation is performed for a background, when a connection setup process is an idle state. If connection is required, a path selection process will search for a precomputation course first. That is, only when a precomputation path is not found, the trigger of the path selection algorithm is carried out. A path is calculated and used, in order to establish connection and to route the packet in a network. Said

path is stored also in the list of paths which made previous selection.
[0021]In order to optimize a network resource in respect of an overall throughput, the present traffic conditions on a link are taken into consideration in the path selection process. As a result, a precomputation path must be continuously updated according to the load change on a network.
[0022]In the case of a link fault, it is important to reroute the traffic on an alternate path, without interrupting end user connection. Generally, the connection which a link carries toward this destination node increases, so that a link becomes close to a destination node. If an obstacle occurs on the link which adjoins a starting point or a destination node, discontinuation of many connection may be needed and some previous selection courses may become invalid. The solution is that carry out precomputation of two or more courses about all destination nodes, and each course uses the separate link which adjoins a starting node and a destination node.
[0023]
[Problem(s) to be Solved by the Invention]Therefore, the method for determining the course with which it is satisfied of the requirements for connection in respect of a quality of service as at high speed as possible must be provided, optimizing a network resource.
[0024]
[Means for Solving the Problem]This invention relates to a packet switched communication network containing two or more nodes by which interconnection was carried out in a transfer link. The purpose of this invention is to make connection setup delay in an access node into the minimum, and there is in making time for choosing an optimum path in the whole network between an access node and a destination node especially into the minimum. Each node in a network is provided with the following.
One or more communication adapters for receiving a data packet and transmitting.
A path control apparatus for assigning, controlling and managing a network resource.
A topology database for storing network composition and traffic characteristics which were updated by network control message.
A routing database for storing a path which was updated simultaneously with a topology database, and was chosen or calculated with each characteristic.

[0025]A method and a system of a claim contain the following steps for every connection request.
* A step which chooses a precomputation path for which said connection request is

satisfied within a routing database for every connection request, * When a precomputation path with which it is satisfied of a connection request is not already stored in a routing database, it is a step which calculates a path with which it is satisfied of said connection request, and stores said path in a routing database.
[0026]When there is no connection request, a method and a system of this invention contain the following addition steps.
* A step which re-calculates a path periodically stored in a routing database according to predetermined phenomena, such as traffic fluctuation and network composition change, * A step which calculates at least one alternate path provided with the same destination node as the same starting node for each [which was stored in a routing database] precomputation path of every, * A step which calculates a path from a starting node to all the possible destination nodes, and * It is a step which removes a precomputation path from a routing database after a predetermined period without choosing.
[0027]
[Embodiment of the Invention]
As shown in high speed communication drawing 2, the typical model of the communications system is made of some user networks (212) which communicate with the highly efficient network (200) which uses a dedicated line, communication enterprise providing service, and a Public Data Network. The mainframe computer which uses each user network as an enterprise server (213), The user group who uses the workstation or personal computer connected on LAN (local area network 214), An application server (215), PBX (private branch exchange 216), and a video server (217) can be described as 1 set of communication processors and the link (211) which carry out interconnection. Although it is distributing to various institutions, it is necessary to carry out interconnection of such a user network with a broader-based transmission mechanism, and since data transfer is constituted, various techniques can be used for it. There are some to which the inspection of data consistency is required for at each network node, and access speed falls as a result depending on the architecture. There is also the architecture which is asking for high speed data transfer intrinsically. Therefore, the technique of transmission in a node, routing, and a change is optimized so that the packet which flows toward a final address with possible top speed may be processed.
[0028]Intrinsically, this invention belongs to the latter category and belongs to the high-speed packet switching network architecture more specifically explained in full detail below.

[0029]The common figure of highly efficient packet switching network drawing 2 shows the high-speed packet-switching transmission systems containing eight nodes (201-208), and interconnection of each node is carried out by the high speed communication line called a suitcase (209). Access (210) to a high-speed network from a user is realized by the access node (202-205) located in a periphery. Each port connects the external device which supports the standard interface to a network including the port of one or more [access node / such], The access point for performing conversion required to transmit the flow of the user data which flow on a network among other external devices is provided. As an example, an access node (202) takes an interface with a private branch exchange (PBX), an application server, and a hub by three ports, respectively, and communicates via a network by a contiguity transit node (201), (205), and (208).

[0030]Switching node each network node (201-208) includes the routing point that an incoming-data packet is selectively routed on a dispatch suitcase toward a neighboring transit node. Such route determination is performed according to the information included in the header of a data packet. In addition to a basic packet routing function, a network node provides the following auxiliary services.

* Determination [of the routing path for packets sent within the node] * Directory service * like drawing of information, or updating about a network user and resources. Include link operating condition information. Management [of the view with which physical network topology was consistent] * Request to print out files of the resources in a network access point [0031]According to this invention, there are the following as such auxiliary service.

* storing [of the routing path in a node] * -- the renewal of such a path [0032]Each port is connected to two or more user processors, and the sauce of the digital data which should be transmitted to the user system of others [user's unit / each], the data receiver for consuming the digital data received from other user systems, or usual contain the both. The interpretation of a user protocol, and conversion to the packet formatted in order to transmit user data appropriately on a packet network (200), Generation of the header for routing such a packet is performed by the access agent who is operating in a port. This header is made in each field of control, routing, and a redundancy check.

* The routing field includes all the information required to route a packet via a network (200) to the destination node which is the addressing place.This field can take some formats according to the routing mode (a connection oriented type or connectionless type routing mode ...) specified.

* Especially a control field contains coding ID of the protocol used when interpreting the routing field.
* Use the redundancy check field in order to inspect whether the header itself has an error. The packet is discarded when an error is detected.
[0033]Routing point drawing 3 shows a common block diagram of the typical routing point (300) which is looked at by the network node (201-208) shown in drawing 2. A routing point contains the high-speed packet switch (302) into which the packet which reaches the routing point is inputted. Such a packet receives as follows.
* Receive from other nodes on a high-speed transmission link (303) via a suitcase adapter (304).
* Receive from a user via the application adapter called a port (301).
[0034]Using the information in a packet header, an adapter (304, 301) determines which packet should be routed with a switch (302) toward the transfer link (303) which comes out of the node toward a local user network (307). An adapter (301 and 304) includes the queuing-ized circuit for queuing-izing a packet, before and after rising [the] on a switch (302).
[0035]A path control apparatus (305) satisfies 1 set of given qualities of service specified by the user, and in order to make into the minimum quantity of the network resource used in order to complete a communication path, it calculates the optimum path which passes along a network (200). Then, this control device builds the header of the packet generated at the routing point. As optimization criteria, there are the number of the capability of the link (suitcase) in the number of intermediate nodes, the characteristic of a connection request, and a path and an operating condition, and intermediate nodes, etc. According to this invention, an optimal path is stored in a routing database (308) in order to carry out a reuse further.
[0036]Each information about the transfer link connected to information required for routing, a node, and its node is included in the network topology database (306). Under stationary state conditions, all routing points have the view same about a network. When activation of the new link is carried out, a new node is added to a network and a link or a node is removed, or when link load changes substantially, network topology information is updated. In order to provide the newest topology information required for path selection, such information, It is exchanged by the control message among other path control apparatus of all the (such a database update is transmitted on the packet just like the data packet exchanged among network end users). When network topology is maintained by all the nodes by renewal of continuation at a current state, network dynamic reconfiguration becomes possible, without interrupting an end user's

logical connection (session).
[0037]The mail arrival transfer link to the point routing [packet] can include the link (210) from the external device in a local user network, or the link (suitcase) (209) from a contiguity network node. In any case, a routing point receives each data packet, and in order to transmit it to another routing point which the information in a packet header shows, it functions similarly. A high-speed packet switching network does not make [be / it / under / period / of a single packet / removing] any transmissions or a node mechanism only for the communication path, but it functions as enabling communication between two end user applications. Thus, it is optimized so that more [substantially] traffic than the traffic considered for the operating condition of the transmitter style of a packet network to be possible in the case of the exclusive transfer link for each communication paths may be transmitted.
[0038]A network management network control function network control facility controls, assigns and manages the resources of a physical network. Each routing point is provided with 1 set of above-mentioned functions in a path control apparatus (305), and it is used for it in order to promote the establishment and management of connection between user applications. There are the following especially as a network control function.
* Directory service The information about a network user and resources is taken out, The * bandwidth management - bandwidth request to print out files and maintenance message to manage are processed. - * which supervises the present request-to-print-out-files level on a link Path selection - The requirements for connection and the present link operating condition level are taken into consideration, * which chooses a best path for every new connection Control Sepang tree In order to establish and manage a routing tree between network nodes - It is used, Control information including a link operating condition is distributed (simultaneously). - * which updates the topology database of a node including new network composition, or a link/node failure Renewal of topology - The Sepang tree is used, The information (link operating condition information is included) about the logic and the physical network of all nodes is distributed, * to manage -- Bandwidth request-to-print-out-files agreement between the network user and network which were established at the time of a congestion control - call setup is carried out. - actual bandwidth is presumed, and in being required, it adjusts a request to print out files during continuation of connection [0039]Topology database (TDB)
The topology database includes the information about assignment of a node, a link, its characteristic, and bandwidth. Topology information is copied in each network node.

When a link and a node are added or deleted, or when the characteristic changes, the rightness of the topology database of each node is guaranteed by an algorithm. A database contains the following.
* Network topology [physical] * including a node and static information like the physical property of a link Node and state [of a link] * Link operating condition including dynamic traits, such as the present bandwidth (under use and a request to print out files), and real-time measurement [0040]The general composition of a topology database is shown in drawing 5. Every one item in a database is related with the node (501) or link (502) which is each resources in a network. Especially each link items contain the following characteristics.
Link (503) physical property : * - transmission-medium and speed -. Routing mode currently supported The maximum packet size Link-buffers capacity - propagation delay - Bandwidth request to print out files currently supported ... * link condition (504):- on-line (the link can accept user connection)
- Stillness (the existing connection is continued although the link cannot accept additional user connection)
- Off-line (the link cannot accept user connection but the existing connection is canceled) ... * link (505) operating-condition: - real-time measurement - request-to-print-out-files bandwidth ... [0041]Drawing 6 shows a part of information stored in the topology database in one table. Although all the characteristics of a link are listed by each node, about a part, it is accepted and this application explains them.
* A full capacity (bps) C_{ij} topology database contains the full capacity for every link. Value C_{ij} expresses usable total bandwidth on the link between the nodes i and j.
* One of the serious characteristics of a transfer link is an usable portion effectively among link capacity as expected [partial (%) rf / which can be reserved]. For the following two reasons, even the theoretical maximum load (bandwidth) cannot apply load to a link.
- In order to take the bandwidth for a network control function to the 1st - to the 2nd. In order to maintain the probability of loss in the case of the violation of bandwidth of the short period of time by various traffic sauce, and stillness delay in the low state, the portion rf of a link which can be reserved is an effective rate which can be reserved on the link between the nodes i and j, in order to maintain transmission of appropriate quality among full capacity C_{ij}. When C_{ij} is the full capacity of a link, the request-to-print-out-files possible capacity of this link becomes $R_{ij}=rfxC_{ij}$.
[Equation 1]
$$(\hat{C}_{ij} \leqq R_{ij} \leqq C_{ij})$$

Note: In the case of much network architecture, it is about 85% of total bandwidth C_{ij} of a link which can be clearly reserved to user traffic (rf<0.85).

* Total request-to-print-out-files equivalent capacity (bps)

[Equation 2]

$$\hat{C}_{R,ij}$$

or [making packet loss low in the connection k on the link between the nodes i and j] -- or the simplest method for canceling entirely is reserving the whole bandwidth which the user demanded. However, when user traffic is a burst state, this technique may waste a lot of bandwidth on a network. The quantity of the bandwidth actually reserved in order to save resources is "equivalent capacity."

[Equation 3]

$$\hat{C}_{k,ij}$$

Becoming equal, said equivalent capacity is a function of the sauce characteristic and a network state. A bandwidth request to print out files comes between average band width which a user demands, and maximum capacity of connection.

[Equation 4]

$$\hat{C}_{R,ij} = \hat{C}^{K}_{R,ij} = \sum_{k=1}^{K} \hat{C}_{k,ij}$$

= A value called the sum total of request-to-print-out-files equivalent capacity expresses the total bandwidth reserved on the link between the nodes i and j by K already established connection. Equivalent capacity of this existing link [Equation 5]

$$\hat{C}_{R,ij}$$

This link cannot be chosen when a difference with the total request-to-print-out-files possible capacity $rfxC_{ij}$ is smaller than the bandwidth demanded by new reserved connection. However, in the case of non-reserved connection whose explicit bandwidth request to print out files is unnecessary entirely, this link can also be chosen.

Note: Equivalent capacity is calculated from a value called "link METORIKKUSU"

showing concentration of all the connection (the characteristic is probably various) which moves in a link top. Link METORIKKUSU is distributed by other nodes via renewal simultaneous transmissive communication of topology.

* The value all the usage band width (bps) $M_{NR(s) \text{ by non-reserving traffic, } ij}M_{NR, \text{ and } ij}$ expresses the sum total of load or bandwidth which non-reserving traffic is using now measured on a link between the nodes i and j.

* Maximum packet size (byte) $mps_{ij}mps_{ij}$ is defined as the maximum packet size supported by the link between the nodes i and j.

* Total usage band width (bps)

[Equation 6]

$$\hat{C}_{T,ij}$$

Total usage band width on the link between the nodes i and j [Equation 7]

$$\hat{C}_{T,ij}$$

**, total request-to-print-out-files bandwidth [Equation 8]

$$\hat{C}_{T,ij}$$

It is calculated by adding measurement band width $M_{NR \text{ and } ij}$ which non-reserving traffic uses.

[0042]Bandwidth Manage User demands various qualities of service. In order to provide various service levels, network connection various type is established. One connection is defined as a path in a network between a starting point access node and an address access node which express a sauce user and a target user, respectively. Network connection can be classified as a request to print out files or un-reserving. It is necessary to assign bandwidth beforehand along with a selected path in request-to-print-out-files network connection.

[0043]Many of high-speed connection is established on a reserved path, in order to guarantee a quality of service and bandwidth which a user demanded. This path on a network uses information in that topology database including the present link operating condition, and is calculated by starting node. Next, a starting node transmits a reservation request along with a selected path, and an intermediate node adds this additional request-to-print-out-files capacity to that sum total (when it can reserve).

Such change is reflected in renewal of topology simultaneous transmissive communication transmitted by intermediate node. The intermediate node does not need to recognize a situation of each connection on the adjacent link. When there are too many packets which an intermediate node gained, an intermediate node only discards the packet by burst nature which generally is not expected (the user can choose service which recovers such abandonment).

[0044]According to a node type, a function of bandwidth management is as follows.

* According to a connection parameter and a network state which include – connection priority in a starting node, The best course is identified as much as possible. – Bandwidth which network connection requires at the time of a connection setup is reserved, This bandwidth is managed during continuation of connection. – Inside of a refusing–connection transit node when there are no resources required in order to satisfy a demand into a network – A bandwidth request to print out files on a link is managed. [0045]A connection setup and a bandwidth request–to–print–out–files process which are shown in the connection setup diagram 1 contain the following steps.

* A connection request is specified by user via a starting point (101) and a destination network address, and 1 set of parameters containing the data flow characteristic (a bit rate, burst nature).

* A parameter obtained from a topology database is used for a path (102) selection process, and 1 set of every one connection requests determine it for every link of one path and its path.

* A connection request is used for a bandwidth (103) request–to–print–out–files process, and it reserves bandwidth on each link of the path. This process includes information exchange (109) between a starting point (access) node (100), a transit node (107) on a path, and a destination node (108).

* A bandwidth request–to–print–out–files response from a transit node (104) and an end node generates call reception or call refusal (110).

* A renewal process of Rink (105) Mettrick updates link METORIKKUSU which was changed in call reception. This information (111) is sent to a topology database of each node in a network via a control Sepang tree by a simultaneous transmissive communication algorithm.

* A congestion control (106) setup adjusts the network connection characteristic, when a call is received.

[0046]The purpose of a path selection path selection process is to determine a best method of assigning a network resource to connection, in order to guarantee that a

user's requirements for a quality of service are satisfied and to optimize a throughput of the whole network. A point-to-point connection is established on it, and if a path selection process is required, it must supply a path on a network with which a part of bandwidth is reserved to a requestor-side user. On the other hand at a path selection algorithm, a situation of a network link currently kept by topology database on the other side in requirements for a user and a node is used as an input parameter.

[0047]Selection criterion: A path selection process is thoroughly performed within a node as which connection is demanded. This uses a topology database and chooses a "best path" as order of importance based on each of the following standards.

* Quality of service : requirements for a quality of service of connection must be satisfied [be / it / under / of connection / duration / whole / crossing]. Many variables which determine network performance exist. However, a quality of service can be defined as 1 set of measurable quantity which describes recognition of a user to service which a network provides. A part of quality-of-service parameter is as follows.

- Connection setup delay - connecting block probability - loss probability - error probability - terminal passage delay - a part of such quality, such as terminal delay change - ..., for example, packet loss probability, or terminal passage delay, affects a calculation method of a path. The sum total of a propagation delay which met a calculated path must not break terminal passage delay specification.

* The minimum hop : since a path must be constituted from a link of a minimum number realizable in order to support requirements for a quality of service of connection, a cleanup cost for supporting quantity of a network resource and connection becomes the minimum. Path calculation is performed based on a link operating condition at the time of connection being required.

* Load balancing : the path provided with a "light load" link is more preferred than a path provided with "heavy-loading" link among the minimum hop paths based on network conditions at the time of path selection. Load of a link is decided by a customer's standard. That is, it can be made a function of total request-to-print-out-files bandwidth of a link which increases in proportion to quantity of actually measured traffic on a link. When load (sum total of load of a link on the appointed path) of a path is an important selection criterion, a path with lighter load is chosen.

[0048]It is an important factor of path selection to satisfy the 1st requirement, and the two remaining functions are used in order to optimize traffic which passes a network.

[0049]Path calculation: A path selection process collects all input and calculates equivalent capacity of new network connection first. Next, a potential path on a network from a starting point to a destination node (plurality is also good) is calculated. A topology database is used and conformity of a link to a potential path is judged. This algorithm builds a new potential path, adds a link and a node for every hop, and inspects on each stage that requirements for a user are satisfied.
[0050]In each stage, since a link is added to a potential path, it judges that this algorithm is provided with bandwidth sufficient in order that a new link may satisfy requirements for resource reservation. It also inspects this algorithm on each stage that all the paths can satisfy now a user's requirements for a quality of service by the addition of a new link. Algorithms differ for every various traffic classes. For example, requirements for terminal delay change (jitter) are more important for real-time graphical computation than non-real time.
[0051]Additional requirements: When some potential paths suitable for network connection with a new path selection process are found and those all are satisfying requirements for a quality of service, as for this process, hop chooses a path of a minimum number as an optimum path. This is because quantity of request-to-print-out-files bandwidth in a network becomes the minimum, therefore a network resource is saved as a result of the minimum hop path and cost is reduced.
[0052]When some minimum hop paths suitable for network connection with a new path selection process are detected and those all are satisfying requirements for a quality of service, this process chooses a path provided with a "light load" link from a heavy-loading link. In the case of this calculation, a link operating condition from a topology database is used.
[0053]General composition of a routing database structure routing database (400) is shown in drawing 4. A routing database is divided into two tables as follows.
* A path table (410) for recording a routing path
* A link table (420) for recording a link relevant to said routing path stored in said path table (410)
[0054]A desirable path table and a link table of an example, "Algorithms+Data Structures = Programs" (264-274 pages) by Niklaus Wirth It realizes as a hash table directly provided with a chain in an overflow region as indicated in data of a title called Prentice-HallInc.
[0055]Path table this application accepts and explains a part of parameter stored in a path table (410). Each item of a path table expresses a path between a starting node in a network and a destination node which satisfy a specific quality of service and

requirements for traffic.
* Destination node (412)
ID* of a node of the last on a path Path characteristic (413)
- the maximum packet size -- various delay characteristics: (the real-time characteristic.) The minimum of the maximum packet sizes supported by all the links on a path calculated about each of the non-real-time characteristic and non-reserving delay characteristics - maximum delay -- various delay characteristics: (the circuit emulation real-time characteristic and the non-real-time characteristic.) The sum total of transfer delay of each link on a path calculated about each of delay characteristics - maximum delay change (jitter): -- various delay characteristics (the real-time characteristic.) Sum total of maximum delay change of each link on a path calculated about each of the non-real-time characteristic and delay characteristics - Loss probability: The sum total of loss probability of all the links in a path calculated about each of various delay characteristics (the real-time characteristic, the non-real-time characteristic, the best efforts delay characteristics). Loss probability can be presumed with the rate (loss information)/(all the transmission information). Loss information is information which does not reach an expected address among information transmitted from a starting node for network conditions (congestion, traffic management, an error ...).
- Minimization standard: According to the type, the connection can assert the requirement for delay in respect of the requirement for a quality of service, especially the following.
- Delay between restriction-less terminals: A path of the minimum [delay / between terminals] is chosen among all the possible paths.
- Delay between the maximum absolute terminals: A selected path guarantees that delay between the terminal becomes less than the appointed value during duration of connection. In many cases, this type of link delay constant is used for real time traffic provided with severe requirements for terminal delay.
- The maximum terminal delay change (the maximum jitter) : Quantity in which delay relevant to a certain service is changed is also called a "delay jitter." Considerable delay will also be accepted if prediction is possible in service of some types (i.e., if a delay jitter is maintained by small quantity). In other services (for example, voice service), it is necessary to maintain both delay and a delay jitter in a small quantity.
- Delay between the maximum terminals with a play out buffer: In order to check that in the case of application containing isochronism traffic (for example, sound) smooth influence of delay change and a packet is periodically transmitted to a user, in a

destination node, a play out buffer is required. Quantity of play out delay is chosen so that it may become equal to the maximum terminal delay change (jitter) which should be canceled. Play out delay becomes a cause of delay between terminals.

– Security level (encryption) support: Many organizations are worried that the interior communication may be blocked by tapping. Since a possibility that communication will be blocked is made into the minimum, some measures can be taken. For example, an optical fiber etc. are using an enciphering device, using a communication link which is hard to block etc. However, since additional expense and inconvenience may occur by using it, such security countermeasures are not reasons required for all the services. Therefore, in order to specify a security requirement for a certain service, there are requirements at the time of establishing the service. Generally, the necessity for security of a certain service is specified using a security level.

– Hop count: The number of links in a path. A path selection process calculates a path with as much as possible little number of links among paths which support demanded requirements for a quality of service of each connection. However, it may be desirable to provide a maximum in the number of hop in a selected path. This means that hop of the given maximum number which becomes so high that cost at the time of using the path cannot be admitted exists. A desirable path selection algorithm of an example stops, when a path candidate is inspected and the maximum number of specified hop is reached, increasing the number of hop. When two or more minimum hop paths with which it is satisfied of requirements for a quality of service are found, the path provided with a "light load" link is more preferred than a path provided with "heavy-loading" link based on network conditions at the time of path selection. In many cases, this condition tends to make a network overall throughput the maximum.

– Bandwidth request-to-print-out-files support: Network connection is mainly classified as follows based on the network resource needs.

– Request-to-print-out-files network connection. At request-to-print-out-files network connection, before network connection is established normally, some network resources need to be reserved. When a network resource required for network connection cannot be assigned, establishment of network connection ends in failure. Especially an important thing is request-to-print-out-files network connection which reserves bandwidth. It is because the such type network connection can provide a predetermined quality of service.

– Non-reserving network connection. Non-bandwidth request-to-print-out-files traffic can be delayed, its average band width may be low, duration may be dramatically short, and the burst characteristic may be strange. Since the minimum

delay is assigned to non-reserving traffic, if the buffer overflows by an intermediate node, a network will eliminate non-reservation packets. This is the reason transfer delay and loss probability do not become a part of quality of service guaranteed to non-reserved connection. Although connectionless type routing mode is dramatically efficient for routing a packet which needs neither a request to print out files nor a quality of service, the connection-oriented routing mode can route a packet, when a request to print out files and a quality of service are expected and provided.
- Real-time-traffic support: Since there is the original specific characteristic in network traffic of each type, it is necessary to treat independently, respectively. A traffic type can be summarized as follows.
- For example, although it is sensitive to delay, traffic -, for example, a sound etc., sensitive to delay and loss etc., interactive video etc., Although delay permits, traffic -, for example, many database updates etc., which delay and loss both permit, such as traffic -, for example, the newest datagram service etc., which permits a certain amount of loss, etc., In addition to traffic packet loss sensitive to loss, and average delay, real time applications (sound etc.) are sensitive to change (jitter) of delay of packet streams between a starting point and an address. In order to satisfy delay loss and requirements for a jitter for various traffic (or application) in an integrated network, It is necessary to define within the architecture a function to correspond so that traffic of one type may not degrade service provided for traffic another type, when it multiplexes collectively.
- Circuit emulation support: A circuit emulation targets a sound, video application, etc. of constant speed. This transmits a serial bit stream during an access link interface on a node, and it uses it in order to support service of a dedicated line style obtained from many communication enterprises, and the same service. In a circuit emulation, the following are required.
- Fixed bit rate - in a starting point and an address Timing relationship [of a starting point and an address] - Connection - ATM network connection support between end users of service: The present high-speed packet switching network architecture, Various logical-link types can be supported. However, link type selection for connection between nodes in a network is decided by service obtained from a communication enterprise, a required link rate, etc.
- An Asynchronous Transfer Mode link (ATM) can be made into ATM connection which uses a dedicated line or is provided by ATM transport service. Data is put into 5 bytes of ATM header, and a fixed-length (53 bytes) cell to which a pay load of 48 bytes was attached, and is transmitted on an ATM link. An ATM link is used when

between nodes is connected by the permanent virtual path connection provided by ATM transport service.

- A variable length packet link can be made into various exclusive use or exchange link connections (T1, T3, E1, etc.) which support transmission of a variable length packet. When the great portion of traffic in a network is variable length, a variable length packet link must be used. A variable length packet link is because there are few overheads to need substantially when transmitting variable length packet traffic (for example, frame relay).
- Depending on the architecture, a node may support combination of an ATM link to an adjacent node, and a variable length packet link, and user data may be able to transmit a network top without restriction with a series of ATM links and variable length packet links. Since an exclusive ATM network is built (i.e., in order to provide an ATM transport service for an ATM connection device), combination of such a link can be used.
- Routing support: According to routing information included in a header, a data packet is routed and is queuing-ized by transit node. Some routing modes can be used in a high-speed network. In almost all cases, a packet which uses various modes can share the same data-communications mechanism.
- Auto-network-shutdown routing (ANR) realizes distributed route specification concretely to connectionless type networks. An access node takes charge of calculation of a course which the packet must follow within a network. Each packet includes a list of labels of a link which a packet passes, when moving into the routing field in a network top. Since the connection setup activities by an intermediate node are unnecessary entirely, ANR is suitable for true datagram service. Arbitrary functions, such as a variable length packet, a copy function, reverse path accumulation, are supported.
- Use label swapping in a connection-oriented network. A header including arbitrary numerical values which identify logical connection to which this packet belongs is attached to each packet transmitted on a link. In label swapping, it is required to set up a connection table and to manage dynamically by each node. In contrast with ATM, label swapping supports a variable length packet, arbitrary functions, such as reverse path accumulation, and a more complicated loss priority structure.
- Although an Asynchronous Transfer Mode (ATM) resembles label swapping transfer mode, A part of functions including a support of header structure and a fixed size packet (a pay load of 48 bytes and 5 bytes of header), 2 level virtual connection hierarchy's (the virtual channel connection VCC and virtual path connection VPC) use,

etc. are removed.

- Empty bandwidth: The minimum of the usable bandwidth of all the links which met the path. Bandwidth usable on link l_{ij} between the nodes i and j [Equation 9]

$$C_{ij}\ rf - \hat{C}_{R,ij}$$

It comes out.

* The 1st link (414)

ID of a link of the 1st on the path (for example, address of a link of the 1st in a link table)

* Life time (415)

This parameter is used in order to remove information which became old from a routing database. The decrement of the "life-time" counter of each path in a routing database is carried out once every day. If a counter amounts to 0, it will consider that a corresponding path became old and it will be removed from a routing database. The counter is reset by the maximum whenever it chooses a path. Please refer to drawing 13 for details about a garbage collection procedure.

[0056]Link table this application accepts and explains a part of parameter stored in a link table (420). Each item of a link table expresses link l_{ij} between the nodes i and j.

* Link ID (422) in a topology database : link ID (for example, address of a link in TDB) is a means for carrying out direct access to the link characteristic (a physical property, a state, an operating condition) stored in a topology database (502).

* Link characteristic (423) : assigned band width stored with various suspension priority level for - real time and non-real-time delay priorities [Equation 10]

$$\hat{C}_{R,ij}$$

(No bandwidth is assigned in a non-reserving delay priority)

Note: A suspension priority is a priority use priority of the connection after connection is established. On the other hand, a requestor-side priority defines the capability of the network connection for carrying out priority use of other connection. The existing connection uses the suspension priority and protects the connection from priority use.

- Equivalent capacity of the requestor-side connection k calculated by real time and a non-real-time delay priority [Equation 11]

$\hat{C}_{k,i\,j}$

* Parent path (424)
ID of the path stored in the path table in relation to the link (for example, address in the path table of a parent path)
* The next link (425) in a path
ID of the link in case there is the following link along with the path (for example, address in a link table of the next link on a path)
[0057]A routing database procedure garbage collection garbage collection procedure is used in order to remove information which became old from a routing database. In a desirable example, this procedure is performed periodically (for example, every day). Drawing 13 shows a common flow chart of a "garbage collection" procedure.
* : (1300) Start [of a procedure] * : (1301) The 1st path stored in routing database is extracted.
* : (1302) The decrement of the "life-time" counter relevant to this path is carried out.
* : (1303) In order to judge whether the path became old, a value of a "life-time" counter is tested.
- : (1304) When a value of a "life-time" counter is 0, the path is removed from a routing database and a procedure shifts to a step (1305).
- When a value of a "life-time" counter is not 0, a procedure shifts to a step (1305).
* : (1305) By a test, it is judged whether other paths are stored in a routing database.
- When none of other paths is stored, complete and end a procedure by a suspension step (1306).
- : (1307) others -- when a path is stored, the following path stored in a routing database is extracted, and a procedure shifts to a step (1302).
[0058]Path retrieval drawing 7 shows a common flow chart of "path retrieval" procedure. This procedure is called during a connection setup. If path selection receives a connection request, it will be judged whether this procedure has at least one path which scans a routing database and with which it is satisfied of this demand. A destination node is set to Z and a list of selected paths is set to SP.
* : (700) Start [of a procedure] * : (701) It is judged whether by search of path table, a demanded path for destination node Z is already stored.
- A path must be calculated when no path is stored in a path table. In that case, it completes and a path retrieval procedure is ended by a suspension step (702). Next, a

path selection process determines a path stored in a routing database by a path storing procedure shown in drawing 8.

– : (703) When at least one path is already stored, the 1st path p stored is extracted from a path table.

* : (704) It is judged whether by a test, the characteristic (413) of the path p stored in a path table satisfies a demand.

– When the characteristic (413) of a path does not satisfy a demand, a procedure shifts to a step (705).

– : (706) When the characteristic of a path satisfies a demand, 1st link l_{ij} of the path p is extracted from a link table.

* : (707) By a test, it is judged whether a link between the nodes i and j can support the new connection k in respect of the following.

– Bandwidth which new connection requires : [Equation 12]

$$\hat{C}_{k,ij}$$

– Assigned band width on Rink : [Equation 13]

$$\hat{C}_{R,ij}$$

– When Rink cannot support the new connection k, a procedure shifts to a step (705).

– When Rink can support the new connection k, a procedure shifts to a step (708).

* : (708) It is judged whether by a test, Rink who should scan in the path p exists more.

– : (709) When Rink who should scan exists more, Rink l_{ij} of the following in the path p is extracted from a link table, and a procedure shifts to a step (707).

– : (710) When Rink who should scan does not exist any more, the path p satisfies a demand and is stored in list SP of the selected path. A procedure shifts to a step (705).

* : (705) It is judged whether a path is stored more by destination node Z demanded by a test.

– : (711) When a path beyond it is stored, the following path p is extracted from a path table, and a procedure shifts to a step (704).

– When a path beyond it is not stored, a procedure shifts to a step (712).

* : (712) By a test, list SP of a selected path judges whether it is empty.

– An usable path is absolutely none when a list is empty. In that case, it completes and a procedure is ended by a suspension step (702). Next, a path selection process

determines a path stored in a routing database by a path storing procedure shown in drawing 8.

– : (713) When a list is not empty, the shortest path (length is the smallest) in SP is chosen. When some paths with same type of length exist in SP, in order to perform load balancing on a network, a path which has the maximum opening bandwidth is chosen. Next, a process is completed and it ends by a suspension step (714).

[0059]Path storing drawing 8 shows a common flow chart of a "path storing" procedure. This procedure is called at the time of an end of each path calculation processed by path selection.

* : (800) Start [of a procedure] * : (801) It is judged whether by test, a calculated path is already stored in a routing database.

– When a path is already stored, complete and end a procedure by a suspension step (802).

– When a path has not been stored yet, a procedure shifts to a step (803).

* : (803) By a test, it is judged whether an empty item for storing a new path in a routing database is in a memory.

– : (804) When an empty item is absolutely none, a path of the minimum [bandwidth / empty] is removed from a routing database, and a procedure shifts to a step (805).

– When there is an empty item, a procedure shifts to a step (805).

* : (805) A relating link is stored in a link table (420). Link items are collectively chained with an address of the next link (425) on a path. A path is linked to said chain by an address of the 1st item (414) of a chain in a link table (420).

* : (806) A link relevant to a path is registered into a topology database. A topology database is notified to whenever [at the following times] at a routing database.

– A link on a path already becomes impossible of operation. – If a registry request by which a bandwidth request to print out files on a link of a path is changed is received, a topology database will transmit these information until it notifies it that a routing database stops. Registration will be canceled if a link is deleted from a routing database. According to this mechanism, the newest routing database is maintainable. Please refer to drawing 12 for details about a "renewal of link" procedure.

* : (807) The path characteristic (413) is updated by information included in a topology database. Next, it completes and a procedure is ended by a suspension step (808).

[0060]A routing database update "routing database update" process is a background task performed periodically and preventively, in order to prepare a potential path or an alternate path, or in order to update a path already stored in a path table (410). In order to make it not become an overload in a connection setup process, this process

is performed when there is no connection request. This process includes the following three procedures.

1. "alternate path calculation"
2. "potential path calculation"
3. "a path re-calculation"

[0061]If a routing database update process starts, an alternate path computational procedure will be called first. All the paths stored in a routing database are scanned, and if a judgment of whether to have to calculate an alternate path about the each is completed, a potential path computational procedure will be performed.

[0062]All the nodes stored in a topology database are scanned, and if a judgment of whether to have to calculate a potential path about the each is completed, a path re-calculation procedure will be performed.

[0063]Completion of a re-calculation of all the paths stored in a routing database will perform an alternate path computational procedure once again. This is the permanent process of calculating one path whenever it is called.

[0064]When a path already stored in an alternate path calculation routing database is peculiar about a given destination node, alternate path calculation is performed. This calculation is performed using the same path characteristic. However, in order not to use the 1st same link as a path already stored in a routing database, and the last link, a dispatch link from a starting node and a mail arrival link to a destination node are not chosen. When an obstacle occurs in one of such the links, it becomes possible to reroute many connection between short period of times dramatically. An alternate path is prepared beforehand and is in the state where it can be used at any time.

[0065]Drawing 9 shows a common flow chart of an alternate path computational procedure. A current path which should be scanned is set to P and the following procedure which should be performed when a routing database update process is called once again is set to NPR.

* : (900) Start [of a procedure] * : (901) By test, it is judged whether the path P is peculiar for the address.

- When a path is not peculiar, a procedure shifts to a step (902).

- : (903) When a path is peculiar, an alternate path is calculated and it is stored in a routing database using a path storing procedure which showed details in drawing 8. Next, a process shifts to a step (904).

* : (904) It is judged whether by a test, a path which should be scanned in a routing database exists more.

- : (905) When a path which should be scanned exists more, P points to the following

path stored in a routing database. Next, a path stored turns into a current path which should be scanned when a routing database update process is called to the next. Next, it completes and a procedure is ended by a suspension step (907).
– : (906) When a path which should be scanned does not exist any more, P points to the 1st path stored in a routing database, and NPR points to a potential path computational procedure. Next, it completes and a process is ended by a suspension step (907).
* : (902) It is judged whether by a test, a path which should be scanned in a routing database exists more.
– : (908) When a path which should be scanned exists more, P points to the following path stored in a routing database, and a procedure shifts to a step (901).
– : (909) When a path which should be scanned does not exist any more, P points to the 1st path stored in a routing database, and NPR points to a potential path computational procedure. A procedure shifts to a step (910).
* : (910) a potential path computational procedure shown in drawing 10 is performed.
[0066]A topology database is scanned in order to determine a node which is not chosen as a destination node in arbitrary paths stored in a potential path calculation routing database. When such a node is found, a path is calculated using a default parameter.
[0067]Drawing 10 shows a common flow chart of a potential path computational procedure. The present node which should be scanned is set to N and the following procedure which should be performed when a routing database update process is called once again is set to NPR.
* : (1000) Start [of a procedure] * : (1001) By test, the node N judges whether it is at least one address for a path stored in a routing database.
– In YES, a procedure shifts to a step (1002).
– : (1003) In NO, a potential path to N is calculated. A new path is stored in a routing database using a path storing procedure shown in drawing 8. A procedure shifts to a step (1004).
* : (1004) It is judged whether by a test, a node which should be scanned in a topology database exists more.
– : (1005) When a node which should be scanned exists more, N points to the following node stored in a topology database. The following node turns into the present node which should be scanned when a routing database update procedure is called once again. Next, it completes and a process is ended by a suspension step (1007).
– : (1006) When a node which should be scanned does not exist any more, N points to

the 1st node stored in a topology database, and NPR points to a path re-calculation procedure. Next, it completes and a process is ended by a suspension step (1007).
* : (1002) It is judged whether by a test, a node which should be scanned in a topology database exists more.
- : (1008) When a node which should be scanned exists more, N points to the following node stored in a topology database. Next, a procedure shifts to a step (1001) once again.
- : (1009) When a node which should be scanned does not exist any more, N points to the 1st node stored in a topology database, and NPR points to a path re-calculation procedure. A procedure shifts to a step (1010).
* : (1010) a path re-calculation procedure shown in drawing 11 is performed.
[0068]A path stored in a path re-calculation routing database is re-calculated using the path characteristic stored in a path table (410) (in order that they may still judge whether it is the best thing). When a more outstanding path is found independently, the path is added to a routing database. Drawing 11 shows a common flow chart of a path re-calculation procedure. A current path which should be scanned is set to P and the following procedure which should be performed when a routing database update process is called once again is set to NPR.
* : (1100) Start [of a procedure] * : (1101) The path P is re-calculated using the characteristic and a default parameter which are stored. A new path is stored in a routing database using a path storing procedure shown in drawing 8.
* : (1102) It is judged whether by a test, a path which should be scanned in a routing database exists more.
- : (1103) When a path which should be scanned exists more, initial setting of the P is carried out to the following path stored in a routing database. The following path turns into a current path which should be scanned when a routing database update procedure is called once again. Next, it completes and a process is ended by a suspension step (1104).
- : (1105) When a path which should be scanned does not exist any more, initial setting of the P is carried out to the 1st path stored in a routing database, and initial setting of the NPR is carried out to an alternate path computational procedure. Next, it completes and a procedure is ended by a suspension step (1104).
[0069]Renewal drawing 12 of a link shows a common flow chart of a link update procedure. This procedure is called by a topology database, when renewal of composition related to a link stored in a routing database is performed.
* : (1200) Start [of a procedure] * : (1201) By test, it is judged whether renewal of

composition is related to change (obstacle on a link) of a link condition.
- In NO, a procedure shifts to a step (1202).
- : (1203) In YES, registration of the obstacle link is canceled with a topology database.
* : (1204) By a test, it is judged whether it is usable in a link (link which connects the same node) in parallel with an obstacle link.
- : (1205) When not usable [at all] in a link, all the link generating in a link table (420) and all the paths which use the link within a path table (410) are deleted. It completes and a procedure is ended by a suspension step (1209).
- : (1206) When usable in a link, an obstacle link is transposed to a parallel link in all the paths stored in a path table. A procedure shifts to a step (1207).
* : (1207) A parallel link is registered into a topology database.
* : (1208) A path is updated using the parallel link characteristic (423). Next, it completes and a process is ended by a suspension step (1209).
* : (1202) By a test, it is judged whether renewal of composition is related to a link bandwidth reservation change.
- In NO, complete and end a process by a suspension step (1209).
- : (1210) In YES, all the paths (empty bandwidth (413)) which use all the link generating (assigned band width (423)) and its link are updated in a routing database. Next, it completes and a process is ended by a suspension step (1209).
[0070]A path calculated when conclusion connection was required is recorded on a routing database, and whenever change occurs in a network, it is updated. An alternate path for supporting an uninterrupted path switch at the time of an obstacle or priority use and the new path which goes to a potential destination node can be calculated and stored when a connection setup process is an idle state. Operation of this last has a low processing priority, and when there is no connection request, it is performed for a background.
[0071]As a conclusion, the following matters are indicated about composition of this invention.
[0072](1) In a method of determining an optimum path between a starting node and a destination node in a packet switched communication network containing two or more nodes (201-208) by which interconnection was carried out in a transfer link (209), A step as which said method chooses a precomputation path for which said connection request is satisfied within a routing database for every connection request, A step which calculates a path with which it is satisfied of said connection request, and stores said path in a routing database when a precomputation path with which it is satisfied of a connection request is not already stored in a routing database, A method

by which a step which re-calculates a path stored in a routing database being periodically included according to at least one predetermined phenomenon in a network.
(2) A method given in the above (1), wherein said predetermined phenomenon in a network includes a routing demand, traffic fluctuation, and network composition change.
(3) A method the above (1) by which a step which calculates at least one alternate path provided with the same destination node as the same starting node for each [which was stored in a routing database] precomputation path of every being included further, or given in (2).
(4) A method given in the above (3) characterized by calculating an alternate path using another dispatch link from a starting node, and another mail arrival link to a destination node as compared with a precomputation path.
(5) A method given in the above (1) thru/or any 1 paragraph of (4) by which a step which calculates a path from a starting node to all the possible destination nodes being included further.
(6) A method given in the above (1) thru/or any 1 paragraph of (5), wherein a precomputation path is removed from a routing database after a predetermined period, without choosing.
(7) A step which re-calculates periodically a path stored in a routing database according to at least one predetermined phenomenon in a network, A step which calculates at least one alternate path provided with the same destination node as the same starting node for each [which was stored in a routing database] precomputation path of every, A method given in the above (1) thru/or any 1 paragraph of (6) when a step which calculates a path between a starting node and all the possible destination nodes, and a step which removes a precomputation path do not have a connection request, wherein it is performed.
(8) Said routing database is connected to a topology database including network composition and traffic characteristics, It is the path table which was updated by network control message and provided with two or more items, Each item expresses a precomputation routing path between a starting node and a destination node, and it is ID of - destination node. - A path table containing the characteristic of a path, and ID of a link of the 1st on a path which begins from - starting node, Are the link table provided with two or more items, and a link on a precomputation path with which each item was stored in a path table is expressed, - ID of a link - The characteristic of a link - A method given in the above (1) thru/or any 1 paragraph of (7) containing ID of

a path with which a link belongs, and a link table which contains ID of the following link along with a path which begins from – starting node.
(9) A node (300) for enforcing a method the above (1) thru/or given in any 1 paragraph of (8).
(10) A packet switched communication network which contains at least one node (300) of a statement in the above (9).

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]It is a figure showing the call setup process by this invention.
[Drawing 2]It is a figure showing the typical model of the high-speed packet switching network containing the access node and transit node of a generic claim of this invention.
[Drawing 3]It is a figure showing the fast path designated point by this invention.
[Drawing 4]It is a figure showing the routing database structure by this invention.
[Drawing 5]It is a figure showing topology database structure.
[Drawing 6]It is a figure showing the link characteristic stored in the topology database.
[Drawing 7]It is a detailed flow chart of the path retrieval procedure by this invention.
[Drawing 8]It is a detailed flow chart of the path storing procedure by this invention.
[Drawing 9]It is a detailed flow chart of the alternate path computational procedure by this invention.
[Drawing 10]It is a detailed flow chart of the potential path computational procedure by this invention.
[Drawing 11]It is a detailed flow chart of the path re-calculation procedure by this invention.
[Drawing 12]It is a detailed flow chart of the link update procedure by this invention.
[Drawing 13]It is a detailed flow chart of the garbage collection procedure by this invention.
[Description of Notations]

301 The port 1, the port 2, the port N

302 Packet switch

304 The suitcase adapter 1, the suitcase adapter 2, the suitcase adapter M

305 Path control apparatus

306 Network topology

308 Routing database

[Translation done.]

* NOTICES *

JP0 and INPIT are not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1]In a dynamic-routing method which changes a route dynamically, it responds to cost having changed with the dynamic factors between nodes (1), Have a link condition database (5) which memorizes cost calculated to each of other node (1) from a self-node (1), and this link condition database (5) is referred to, A dynamic-routing method constituting so that cost to a node (1) which is going to transmit data may choose a route used as the minimum and may send out the data concerned to the next node (1) of this route.
[Claim 2]A node (1) is equipped with a circuit state primary detecting element (3) which detects a state of a circuit between nodes (1), A dynamic-routing method given in the 1st paragraph of a claim constituting so that cost between the nodes concerned may be changed dynamically, when a state of a circuit for which it asked by this circuit state primary detecting element (3) changes.
[Claim 3]When changing cost between the above-mentioned nodes (1) dynamically, it notifies to other nodes (1) of all the, The 1st paragraph of a claim and a dynamic-routing method given in the 2nd paragraph constituting so that cost calculated to each of other node (1) from a self-node (1) may be stored in the above-mentioned link condition database (5).

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application]This invention relates to the dynamic-routing method which changes a route dynamically.

[0002]The dynamic routing protocol used by OSI, TCP/IP, etc. in recent years (between systems mutual route information) [exchange, learn and] It is required with the spread of protocols for a system to determine dynamically the route to the system which should reach that setting out of the more nearly optimal cost should be enabled. For this reason, cost is wanted to determine the minimum route like before not only in consideration of a static factor but in consideration of dynamic factors (traffic etc.) in the cost of the dynamic routing protocol.

[0003]

[Description of the Prior Art]The system A as the conventional dynamic routing protocol shown at (**) of drawing 1, for example. The cost which opted for the cost for every route between B, C, and D a priori (at for example, the time of a system design), and opted for it once only by static factors (for example, topology etc.) was not able to be changed except that the circuit was downed (things come and it becomes cost =infinity).

[0004]

[Problem(s) to be Solved by the Invention]For this reason, except when a circuit was downed, the conventional dynamic routing protocol could not change cost, but had produced the problem that a route did not change. On the other hand, also by a dynamic factor (for example, factor which users, such as traffic, defined), in quest of the minimum cost, a route may be changed and that the user expects the dynamic routing protocol may say, planning load sharing etc.

[0005]An object of this invention is to change cost dynamically, when the states (for example, traffic etc.) of a circuit change, to perform cost calculation to the node of each address based on this cost in addition to the time of a circuit down, to switch to the lowest-cost route, and to plan load sharing etc.

[0006]

[Means for Solving the Problem]With reference to drawing 1, The means for solving a technical problem is explained. In drawing 1, the node 1 sends and receives data via a circuit.

[0007]The circuit state primary detecting element 3 detects a state (for example,

traffic volume) of a circuit between the nodes 1. The link condition database 5 calculates and memorizes cost to each of other node 1 from the self-node 1 corresponding to cost having changed with the dynamic factors between the nodes 1.
[0008]
[Function]This invention responds to cost having changed with the dynamic factors between the nodes 1, as shown in drawing 1, The cost to each of other node from the self-node 1 is calculated, and it memorizes in the link condition database 5, and the cost to the node 1 which is going to send out data chooses the route used as the minimum, and he is trying to send out the data concerned to the next node 1 of this route with reference to this.
[0009]Under the present circumstances, the circuit state primary detecting element 3 detects the state (for example, traffic volume) of a circuit as a dynamic change of the cost between the nodes 1, When the state of this detected circuit changes, cost is changed, and the cost of the route to each of other node 1 from the self-node 1 is re-calculated, and he memorizes in the link condition database 5, and is trying to send out data to the next node 1 of the route of the minimum cost with reference to this. When changing the cost between nodes dynamically, notify to other nodes 1 of all the, memorize the cost calculated to each of other node 1 from the self-node 1 in the link condition database 5, and this is referred to, He is trying to send out data to the node 1 which chooses the route which makes the minimum cost to the node 1 which is going to send out data, and adjoins.
[0010]Therefore, when the costs (for example, traffic etc.) on a route change in addition to the time of a circuit down, re-cost calculation is performed dynamically and it switches to the lowest-cost route automatically, and it becomes possible to plan load sharing etc.
[0011]
[Example]Next, the composition and operation of the example of this invention are explained to details one by one using drawing 4 from drawing 1.
[0012]Drawing 1 shows 1 example lineblock diagram of this invention. (b) of drawing 1 shows a lineblock diagram. The node 1 sends and receives data via a circuit, and comprises the receive section 2, the circuit state primary detecting element 3, the updating section 4, the link condition database 5, the route determination part 6, the transmitting database 7, the transmission section 8, etc. in (b) of drawing 1.
[0013]The receive section 2 receives data from other adjoining nodes (system) 1. The circuit state primary detecting element 3 detects the circuit state of Rink (circuit) between other adjoining nodes 1 and the self-node 1, for example, the traffic volume

per unit time, i.e., the through put of the data per unit time, etc., (for example, a frame number/second).

[0014]The updating section 4 exceeds a fixed value with change of traffic volume etc., and when cost needs to be updated, it updates the Rink state data base 5. For example, the cost to each of other node 1 from the self-node 1 is re-calculated, and the cost of the Rink state data base 5 is updated.

[0015]The Rink state data base 5 memorizes the cost of all the routes until it reaches the node 1 about all other nodes 1 with which the self-node 1 may communicate ((**) of drawing 2, (**) reference).

[0016]The route determination part 6 determines whether to choose which route as the node 1 of the partner who communicates with reference to the Rink state data base 5 (total of cost chooses the minimum route).

[0017]It is registered whether the transmitting database 7 should just transmit data to the node 1 which any adjoin next when the data addressed to the node is received about all the routes 1 which may communicate ((**) of drawing 2, (**) reference).

[0018]The transmission section 8 transmits data to other adjoining nodes 1. (**) of drawing 1 shows a network lineblock diagram. Here, a network comprises four, the node A, the node B, the node C, and the node D, and assumes that it is connected in the shape of a link so that it may illustrate. Here, ab=1, bc=2, cd=2, and ad=6 are the costs between each node of an initial state (it determines at the time of a system design). Here, a user defines cost arbitrarily and makes it a traffic throughput as an example. Therefore, cost ab=1 between a certain node 1 and node 1 A, for example, a node, and the node B changes with ab=3, when traffic exceeds constant value. As shown in (**) of drawing 2 later mentioned in connection with this, and (**), the link condition database 5 and the transmitting database 7 are updated.

[0019]First, operation of the composition of (b) of drawing 1 is explained in order of ** to **. In (b) of drawing 1, ** detects the data volume per unit time of the data between other nodes 1 by which the circuit state primary detecting element 3 adjoins the self-node 1 for every predetermined time, When variation becomes large rather than the constant value set up beforehand, it directs to update the link condition database 5 to the updating section 4.

[0020]When traffic volume changed, the updating section 4 which received the update indication of the link condition database 5 by ** the cost between nodes ** Re-determination, For example, when the traffic between the node A of (**) of drawing 1 and the node B becomes high and cost ab=1 is changed to cost ab=3 (rise), As shown in (**) of drawing 2 mentioned later, the cost between the self-node 1 and

other nodes 1 of all the is re-calculated, and the link condition database 5 is updated ((**) of drawing 2 reference).

[0021]** Notify the route determination part 6 that the updating section 4 which updated the link condition database 5 by ** updated. ** With reference to the link condition database 5 with which the route determination part 6 which received the notice by ** was updated, redetermine the optimum route (for example, route of the minimum [total / of cost]) to other nodes 1 of all the, and set it as the transmitting database 7 ((**) of drawing 2 reference).

[0022]** Direct that the updating section 4 notifies other nodes 1 that the link condition database 5 was updated to the transmission section 8. ** Notify the information, including a result etc., that the transmission section 8 which received directions by ** updated the link condition database 5 to other nodes 1 of all the. Other nodes 1 which received this notice perform an update process like ** to **.

[0023]By the above. When change of the traffic volume between the nodes 1 which adjoin by a certain node 1 exceeds the constant value set up beforehand. Register into the transmitting database 7 the node which the cost between a **** node and each of other node 1 is re-calculated, and updating and cost choose the minimum route for the link condition database 5, and then transmits data, and. The updating result of the link condition database 5 is notified to other nodes 1 of all the, and renewal of the link condition database 5 of each node 1 is urged. Cost is changed dynamically [when change of traffic volume exceeds by this the constant value set up beforehand], It becomes possible to re-calculate cost corresponding to this and to change dynamically the link condition database 5 and the transmitting database 7 of each node 1, and it becomes possible to notify to other nodes 1 and to change similarly.

[0024]Cost ab=1 between the node A of the lineblock diagram of the network of (**) of drawing 1 and the node B explains concretely operation when change of traffic volume is set to cost ab=3 exceeding constant value using drawing 2.

[0025](**) of drawing 2 and (**) show the example computation and the value of the Rink state data base 5 at the time of the cost (ab=1, bc=2, cd=2, ad=6) of the initial state of (**) of drawing 1, and the transmitting database 7.

[0026](b) of drawing 2 shows the example of the Rink state data base of an initial state. Here, the cost of the node B is set to cost ab=1 at the time of route:B, and turns into the cost ad=6+ cost cd=2+ cost bc=2= cost 10 at the time of route:DCB.

[0027]The following will become the same like a graphic display, if it asks for cost about all the routes to the node C and the node D. (**) of drawing 2 shows the

example of the transmitting database of an initial state. Here, the node which transmits data next by the route to the node B turns into the node B. Cost chooses the minimum route:B among the costs by the route of the node B of the link condition database 5 of (b) of drawing 2, and this is determined as the node B as a node which transmits data next at the time of this route:B, and registers it.

[0028]Like the following, with reference to the link condition database 5 of (b) of drawing 2, the route of the minimum cost is chosen about all the routes to the node C and the node D, and the adjoining node which transmits data next at the time of this selected route is registered into the transmitting database 7 like a graphic display.

[0029]Next, the link condition database and transmitting database after updating when cost ab=1 between the node A and the node B which are (**) of drawing 1 is changed with cost ab=3 with increase of traffic are shown in (**) of drawing 2, and (**).

[0030](**) of drawing 2 shows the example of the link condition database after updating. Here, since cost ab=1 between the node A and the node B was changed into cost ab=3, the cost of the node B is updated with cost ab=3 at the time of route:B.

[0031]Route: It becomes the cost ad=6+ cost cd=2+ cost bc=2= cost 10 at the time of DCB, and is the same. The following will become the same like a graphic display, if it asks for cost about all the routes to the node C and the node D, and the cost enclosed with ** is updated.

[0032](**) of drawing 2 shows the example of the transmitting database after updating. Here, the node which transmits data next by the route to the node B turns into the node B, and does not change.

[0033]On the other hand, since the node which transmits data next by the route to the node D turned into the node D and route:BCD enclosed with ** of the node of (**) of drawing 2 became the cost minimum, the node which transmits data next corresponding to this is changed.

[0034]As mentioned above, when change of the traffic volume between the nodes 1 which adjoin by a certain node 1 exceeds the constant value set up beforehand, change cost, re-calculate cost about the route 1 between all the nodes 1, memorize in the link condition database 5, and. Cost registers into the transmitting database 7 the node 1 which chooses the minimum route and transmits data to the next of this route, and updates it. Thereby, when change of traffic volume exceeds constant value, it becomes possible to change into the dynamically optimal route and to transmit data.

[0035]Next, according to an order shown in the flow chart of drawing 3, operation of the composition of one example of this invention is explained in detail. In drawing 3, S1 creates a link condition database. For example at the time of the composition of the

network of (**) of drawing 1, this creates the link condition database of an initial state by the node A, as shown in (b) of drawing 2 as an initial state.

[0036]S2 creates a transmitting database. For example at the time of the composition of the network of (**) of drawing 1, this creates the transmitting database of an initial state by the node A, as shown in (**) of drawing 2 as an initial state.

[0037]S3 detects traffic. This detects the data volume per unit time (traffic volume) which the data between other nodes 1 by which the traffic primary detecting element 3 of (**) of drawing 1 adjoins the self-node 1 sent and received.

[0038]S4 distinguishes whether the value with change of the traffic volume detected by S3 was exceeded. Since the value with change of traffic volume was exceeded in YES, S1 and S2 are performed, Based on the value (for example, value which raised cost ab=1 between the node A of (**) of drawing 1, and the node B to cost ab=3) changed for example, raised, the cost between nodes, It re-calculates, as it is indicated in other (**)s which are re-calculations, for example, drawing 2, about the cost of all the routes between the nodes 1 altogether as the self-node 1. On the other hand, in NO, since a value with traffic volume is not exceeded, it carries out by repeating S3.

[0039]When each node 1 with the composition of (b) of drawing 1 detects the traffic volume between other nodes 1 which adjoin the self-node 1 and change of this traffic volume exceeds constant value by the above, As shown in (**) of drawing 2, and (**), cost is changed (here, it goes up), it re-calculates, and the node 1 which chooses the lowest-cost route and then sends out data is registered. By this, corresponding to change of traffic volume, a route will be changed dynamically.

[0040]Drawing 4 shows the relay flow chart of this invention. In drawing 4, S11 receives the data which should be relayed. This receives the data (data as shown in the lower right) which should be relayed from other nodes 1 which a certain node 1 with the composition of (**) of drawing 1 adjoins.

[0041]S12 transmits to the following node with reference to the transmitting database 7. This takes out the address of the data (packet) indicated on the right-hand side received by S11, With reference to the transmitting database 7 (see the transmitting database 2 of (**) of drawing 2), the adjoining node 1 which is registered about the node 1 of the address concerned and which sends out data next is taken out, and data (packet) is transmitted to this node 1.

[0042]By the above, data is transmitted to the adjoining node 1 set as the address by matching by each node 1 with reference to (**) of drawing 2, or the (**) transmitting database 7. Under the present circumstances, since the transmitting database 7 is

dynamically updated corresponding to change of traffic volume as mentioned already, it becomes possible to transmit data towards the route corresponding to this.

[0043]

[Effect of the Invention]As explained above, according to this invention, when the state (for example, traffic volume) of a circuit changes, the cost of the circuit is changed dynamically, Since the composition which performs re-cost calculation of the route to the node of an address, and transmits towards the lowest-cost route is adopted, data can be automatically transmitted towards a low-cost route besides the time of a circuit down. By this, when the state of a circuit changes between a certain nodes, load sharing is planned efficiently dynamically, and it contributes greatly to the conventional network which is using the dynamic routing protocol.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is 1 example lineblock diagram of this invention.

[Drawing 2]It is an example of the link condition database / transmitting database of this invention.

[Drawing 3]It is a renewal flow chart of dynamic of the link condition database / transmitting database of this invention.

[Drawing 4]It is a relay flow chart of this invention.

[Description of Notations]

1: The node which constitutes a network

2: Receive section

3: Circuit state primary detecting element

4: Updating section

5: Link condition database

6: Route determination part

7: Transmitting database

8: Transmission section

[Translation done.]

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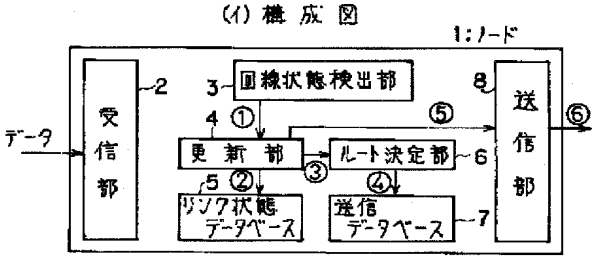
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(54)【発明の名称】　動的ルーテイング方式

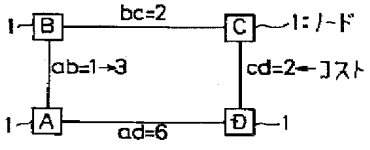
(57)【要約】
【目的】　本発明は、動的にルートの変更を行う動的ルーティング方式に関し、回線ダウン時以外に、回線の状態（例えばトラヒックなど）が変化したときにその回線のコストを動的に変化させ、更に宛先のノードまでのルートの再コスト計算を行って最もコストの低いルートに切り換えて負荷分散などを図ることを目的とする。
【構成】　ノード１間の動的な要因によりコストが変化したことに対応して、自ノード１から他の各ノード１までの計算したコストを記憶するリンク状態データベース５を備え、このリンク状態データベース５を参照して、データを送信しようとするノード１までのコストが最小となるルートを選択し、このルートの次のノード１に当該データを送出するように構成する。

本発明の１実施例構成図

(イ)構成図



(ロ)ネットワークの構成図



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【特許請求の範囲】
【請求項１】　動的にルートの変更を行う動的ルーティング方式において、
ノード（１）間の動的な要因によりコストが変化したことに対応して、自ノード（１）から他の各ノード（１）までの計算したコストを記憶するリンク状態データベース（５）を備え、
このリンク状態データベース（５）を参照して、データを送信しようとするノード（１）までのコストが最小となるルートを選択し、このルートの次のノード（１）に当該データを送出するように構成したことを特徴とする動的ルーティング方式。
【請求項２】　ノード（１）間の回線の状態を検出する回線状態検出部（３）をノード（１）に備え、
この回線状態検出部（３）によって求めた回線の状態が変化したときに当該ノード間のコストを動的に変化させるように構成したことを特徴とする請求項第１項記載の動的ルーティング方式。
【請求項３】　上記ノード（１）間のコストを動的に変化させたときに、他の全てのノード（１）に通知し、自ノード（１）から他の各ノード（１）までの計算したコストを上記リンク状態データベース（５）に記憶させるように構成したことを特徴とする請求項第１項および第２項記載の動的ルーティング方式。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】本発明は、動的にルートの変更を行う動的ルーティング方式に関するものである。
【０００２】近年、ＯＳＩ、ＴＣＰ／ＩＰなどで使用する動的ルーティングプロトコル（システム間でお互いのルート情報を交換して学習して、到達すべきシステムまでのルートをシステムが動的に決定するためのプロトコル）の普及に伴い、より最適なコストの設定を可能にすることが要求されている。このため、動的ルーティングプロトコルのコストを従来のように静的な要因だけでなく、動的な要因（トラヒックなど）を考慮してコストが最小のルートを決定することが望まれている。
【０００３】
【従来の技術】従来の動的ルーティングプロトコルは、例えば図１の（ロ）に示すようなシステムＡ、Ｂ、Ｃ、Ｄ間の各ルート毎のコストを静的な要因（例えば接続形態など）によってのみ事前（例えばシステム設計時）に決定し、一度決定したコストはその回線がダウンする（ことのきコスト＝∞となる）以外には変更できなかった。
【０００４】
【発明が解決しようとする課題】このため、従来の動的ルーティングプロトコルは、回線がダウンしたとき以外に、コストを変更することができずルートが切り替わらないといった問題を生じていた。これに対してユーザが

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動的ルーティングプロトコルに期待しているのは、動的な要因（例えばトラヒックなどのユーザが定義した要因）によっても最小コストを求めてルートを変更し、負荷分散などを図りたりということがある。
【０００５】本発明は、回線ダウン時以外に、回線の状態（例えばトラヒックなど）が変化したときに動的にコストを変更し、このコストを元に各宛先のノード迄のコスト計算を行って最もコストの低いルートに切り換えて負荷分散などを図ることを目的としている。
【０００６】
【課題を解決するための手段】図１を参照して課題を解決するための手段を説明する。図１において、ノード１は、回線を介してデータを送受するものである。
【０００７】回線状態検出部３は、ノード１間の回線の状態（例えばトラヒック量）を検出するものである。リンク状態データベース５は、ノード１間の動的な要因によりコストが変化したことに対応して、自ノード１から他の各ノード１までのコストを計算して記憶するものである。
【０００８】
【作用】本発明は、図１に示すように、ノード１間の動的な要因によりコストが変化したことに対応して、自ノード１から他の各ノードまでのコストを計算してリンク状態データベース５に記憶し、これを参照して、データを送出しようとするノード１までのコストが最小となるルートを選択し、このルートの次のノード１に当該データを送出するようにしている。
【０００９】この際、ノード１間のコストの動的変化として、回線状態検出部３が回線の状態（例えばトラヒック量）を検出し、この検出した回線の状態が変化したときにコストを変化させ、自ノード１から他の各ノード１までのルートのコストを再計算してリンク状態データベース５に記憶し、これを参照してデータを最小コストのルートの次のノード１に送出するようにしている。また、ノード間のコストを動的に変化させたときに、他の全てのノード１に通知し、自ノード１から他の各ノード１までの計算したコストをリンク状態データベース５に記憶し、これを参照して、データを送出しようとするノード１迄のコストを最小とするルートを選択して隣接するノード１にデータを送出するようにしている。
【００１０】従って、回線ダウン時以外に、ルート上のコスト（例えばトラヒックなど）が変化したときに動的に再コスト計算を行って最もコストの低いルートに自動的に切り換え、負荷分散などを図ることが可能となる。
【００１１】
【実施例】次に、図１から図４を用いて本発明の実施例の構成および動作を順次詳細に説明する。
【００１２】図１は、本発明の１実施例構成図を示す。図１の（イ）は、構成図を示す。図１の（イ）において、ノード１は、回線を介してデータを送受するもので

あって、受信部２、回線状態検出部３、更新部４、リンク状態データベース５、ルート決定部６、送信データベース７、および送信部８などから構成されるものである。

【００１３】受信部２は、隣接する他のノード（システム）１からデータを受信するものである。回線状態検出部３は、隣接する他のノード１と自ノード１との間にあるリンク（回線）の回線状態、例えば単位時間当たりのトラヒック量、即ち単位時間当たりのデータの通過量（例えばフレーム数／秒）などを検出するものである。

【００１４】更新部４は、トラヒック量などの変化がある一定の値を越え、コストを更新する必要がある場合にリンク状態データベース５を更新するものである。例えば自ノード１から他の各ノード１迄のコストを再計算し、リンク状態データベース５のコストを更新するものである。

【００１５】リンク状態データベース５は、自ノード１が通信する可能性のある全ての他のノード１について、そのノード１に到達するまでの全てのルートのコストを記憶するものである（図２の（イ）、（ハ）参照）。

【００１６】ルート決定部６は、リンク状態データベース５を参照して、通信する相手のノード１にいずれのルートを選択（コストの総和が最小のルートを選択）するかを決定するものである。

【００１７】送信データベース７は、通信する可能性のある全てのルート１について、そのノード宛のデータを受信したときに次にいずれの隣接するノード１へデータを送信すればよいかを登録するものである（図２の（ロ）、（ニ）参照）。

【００１８】送信部８は、隣接する他のノード１へデータを送信するものである。図１の（ロ）は、ネットワークの構成図を示す。ここで、ネットワークは、ノードＡ、ノードＢ、ノードＣ、ノードＤの４つから構成され、図示するようにリンク状に接続されているとする。ここで、ａｂ＝１、ｂｃ＝２、ｃｄ＝２、ａｄ＝６は初期状態の各ノード間のコストである（システム設計時に決定）。ここで、コストはユーザが任意に定義するものであって、例としてトラヒックスループットとする。従って、あるノード１とノード１、例えばノードＡとノードＢとの間のコストａｂ＝１が、トラヒックが一定値を越えた場合にａｂ＝３と変更する。これに伴って後述する図２の（ハ）、（ニ）に示すように、リンク状態データベース５および送信データベース７を更新する。

【００１９】まず、図１の（イ）の構成の動作を①から⑥の順序で説明する。図１の（イ）において、①は、回線状態検出部３が自ノード１と隣接する他のノード１との間のデータの単位時間当たりのデータ量を所定時間毎に検出し、予め設定した一定値よりも変化量が大きくなった場合、リンク状態データベース５を更新するように更新部４に指示する。

【００２０】②は、①でリンク状態データベース５の更新指示を受けた更新部４がトラヒック量が変化したことによりノード間のコストを再決定、例えば図１の（ロ）のノードＡとノードＢとの間のトラヒックが高くなった場合コストａｂ＝１をコストａｂ＝３に変化（上昇）させた場合、後述する図２の（ハ）に示すように自ノード１と他の全てのノード１との間のコストを再計算し、リンク状態データベース５を更新する（図２の（ハ）参照）。

【００２１】③は、②でリンク状態データベース５を更新した更新部４が更新した旨をルート決定部６に通知する。④は、③で通知を受けたルート決定部６が更新されたリンク状態データベース５を参照して、他の全てのノード１迄の最適ルート（例えばコストの総和が最小のルート）を決定し直し、送信データベース７に設定する（図２の（ニ）参照）。

【００２２】⑤は、更新部４が送信部８に対して、リンク状態データベース５を更新した旨を他のノード１に通知するように指示する。⑥は、⑤で指示を受けた送信部８がリンク状態データベース５を更新した結果などの情報を、他の全てのノード１に通知する。この通知を受けた他のノード１は、②から⑤と同様に更新処理を行う。

【００２３】以上によって、あるノード１で隣接するノード１との間のトラヒック量の変化が予め設定した一定値を越えたときに自ノードと他の各ノード１との間のコストを再計算してリンク状態データベース５を更新およびコストが最小のルートを選択して次にデータを送信するノードを送信データベース７に登録すると共に、リンク状態データベース５の更新結果を他の全てのノード１に通知し、各ノード１のリンク状態データベース５の更新を促す。これにより、トラヒック量の変化が予め設定した一定値を越えたときに動的にコストを変更し、これに対応してコストを再計算して各ノード１のリンク状態データベース５および送信データベース７を動的に変更することが可能となると共に、他のノード１に通知して同様に変更することが可能となる。

【００２４】図２を用い、図１の（ロ）のネットワークの構成図のノードＡとノードＢとの間のコストａｂ＝１が、トラヒック量の変化が一定値を越えてコストａｂ＝３となったときの動作を具体的に説明する。

【００２５】図２の（イ）、（ロ）は、図１の（ロ）の初期状態のコスト（ａｂ＝１、ｂｃ＝２、ｃｄ＝２、ａｄ＝６）のときのリンク状態データベース５および送信データベース７の計算例および値を示す。

【００２６】図２の（イ）は、初期状態のリンク状態データベースの例を示す。ここで、ノードＢのコストは、ルート：Ｂのときにコストａｂ＝１となり、ルート：ＤＣＢのときにコストａｄ＝６＋コストｃｄ＝２＋コストｂｃ＝２＝コスト１０となる。

【００２７】以下同様に、ノードＣ、ノードＤへの全て

のルートについてコストを求めると図示のようになる。図２の（ロ）は、初期状態の送信データベースの例を示す。ここで、ノードＢへのルートで次にデータを送信するノードはノードＢとなる。これは、図２の（イ）のリンク状態データベース５のノードＢのルートによるコストのうち、コストが最小のルート：Ｂを選択し、このルート：Ｂのときに次にデータを送信するノードとしてノードＢとして決定し、登録したものである。

【００２８】以下同様に、ノードＣ、ノードＤへの全てのルートについて、図２の（イ）のリンク状態データベース５を参照して最小のコストのルートを選択し、この選択したルートのときに次にデータを送信する隣接するノードを、送信データベース７に図示のように登録する。

【００２９】次に、図１の（ロ）のノードＡとノードＢとの間のコストａｂ＝１が、トラヒックの増大に伴いコストａｂ＝３と変更されたときの、更新後のリンク状態データベースおよび送信データベースを、図２の（ハ）、（ニ）に示す。

【００３０】図２の（ハ）は、更新後のリンク状態データベースの例を示す。ここで、ノードＡとノードＢの間のコストａｂ＝１がコストａｂ＝３に変更されたので、ノードＢのコストは、ルート：Ｂのときにコストａｂ＝３と更新する。

【００３１】ルート：ＤＣＢのときにコストａｄ＝６＋コストｃｄ＝２＋コストｂｃ＝２＝コスト１０となり、元のままである。以下同様に、ノードＣ、ノードＤへの全てのルートについてコストを求めると図示のようになり、□で囲んだコストが更新されている。

【００３２】図２の（ニ）は、更新後の送信データベースの例を示す。ここで、ノードＢへのルートで次にデータを送信するノードはノードＢとなり、変わらない。

【００３３】一方、ノードＤへのルートで次にデータを送信するノードは、ノードＤとなり、図２の（ハ）のノードの□で囲んだルート：ＢＣＤがコスト最小となったので、これに対応して次にデータを送信するノードが変更されたものである。

【００３４】以上のように、あるノード１で隣接するノード１との間のトラヒック量の変化が予め設定した一定値を越えたときにコストを変化して全てのノード１間のルート１についてコストを再計算してリンク状態データベース５に記憶すると共に、コストが最小のルートを選択してこのルートの次にデータを送信するノード１を送信データベース７に登録し、更新する。これにより、トラヒック量の変化が一定値を越えたときに動的に最適なルートに変更してデータを送信することが可能となる。

【００３５】次に、図３のフローチャートに示す順序に従い、本発明の１実施例の構成の動作を詳細に説明する。図３において、Ｓ１は、リンク状態データベースを作成する。これは、例えば図１の（ロ）のネットワークの構成のときに、初期状態として図２の（イ）に示すように、ノードＡで初期状態のリンク状態データベースを作成する。

【００３６】Ｓ２は、送信データベースを作成する。これは、例えば図１の（ロ）のネットワークの構成のときに、初期状態として図２の（ロ）に示すように、ノードＡで初期状態の送信データベースを作成する。

【００３７】Ｓ３は、トラヒックを検出する。これは、図１の（イ）のトラヒック検出部３が自ノード１と隣接する他のノード１との間のデータの送受した単位時間当たりのデータ量（トラヒック量）を検出する。

【００３８】Ｓ４は、Ｓ３で検出したトラヒック量の変化がある値を越えたか否かを判別する。ＹＥＳの場合には、トラヒック量の変化がある値を越えたので、Ｓ１、Ｓ２を実行し、ノード間のコストを変化例えば上昇させた値（例えば図１の（ロ）のノードＡとノードＢとの間のコストａｂ＝１をコストａｂ＝３に上昇させた値）をもとに、自ノード１と他の全てノード１との間の全てのルートのコストを再計算、例えば図２の（ハ）に示すように再計算する。一方、ＮＯの場合には、トラヒック量がある値を越えないのでＳ３を繰り返し行う。

【００３９】以上によって、図１の（イ）の構成を持つ各ノード１が自ノード１と隣接する他のノード１との間のトラヒック量を検出し、このトラヒック量の変化が一定値を越えたときに、図２の（ハ）、（ニ）に示すように、コストを変化（ここでは上昇）させて再計算し、コストの最も低いルートを選択して次にデータを送出するノード１を登録する。これにより、トラヒック量の変化に対応して、動的にルートが変更されることとなる。

【００４０】図４は、本発明の中継フローチャートを示す。図４において、Ｓ１１は、中継すべきデータを受信する。これは、図１の（イ）の構成を持つあるノード１が隣接する他のノード１から中継すべきデータ（右下に示すようなデータ）を受信する。

【００４１】Ｓ１２は、送信データベース７を参照し、次のノードへ送信する。これは、Ｓ１１で受信した右側に記載するデータ（パケット）の宛先を取り出し、送信データベース７を参照（例えば図２の（ロ）の送信データベース２を参照）し、当該宛先のノード１について登録されている、次にデータを送出する隣接するノード１を取り出し、このノード１にデータ（パケット）を送信する。

【００４２】以上によって、各ノード１では、図２の（ロ）あるいは（ニ）送信データベース７を参照し、宛先に対応づけて設定されている隣接するノード１にデータを送信する。この際、既述したように、トラヒック量の変化に対応して送信データベース７を動的に更新するので、これに対応したルートに向けてデータを送信することが可能となる。

【００４３】

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【発明の効果】以上説明したように、本発明によれば、回線の状態（例えばトラヒック量）が変化したときにその回線のコストを動的に変化させ、更に宛先のノード迄のルートの再コスト計算を行って最もコストの低いルートに向けて送信する構成を採用しているため、回線ダウン時以外にも、コストの低いルートに向けて自動的にデータを送信することができる。これにより、あるノード間で回線の状態が変化したときに動的に効率的に負荷分散を図り、動的ルーティングプロトコルを使用している従来のネットワークに対して大きく寄与する。

【図面の簡単な説明】

【図１】本発明の１実施例構成図である。

【図２】本発明のリンク状態データベース／送信データベースの例である。

【図３】本発明のリンク状態データベース／送信データベースの動的更新フローチャートである。

【図４】本発明の中継フローチャートである。

【符号の説明】

１：ネットワークを構成するノード

２：受信部

３：回線状態検出部

４：更新部

５：リンク状態データベース

６：ルート決定部

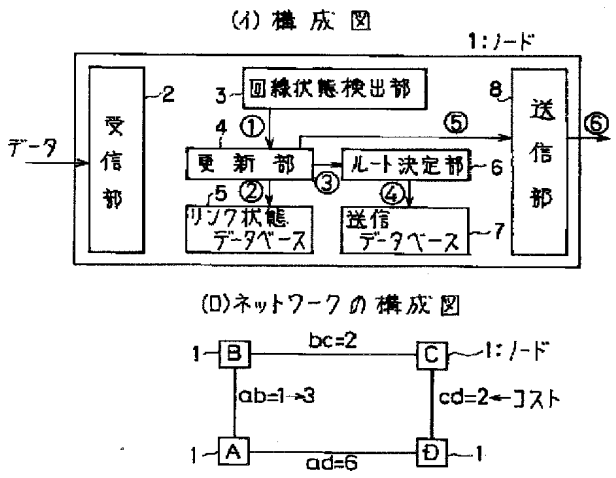
７：送信データベース

８：送信部

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【図１】

本発明の１実施例構成図



【図２】

本発明のリンク状態データベース/送信データベースの例

(イ)初期状態のリンク状態データベース(ノードA)

	コスト
B	1=1 (ルート:B) 6+2+2=10 (ルート:DCB)
C	1+2=3 (ルート:BC) 6+2=8 (ルート:DC)
D	1+2+2=5 (ルート:BCD) 6=6 (ルート:D)

ノード

(ロ)初期状態の送信データベース(ノードA)

	次にデータを送信するノード
B	B
C	B
D	B

ノード

(ハ)更新後のリンク状態データベース(ノードA)

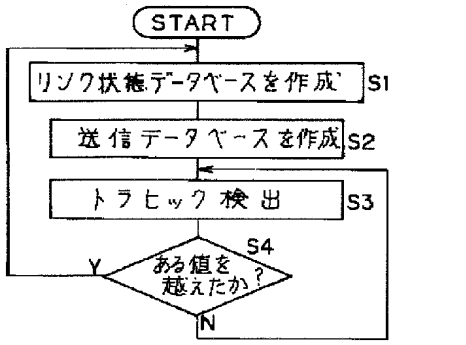
	コスト
B	3=3 (ルート:B) 6+2+2=10 (ルート:DCB)
C	3+2=5 (ルート:BC) 6+2=8 (ルート:DC)
D	3+2+2=7 (ルート:BD) 6=6 (ルート:D)

(ニ)更新後の送信データベース(ノードA)

	次にデータを送信するノード
B	B
C	B
D	D

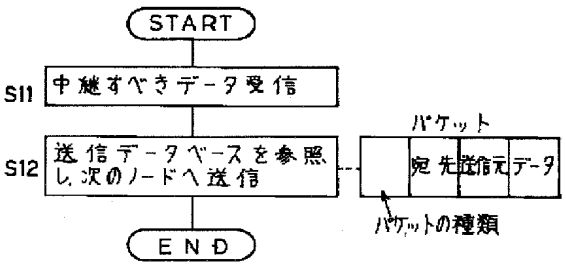
【図３】

本発明のリンク状態データベース/送信データベースの動的更新フローチャート



【図４】

本発明の中継フローチャート



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF: STOLORZ et al. Application Serial No.: 10/259,497 Application Filing Date: 09/30/2002 Title: Configurable Adaptive Global Traffic Control And Management	Attorney Docket: 0093-US-U1 Confirmation No.: 5284 Date: May 6, 2010

REQUEST FOR RECONSIDERATION OF PETITION UNDER 37 CFR 1.183 AND 1.48

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via EFS-Web
Hon. Commissioner of Patents
Attn: Office of Petitions
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant respectfully requests reconsideration of its petitions under 37 C.F.R. §§ 1.183 and 1.48.

PETITION UNDER 37 CFR 1.48(A)

Submitted herewith is a declaration by all but two of the actual joint inventors.

The declaration now includes the signature of joint inventor John **Salmon** (dated January 6, 2010).

In addition, the declaration by joint inventor Maksim **Yevmenkin** has been corrected (to correct his mailing address). Mr. Yevmenkin signed the corrected declaration on April 27, 2010.

Applicant respectfully submits that this declaration satisfies the requirements of 37 CFR 1.48(a).

PETITION UNDER 37 CFR 1.183 TO WAIVE 1.64

At this time, despite repeated requests, two joint inventors (**Stolorz** and **Hagberg**) continue to refuse to sign the declaration naming them and the other listed inventors, and the person sought to be added as a joint inventor (Ted Middleton), as joint inventors.

Details of Applicant's additional attempts to obtain signatures from Mr. Stolorz and Mr. Hagberg were set forth in Applicant's Petition of May 27, 2009. Since that time (almost one year ago) neither Mr. Stolorz nor Mr. Hagberg has agreed to sign the declaration.

THE LAST KNOWN ADDRESSES OF THE NONSIGNING INVENTORS

The last known addresses of the two (2) nonsigning inventors are as follows:

Paul Stolorz
124 University Ave
Los Altos, CA 94022
U.S.A.

Aric Hagberg
36 Camino Chupadero
Santa Fe, NM 87506
U.S.A.

CONCLUSION

Applicant/Assignee respectfully requests granting of this petition.

The PTO is requested to please contact the undersigned at the number provided should there be any deficiencies in this petition or associated filings.

The undersigned telephoned Mr. Douglas Wood regarding this Request for Reconsideration. Applicant thanks Mr. Wood for the courtesy extended the undersigned during their telephone call.

CUSTOMER NUMBER

75948

Davidson Berquist Jackson & Gowdey LLP
4300 Wilson Blvd., 7th Floor,
Arlington Virginia 22203
(703) 894-6400 ● FAX: (703) 894-6430

Respectfully submitted,

/Brian Siritzky/Reg. No. 37,497

By:_____

Brian Siritzky, Ph.D.
Registration No.: 37,497

RULE 63 (37 C.F.R. 1.63)
INVENTORS DECLARATION FOR PATENT APPLICATION
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

As a below named inventor, I hereby declare that my residence, mailing address and citizenship are as stated below next to my name, and I believe I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

the specification of which (**check applicable box(es)**):

☐ is attached hereto

☒ was filed on 09-30-2002 as U.S. Application Serial No. 10/259,497

☐ was filed as PCT International application No. _____ on _____.

and (if applicable to U.S. or PCT application) was amended on 08/31/2007.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose to the Patent Office all information known to me to be material to patentability as defined in 37 C.F.R. 1.56. I hereby claim foreign priority benefits under 35 U.S.C. 119/365 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 or, if no priority is claimed, before the filing date of this application:

Priority Foreign Application(s): **NONE**

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below.

Application Number	Day/Month/Year Filed
60/325,177	28/09/2001

I hereby claim the benefit under 35 U.S.C. 120/365 of all prior United States and PCT international applications listed above or below.

Prior U.S./PCT Application(s) -- Application Serial No.	Day/Month/Year Filed	Status: Patented, Pending, Abandoned

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. And on behalf of the owner(s) hereof, I hereby ask that all communications in this matter be directed to: **DAVIDSON BERQUIST JACKSON & GOWDEY, LLP** at the address/phone numbers associated with customer number **75948**.

Inventor's Signature:			Date:
Inventor's Name:	**Paul E. Stolorz**		
Citizenship:	Australia		
Residence:	City: Los Altos	State/Country:	CA / US
Mailing Address:	124 University Ave., Los Altos CA 94022		Zip Code: 94022

☒ Additional inventors are being named on the 2 supplemental sheets attached hereto.

Declaration supplemental sheet (1 of 2)

Inventor's Signature:			Date: Jan 6, 2010
Inventor's Name:	John K. SALMON		
Citizenship:	US		
Residence:	City: Chappaqua	State/Country:	NY / US
Mailing Address:	820 Hardscrabble Rd., Chappaqua NY 10514, U.S.A.		Zip Code: 10514

Inventor's Signature:			Date:
Inventor's Name:	Michael S. WARREN		
Citizenship:	US		
Residence:	City: Los Alamos	State/Country:	NM / US
Mailing Address:	4611 Esperanza, Los Alamos, NM 87545, U.S.A.		Zip Code: 87545

Inventor's Signature:			Date:
Inventor's Name:	Jeffrey G. KOLLER		
Citizenship:	US		
Residence:	City: Oxnard	State/Country:	CA / US
Mailing Address:	3549 Glen Abbey Lane, Oxnard, CA 93036, U.S.A.		Zip Code: 93036

Inventor's Signature:			Date:
Inventor's Name:	Aric HAGBERG		
Citizenship:	US		
Residence:	City: Santa Fe	State/Country:	NM / US
Mailing Address:	36 Camino Chupadero Santa Fe, NM 87506, U.S.A.		Zip Code: 87506

Inventor's Signature:			Date:
Inventor's Name:	Maksim YEVMENKIN		
Citizenship:	Russia		
Residence:	City: Los Altos	State/Country:	CA / US
Mailing Address:	821 Warwick Ave. Thousand Oaks, CA 91360, U.S.A.		Zip Code: 91360

☒ Additional inventors are named on the next sheet.

Declaration supplemental sheet (2 of 2)

Inventor's Signature:			Date:
Inventor's Name:	Mark BRADY		
Citizenship:	US		
Residence:	City: San Rafael	State/Country:	CA / US
Mailing Address:	615 Tarragon Dr. San Rafael, CA 94903, U.S.A.		Zip Code: 94903

Inventor's Signature:			Date:
Inventor's Name:	David PFITZNER		
Citizenship:	Australia		
Residence:	City: College Park	State/Country:	SA / Australia
Mailing Address:	1/40 Torrens Street College Park SA 5069 Australia		Zip Code: 5069

Inventor's Signature:			Date:
Inventor's Name:	Ted MIDDLETON		
Citizenship:	US		
Residence:	City: Moorpark	State/Country:	CA / US
Mailing Address:	4086 Bending Oak Ct. Moorpark, CA 93021, U.S.A.		Zip Code: 93021

Electronic Acknowledgement Receipt

EFS ID:	7564522
Application Number:	10259497
International Application Number:	
Confirmation Number:	5284
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Customer Number:	83579
Filer:	Brian Siritzky
Filer Authorized By:	
Attorney Docket Number:	0093-US-U1
Receipt Date:	06-MAY-2010
Filing Date:	30-SEP-2002
Time Stamp:	15:20:41
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	Oath or Declaration filed	2711_0054_Decl_Yevmenkin_corrected.pdf	503428 20a950c9600d088ebe799532536a2c653bf41bad	no	3

Warnings:	
Information:	

2	Petition for review by the Office of Petitions.	PA-Request_for_Reconsideration_of_Petition_05_06_2010.pdf	145817 03dc698111098ef5e07be8e4e81963fdc63567a4	no	3
Warnings:					
Information:					
3	Oath or Declaration filed	John_Salmon_Oath_2711_0054_scanned.pdf	1319772 11d269f39bfd0fc267acda18d94d6687c0547095	no	3
Warnings:					
Information:					
			Total Files Size (in bytes):	1969017	

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.

RULE 63 (37 C.F.R. 1.63)
INVENTORS DECLARATION FOR PATENT APPLICATION IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

As a below named inventor, I hereby declare that my residence, mailing address and citizenship are as stated below next to my name, and I believe I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

the specification of which (**check** applicable **box(es)**):

☐ is attached hereto

☒ was filed on 09-30-2002 as U.S. Application Serial No. 10/259,497

☐ was filed as PCT International application No. _____ on _____.

and (if applicable to U.S. or PCT application) was amended on 08/31/2007.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose to the Patent Office all information known to me to be material to patentability as defined in 37 C.F.R. 1.56. I hereby claim foreign priority benefits under 35 U.S.C. 119/365 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 or, if no priority is claimed, before the filing date of this application:

Priority Foreign Application(s): **NONE**

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below.

Application Number	Day/Month/Year Filed
60/325,177	28/09/2001

I hereby claim the benefit under 35 U.S.C. 120/365 of all prior United States and PCT international applications listed above or below.

Prior U.S./PCT Application(s) -- Application Serial No.	Day/Month/Year Filed	Status: Patented, Pending, Abandoned

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. And on behalf of the owner(s) hereof, I hereby ask that all communications in this matter be directed to: **DAVIDSON BERQUIST JACKSON & GOWDEY, LLP** at the address/phone numbers associated with customer number **75948**.

Inventor's Signature:			Date:
Inventor's Name:	**Paul E. STOLORZ**		
Citizenship:	Australia		
Residence:	City: Los Altos	State/Country:	CA / US
Mailing Address:	124 University Ave., Los Altos CA 94022		Zip Code: 94022

☒ Additional inventors are being named on the 2 supplemental sheets attached hereto.

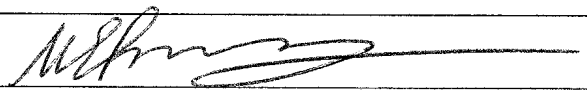
Declaration supplemental sheet (1 of 2)

Inventor's Signature:			Date:
Inventor's Name:	**John** **K.** **SALMON**		
Citizenship:	US		
Residence:	City: Chappaqua	State/Country:	NY / US
Mailing Address:	820 Hardscrabble Rd., Chappaqua NY 10514, U.S.A.		Zip Code: 10514

Inventor's Signature:			Date:
Inventor's Name:	**Michael** **S.** **WARREN**		
Citizenship:	US		
Residence:	City: Los Alamos	State/Country:	NM / US
Mailing Address:	4611 Esperanza, Los Alamos, NM 87545, U.S.A.		Zip Code: 87545

Inventor's Signature:			Date:
Inventor's Name:	**Jeffrey** **G.** **KOLLER**		
Citizenship:	US		
Residence:	City: Oxnard	State/Country:	CA / US
Mailing Address:	3549 Glen Abbey Lane, Oxnard, CA 93036, U.S.A.		Zip Code: 93036

Inventor's Signature:			Date:
Inventor's Name:	**Aric** **HAGBERG**		
Citizenship:	US		
Residence:	City: Santa Fe	State/Country:	NM / US
Mailing Address:	36 Camino Chupadero Santa Fe, NM 87506, U.S.A.		Zip Code: 87506

Inventor's Signature:			Date: 4/27/2010
Inventor's Name:	**Maksim** **YEVMENKIN**		
Citizenship:	Russia		
Residence:	City: Thousand Oaks	State/Country:	CA / US
Mailing Address:	427 Sundance Street, Thousand Oaks, CA 91360, U.S.A.		Zip Code: 91360

☒ Additional inventors are named on the next sheet.

Declaration supplemental sheet (2 of 2)

Inventor's Signature:			Date:
Inventor's Name:	**Mark** **BRADY**		
Citizenship:	US		
Residence:	City: San Rafael	State/Country:	CA / US
Mailing Address:	615 Tarragon Dr. San Rafael, CA 94903, U.S.A.		Zip Code: 94903

Inventor's Signature:			Date:
Inventor's Name:	**David** **PFITZNER**		
Citizenship:	Australia		
Residence:	City: College Park	State/Country:	SA / Australia
Mailing Address:	1/40 Torrens Street College Park SA 5069 Australia		Zip Code: 5069

Inventor's Signature:			Date:
Inventor's Name:	**Ted** **MIDDLETON**		
Citizenship:	US		
Residence:	City: Moorpark	State/Country:	CA / US
Mailing Address:	4086 Bending Oak Ct. Moorpark, CA 93021, U.S.A.		Zip Code: 93021

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 NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
10/259,497	09/30/2002	2451	3508	0093-US-U1	80	10

CONFIRMATION NO. 5284

CORRECTED FILING RECEIPT

83579
LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

OC000000042825090

Date Mailed: 08/03/2010

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)

Paul E. Stolorz, Thousand Oaks, CA;
John K. Salmon, Altadena, CA;
Michael S. Warren, Santa Fe, NM;
Jeffrey Koller, Torrance, CA;
Aric Hagberg, Santa Fe, CA;
Maksim Yevmenkin, Thousand Oaks, CA;
Mark Brady, Thousand Oaks, CA;
David Pfitzner, Thousand Oaks, CA;
Ted Middleton, Moorpark, CA;

Assignment For Published Patent Application

Cable & Wireless Internet Services, Inc., San Francisco, CA

Power of Attorney: The patent practitioners associated with Customer Number 83579

Domestic Priority data as claimed by applicant

This appln claims benefit of 60/325,177 09/28/2001

Foreign Applications

If Required, Foreign Filing License Granted: 10/28/2002

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 10/259,497**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

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).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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 AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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).

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

Bib Data Sheet

CONFIRMATION NO. 5284

SERIAL NUMBER	FILING OR 371(c) DATE / RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/259,497	09/30/2002	709	2451	0093-US-U1

APPLICANTS

Paul E. Stolorz, Thousand Oaks, CA;
John K. Salmon, Altadena, CA;
Michael S. Warren, Santa Fe, NM;
Jeffrey Koller, Torrance, CA;
Aric Hagberg, Santa Fe, CA;
Maksim Yevmenkin, Thousand Oaks, CA;
Mark Brady, Thousand Oaks, CA;
David Pfitzner, Thousand Oaks, CA;
Ted Middleton, Moorpark, CA;

**** CONTINUING DATA ***************************

This appln claims benefit of 60/325,177 09/28/2001

**** FOREIGN APPLICATIONS *********************

IF REQUIRED, FOREIGN FILING LICENSE GRANTED
** 10/28/2002

Foreign Priority claimed	STATE OR COUNTRY	SHEETS DRAWING	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ yes ☐ no	CA	22	80	10

35 USC 119 (a-d) conditions met: ☐ yes ☐ no ☐ Met after Allowance

Verified and Acknowledged: _____ Examiner's Signature Initials

ADDRESS
83579

TITLE

CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

FILING FEE RECEIVED	FEES: Authority has been given in Paper	
3508	No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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LEVEL 3 COMMUNICATIONS, LLC
C/O CPA GLOBAL
P.O. BOX 52050
MINNEAPOLIS MN 55402

MAILED

AUG 03 2010

OFFICE OF PETITIONS

In re Application of :
Stolorz et al. :
Application Number: 10/259497 : ON PETITION
Filing Date: 09/30/2002 :
Attorney Docket Number: 0093-US-U1 :

This is a decision in reference to the renewed petition filed on May 6, 2010, which are treated as (a) a petition under 37 CFR 1.48(a)(1) requesting a person be added as a named inventor and (b) a petition under 37 CFR 1.183 requesting waiver of 37 CFR 1.64 which requires that a named inventor execute a supplemental declaration.

The petition is **GRANTED**.

On September 30, 2002, the above-identified application was filed with a declaration naming Paul E. Stolorz, John K. Salmon, Michael S. Warren, Jeffrey Koller, Aric Hagberg, Maksim Yevmenkin, Mark Brady, and David Pfitzner as joint inventors.

On May 27, 2009, the initial petitions were filed. Petitioners request that Ted Middleton be added as a named inventor under 37 CFR 1.48(a)(1). Petitioners also request waiver under 37 CFR 1.183 of 1.64 in that three named inventors, Stolorz, Salmon, and Hagberg, refuse to execute the supplemental declaration naming them as joint inventors.

On April 5, 2010, the petition were dismissed.

On May 6, 2010, the subject renewed petitions were filed. Petitioners aver that joint inventor Salmon has signed the

supplemental declaration, but that joint inventors Stolorz and Hagberg have failed to sign and return the executed declaration.

A new declaration signed by joint inventor Yevmenkin has also been supplied.

Petition Under 37 CFR 1.48(a).

37 CFR 1.48(a) requires that an amendment to the named inventive entity be accompanied by:

(1) a petition including a statement from each person being added and each person being deleted as an inventor that the error occurred without deceptive intention on his or her part;

(2) an oath or declaration by each actual inventor or inventors as required by 37 CFR 1.63 or as permitted by 37 CFR 1.42, 1.43 or 1.47;

(3) the fee set forth in 37 CFR 1.17(i), and

(4) the written consent of any existing assignee, if any of the originally named inventors has executed an assignment.

As such, the petition under 37 CFR 1.48 is granted with respect to the addition of Ted Middleton as a named inventor.

Petition Under 37 CFR 1.183 to waive 1.64.

In view of the efforts recounted in the petition to obtain the signatures of Paul E. Stolorz and Aric Hagberg, it is agreed that justice would be served by waiving the requirement for their signatures on the supplemental declaration.

The inventorship will be as stated in the attached corrected filing receipt.

The address in the renewed petition is different than the correspondence address. A courtesy copy of this decision is being mailed to the address in the petition. All future correspondence will be mailed solely to the address of record. A change of correspondence address should be filed if the correspondence address needs to be updated.

The application is referred to Technology Center Art Unit 2451 for further processing.

Telephone inquiries related to this decision should be directed to the undersigned at 571-272-3231.

D. Wood

Douglas I. Wood
Senior Petitions Attorney
Office of Petitions

Encl: Corrected Filing Receipt

Cc: DAVIDSON BERQUIST JACKSON & GOWDEY LLP
4300 WILSON BLVD, 7TH FLOOR
ARLINGTON VA 22203

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 NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
10/259,497	09/30/2002	2451	3508	0093-US-U1	80	10

CONFIRMATION NO. 5284

CORRECTED FILING RECEIPT

83579
LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

OC00000004282509

Date Mailed: 08/03/2010

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)

Paul E. Stolorz, Thousand Oaks, CA;
John K. Salmon, Altadena, CA;
Michael S. Warren, Santa Fe, NM;
Jeffrey Koller, Torrance, CA;
Aric Hagberg, Santa Fe, CA;
Maksim Yevmenkin, Thousand Oaks, CA;
Mark Brady, Thousand Oaks, CA;
David Pfitzner, Thousand Oaks, CA;
Ted Middleton, Moorpark, CA;

Assignment For Published Patent Application

Cable & Wireless Internet Services, Inc., San Francisco, CA

Power of Attorney: The patent practitioners associated with Customer Number 83579

Domestic Priority data as claimed by applicant

This appln claims benefit of 60/325,177 09/28/2001

Foreign Applications

If Required, Foreign Filing License Granted: 10/28/2002

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 10/259,497**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

Preliminary Class

709

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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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).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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 AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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).

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 1 of 1	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	STOLORZ, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. WALSH
	Attorney Docket No.	0093-US-U1
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	1-1	Office Action for Chinese (PRC) patent application no. 02821371.8, from The Patent Office of the People's Republic of China, dated Aug. 3, 2010 (non-official translation, 9 pgs., including 2 pg. summary).	
	1-2		
	1-3		
	1-4		
	1-5		
	1-6		
	1-7		

Examiner Signature		Date Considered	

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abstract, T = Translation, PT = Partial Translation, SOR = Statement of Relevancy, PF = Patent Family.

Electronic Acknowledgement Receipt

EFS ID:	8279546
Application Number:	10259497
International Application Number:	
Confirmation Number:	5284
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Customer Number:	83579
Filer:	Brian Siritzky
Filer Authorized By:	
Attorney Docket Number:	0093-US-U1
Receipt Date:	24-AUG-2010
Filing Date:	30-SEP-2002
Time Stamp:	14:48:22
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	NPL Documents	NP0000.pdf	793072 7bfb081cf3d7437f36947577c0d5de312ac7a211	no	9

Warnings:	
Information:	

2	Transmittal Letter	PA_IDS_filed_08_24_10.pdf	191091 637d52aeecbb3ae1919262868321fef564bb2ee1	no	2
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Filed (SB/08)	PA_1449_filed_08_24_2010.pdf	63372 187a008a582977c2567abf2bb4ff140816f162b0	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
		Total Files Size (in bytes):	1047535		

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF: STOLORZ, Paul E. et al.	Attorney Docket: 0093-US-U1
	Group Art Unit: 2451
Application Serial No.: 10/259,497	Examiner: John B. Walsh
Application Filing Date: 09/30/2002	Confirmation No.: 5284
Title: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT	Date: August 24, 2010

INFORMATION DISCLOSURE STATEMENT

via EFS-Web
Hon. Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. § 1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. One copy of each non-U.S. Patent reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

The submission of any document herewith, which is not a statutory bar, is not intended that any such document constitutes prior art against any of the claims of the present application or is considered to be material to patentability as defined in 37 C.F.R. § 1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference against the claims of the present application.

This IDS is intended to be in full compliance with the rules, but should the Examiner find any part of its requirement content to have been omitted, prompt notice to that effect is earnestly solicited, along with additional time under Rule 97(f), to enable Applicant to comply fully.

This Information Disclosure Statement cites a recent office action (August 3, 2010) from related Chinese patent application (No. 02821371.8).

If the Examiner has any questions about this application or requires any additional information, he is respectfully requested to contact the undersigned.

Please credit or debit Deposit Account No. 501860 as needed under 37 C.F.R. § 1.17(p) to ensure consideration of the disclosed information.

Contingent IDS Request Under Rule 97(c): Should a first Office Action on the merits issue with a mailing date which precedes or is the same as the filing date of this IDS, please consider this a Request under Rule 97(c), charge the IDS fee (per rule 17(p)) to our Deposit Account No. 501860 under Order No. 2711-0096 and proceed to consider this IDS under Rule 97(c).

CHARGE STATEMENT: Deposit Account No. 501860, order no. **2711-0054**.
The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (missing or insufficiencies only) now or hereafter relative to this application and the resulting Official Document under Rule 20, or credit any overpayment, to our Accounting/Order Nos. shown above, for which purpose a duplicate copy of this sheet is attached **This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal sheet is filed**.

CUSTOMER NUMBER	Respectfully submitted,
83579	**/Brian Siritzky/Reg. No. 37,497** By:_____ Brian Siritzky, Ph.D. Registration No.: 37,497 703.894.6405 August 24, 2010

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

83579 7590 09/20/2010

LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER	
WALSH, JOHN B	
ART UNIT	PAPER NUMBER
2451	

DATE MAILED: 09/20/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	09/30/2002	Paul E. Stolorz	0093-US-U1	5284

TITLE OF INVENTION: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$0	$1510	$1510	12/20/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

83579 7590 09/20/2010

LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	09/30/2002	Paul E. Stolorz	0093-US-U1	5284

TITLE OF INVENTION: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$0	$1510	$1510	12/20/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
WALSH, JOHN B	2451	709-238000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. 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 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, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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.

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.
10/259,497	09/30/2002	Paul E. Stolorz	0093-US-U1	5284

83579 7590 09/20/2010

LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

EXAMINER	
WALSH, JOHN B	
ART UNIT	PAPER NUMBER
2451	

DATE MAILED: 09/20/2010

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 741 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 741 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

Interview Summary	Application No.	Applicant(s)	
	10/259,497	STOLORZ ET AL.	
	Examiner	Art Unit	
	John B. Walsh	2451	

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

(1) *John B. Walsh*. (3)_____.

(2) *Brian Siritzky*. (4)_____.

Date of Interview: *26 February 2010*.

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: *see Examiner's Amendment*.

Identification of prior art discussed: *Day '052*.

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: *See Examiner's Amendment*.

(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.

/John B. Walsh/ Primary Examiner, Art Unit 2451	

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.

Notice of Allowability	Application No.	Applicant(s)	
	10/259,497	STOLORZ ET AL.	
	Examiner	Art Unit	
	John B. Walsh	2451	

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *RCE of 1/7/10*.

2. ☒ The allowed claim(s) is/are *10-23,25-28,36-69,72-75,77,78,80-83,86,88 and 89*.

3. ☐ 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 the:
      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)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 1/7/10;3/15/10;4/26/10;8/24/10
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *20100228* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/John B. Walsh/
Primary Examiner, Art Unit 2451

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Brian Siritzky on February 26, 2010.

The application has been amended as follows:

In the Claims:

a. Claim 10, line 5- insert --comprising hardware in combination with software and-- after "domain name server".

b. Claim 39, line 3 - insert --comprising hardware in combination with software-- after "an administrative master agent (AMA)".

c. Claim 42, line 4 – insert --, said domain name server comprising hardware in combination with software-- after "a hostname".

d. Claim 63, line 9 - insert --wherein said domain name server comprises hardware in combination with software, and -- after "location-based policy,".

e. Claim 75, line 3 – insert --by hardware in combination with software,-- after "maintaining".

f. Claim 77, line 1 –replace "76" with --75-- after "according to claim".

g. Claim 81, line 3 – insert --comprising hardware in combination with software-- after "a server network".

h. Claim 82, line 3 – insert --comprising hardware in combination with software-- after "a server network".

i. Claim 83, line 3 – insert --comprising hardware in combination with software-- after "a server network".

j. Claim 86, line 4 - insert --, wherein the domain name server comprises hardware in combination with software,-- after "to resolve a hostname,".

k. Claim 88, line 5 – insert --, by hardware in combination with software,-- after "ascertaining";

line 12 – delete "at least one of" after "the at least one policy comprises".

l. Claim 89, line 4 - insert -- ,wherein the domain name server comprises hardware in combination with software,-- after "a hostname".

Allowable Subject Matter

2. Claims 10-23, 25-28, 36-69, 72-75, 77, 78, 80-83, 86, 88 and 89 are allowed.

3. The following is an examiner's statement of reasons for allowance: Day '052 does not teach or disclose the applicant's invention as claimed in detail, in particular, the ATC administrative framework as claimed in detail; administrative master agent, AMA backup and network operation center; as concerns claims 42, 63 and 88, Day '052 does not teach or disclose the dynamically establishing the at least one policy as claimed in detail.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Walsh whose telephone number is 571-272-7063. The examiner can normally be reached on Monday-Thursday from 8:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. 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.

/John B. Walsh/
Primary Examiner, Art Unit 2451

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

BIB DATA SHEET

CONFIRMATION NO. 5284

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/259,497	09/30/2002	709	2451	0093-US-U1

APPLICANTS

Paul E. Stolorz, Thousand Oaks, CA;
John K. Salmon, Altadena, CA;
Michael S. Warren, Santa Fe, NM;
Jeffrey Koller, Torrance, CA;
Aric Hagberg, Santa Fe, CA;
Maksim Yevmenkin, Thousand Oaks, CA;
Mark Brady, Thousand Oaks, CA;
David Pfitzner, Thousand Oaks, CA;

**** CONTINUING DATA ***************************

This appln claims benefit of 60/325,177 09/28/2001

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

10/28/2002

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /JOHN B WALSH/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	22	80	10

ADDRESS

LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402
UNITED STATES

TITLE

CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

FILING FEE RECEIVED		
3508	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Issue Classification	Application/Control No. 10/259,497	Applicant(s)/Patent under Reexamination STOLORZ ET AL.
	Examiner John B. Walsh	Art Unit 2451

ISSUE CLASSIFICATION

ORIGINAL		INTERNATIONAL CLASSIFICATION									
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED				
709	238	G	06	F	15	/173	G	06	F	15	/173
		G	06	F	15	/16	G	06	F	15	/16

CROSS REFERENCES				
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)			
709	202	223	224	

N/A (Assistant Examiner) (Date)	/John B. Walsh/ 2/28/10 (Primary Examiner) (Date)	Total Claims Allowed: 62
(Legal Instruments Examiner) (Date)		O.G. Print Claim(s): 1 / O.G. Print Fig.: 1

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		31	34	61		91		121		151		181
	2		32	35	62		92		122		152		182
	3		33	36	63		93		123		153		183
	4		34	37	64		94		124		154		184
	5		35	61	65		95		125		155		185
	6		36	62	66		96		126		156		186
	7		37	38	67		97		127		157		187
	8		38	39	68		98		128		158		188
	9	18	39	40	69		99		129		159		189
1	10	19	40		70		100		130		160		190
2	11	20	41		71		101		131		161		191
3	12	21	42	41	72		102		132		162		192
4	13	22	43	42	73		103		133		163		193
5	14	53	44	43	74		104		134		164		194
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7	17	24	47	45	77		107		137		167		197
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9	19	26	49		79		109		139		169		199
10	20	27	50	47	80		110		140		170		200
11	21	56	51	48	81		111		141		171		201
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13	23	28	53	51	83		113		143		173		203
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15	26	29	56	52	86		116		146		176		206
16	27	30	57		87		117		147		177		207
17	28	31	58	60	88		118		148		178		208
	29	32	59	55	89		119		149		179		209
	30	33	60		90		120		150		180		210

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 1 of 1		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	1-1	Office Action from Chinese Patent Office for application non. 02821371.8, Jan. 29, 2010, in Chinese with translation.	
	1-2	Office Action from Chinese Patent Office for application non. 02821371.8, Jan. 4, 2008, in Chinese with translation.	
	1-3	Office Action from Chinese Patent Office for application non. 02821371.8, May 8, 2009, in Chinese with translation.	
	1-4		
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	1-6		
	1-7		

Examiner Signature	/John Walsh/ (09/13/2010)	Date Considered	09/13/2010

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abstract, T = Translation, PT = Partial Translation, SOR = Statement of Relevancy, PF = Patent Family.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /JW/ (09/13/2010)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 1 of 1		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	STOLORZ, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. WALSH
	Attorney Docket No.	0093-US-U1
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	1-1	Office Action for Chinese (PRC) patent application no. 02821371.8, from The Patent Office of the People's Republic of China, dated Aug. 3, 2010 (non-official translation, 9 pgs., including 2 pg. summary).	
	1-2		
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Examiner Signature	/John Walsh/ (09/13/2010)	Date Considered	09/13/2010

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /JW/ (09/13/2010)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 1 of 4		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	STOLORZ, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. WALSH
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
	1-1	US-2004039798	2004/02/26	Hotz, et al.
	1-2	US-7373644	2008/05/13	Aborn
	1-3	US-7577754	2009/08/18	Garcia-Luna-Aceves, et al.
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Examiner Signature	/John Walsh/ (09/13/2010)	Date Considered	09/13/2010

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 2 of 4	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	STOLORZ, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. WALSH
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication Date	Name of Patentee or Applicant of Cited Document	Notes
	2-1	JP 10-70571	1998/03/10	IBM	
	2-2	JP 5-130144	1993/05/25	FUJITSU LTD	
	2-3	KR 1999-72167	1999/09/27	Stanford-Clark	
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Examiner Signature	/John Walsh/ (09/13/2010)	Date Considered	09/13/2010

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 3 of 4		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	STOLORZ, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. WALSH
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	3-1	Claims (amended) filed by applicant in Japanese Patent Application No. 2003-531370, Jan. 17, 2008 (English translation provided by foreign associate) [12 pgs.]	
	3-2	Claims (amended) filed by applicant in KIPO for Korean Patent Application No. KR 10 2004 7004613, July 24, 2009 (English translation provided by foreign associate) [10 pgs.]	
	3-3	European Patent Application No. 02799672.7, file history as of April 23, 2010 (downloaded from EPO).	
	3-4	International Preliminary Examination Report (IPER), Form PCT/IPEA/409, for PCT/US02/30921, October, 2005 [5 pgs.]	
	3-5	International Search Report (ISR), Form PCT/ISA/210, for PCT/US02/30921, Jan. 28, 2004 [5 pgs.]	
	3-6	Japanese Patent Office (JPO) "Notice of Reasons for Rejection", for Japanese Patent Application No. 2003-531370, July 17, 2007, "Organized Translation" provided by foreign associate [2 pgs.]	
	3-7	Japanese Patent Publication JP 10-70571,June, 1997, International Business Machines Corporation, English translation provided with Office Action [34 pgs.]	

Examiner Signature	/John Walsh/ (09/13/2010)	Date Considered	09/13/2010

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /JW/ (09/13/2010)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 4 of 4	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	STOLORZ, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. WALSH
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

NON-PATENT REFERENCES

Examiner Initials*	Cite No.	Non-patent Reference bibliographic information, where available	Notes
	4-1	Japanese Patent Publication JP 5-130144, Published 1993-05-25, Fujitsu Ltd., English translation provided with Office Action [9 pgs.]	
	4-2	Korean Intellectual Property Office (KIPO), Notice of Preliminary Rejection (Non-Final)) for Korean Patent Application No. KR 10 2004 7004613, April 24, 2009, English translation (provided by foreign associate) [5 pgs.]	
	4-3		
	4-4		
	4-5		
	4-6		
	4-7		

Examiner Signature	/John Walsh/ (09/13/2010)	Date Considered	09/13/2010

*Examiner: Initial if reference was 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. Notes: If identified, the following is provided: EA = English Abstract, T = Translation, PT = Partial Translation, SOR = Statement of Relevancy, PF = Patent Family.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /JW/ (09/13/2010)

Search Notes

Application/Control No.	Applicant(s)/Patent under Reexamination
10/259,497	STOLORZ ET AL.
Examiner	**Art Unit**
John B. Walsh	2451

SEARCHED			
Class	Subclass	Date	Examiner

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
709	**202,216**	2/28/2010	**JW**
709	223,224	2/28/2010	JW
709	238,245	2/28/2010	JW

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
inventor name search	2/28/2010	JW

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	86	(STOLORZ-PAUL-E.in. or SALMON-JOHN-K.in. or WARREN-MICHAEL-S.in. or KOLLER-JEFFREY.in. or HAGBERG-ARIC.in. or YEVMENKIN-MAKSIM.in. or BRADY-MARK.in. or PFITZNER-DAVID.in.)	US-PGPUB; USPAT	OR	ON	2010/02/28 23:27
L2	3	L1 and (policy).clm.	US-PGPUB; USPAT	OR	ON	2010/02/28 23:28
L3	63	709/202,216,223,224,238,245.ccls. and ((policy or policies) and agent and server).clm.	US-PGPUB	OR	ON	2010/02/28 23:29
L4	15	709/202,216,223,224,238,245.ccls. and ((policy or policies) and agent and server).clm. and @ad<"20020930"	US-PGPUB	OR	ON	2010/02/28 23:29

2/28/10 11:32:13 PM
C:\Documents and Settings\jwalsh\My Documents\EAST\workspaces\10259497.wsp

INFORMATION DISCLOSURE STATEMENT BY APPLICANT FORM PTO-1449 (modified) Sheet 1 of 1		
	Application No.	10/259,497
	Filing Date	09/30/2002
	First Named Inventor	Stolorz, Paul E.
	Group Art Unit	2451
	Examiner Name	John B. Walsh
	Attorney Docket No.	2711-0054 (0093-US-U1)
	Confirmation No.	5284

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	Document No.	Publication/ Issue Date	Name of Patentee or Applicant of Cited Document
	1-1	US-7185052	2007/02/27	Day
	1-2			
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Examiner Signature	/John Walsh/ (01/11/2010)	Date Considered	01/11/2010

*Examiner: Initial if reference was 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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /JW/ (01/11/2010)

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

83579 7590 09/20/2010

LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

David D. Wier (Depositor's name)
(Signature)
September 24, 2010 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	09/30/2002	Paul E. Stolorz	0093-US-U1	5284

TITLE OF INVENTION: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$0	$1510	$1510	12/20/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
WALSH, JOHN B	2451	709-238000

1. **Change** of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 Brian Siritzky, Ph.D.
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed fo recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Level 3 Communications, LLC
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Broomfield, CO

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Governmen

4a. The following fee(s) are submitted:
☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 50-9063 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party i interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date September 24, 2010

Typed or printed name David D. Wier Registration No. 48,229

This collection of information is required by 37 CFR 1.311. 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 12 minutes to complete, including gathering, preparing, anc 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 complet 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, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450 Alexandria, Virginia 22313-1450.

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Electronic Acknowledgement Receipt

EFS ID:	8496301
Application Number:	10259497
International Application Number:	
Confirmation Number:	5284
Title of Invention:	CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT
First Named Inventor/Applicant Name:	Paul E. Stolorz
Customer Number:	83579
Filer:	David Dewey Wier
Filer Authorized By:	
Attorney Docket Number:	0093-US-U1
Receipt Date:	24-SEP-2010
Filing Date:	30-SEP-2002
Time Stamp:	17:04:46
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	Applicant summary of interview with examiner	20100924ApplicantInterviewSummary.pdf	68405 de05a7ebbaf0e182548330b87326beff929f21b7	no	2

Warnings:	
Information:	

2	Post Allowance Communication - Incoming	20100924CommentsonAllowance.pdf	21734 e0b42bc8e54cca14d9d4710c991e95b82035756c	no	1
Warnings:					
Information:					
3	Issue Fee Payment (PTO-85B)	20100924IssueFeeTransmittal-cute2.pdf	66446 164a74292549b560b91f002e65865398f4b649b9	no	1
Warnings:					
Information:					
		Total Files Size (in bytes):	156585		

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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

In re PATENT APPLICATION OF:	Attorney Docket: **0093-US-U1**
Stolorz, Paul	Group Art Unit: 2451
Application Serial No.: 10/259,497	Examiner: WALSH, John B.
Application Filing Date: 09/30/2002	Confirmation No.: 5284
Title: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT	September 24, 2010

INTERVIEW SUMMARY STATEMENT

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

Sir:

On February 26, 2010 Applicant's representative, the undersigned, conducted a telephone interview with the Examiner regarding this application. The Office mailed an *Interview Summary* with a Notice of Allowance on September 20, 2010.

During the interview the undersigned discussed U.S. Patent No. 7,185,052 (to Day *et al.* – hereinafter "Day '052"). The undersigned informed the Examiner that the Day '052 patent had been cited in related copending applications (Nos. 11/976,648 and 11/932,162). The undersigned reminded the Examiner that this application is related to those two applications (both of which he is examining), and requested that he should consider the prosecution of those applications (including the art cited therein) in the prosecution of the present application.

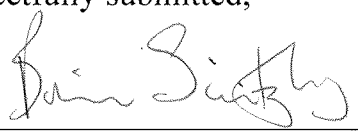
The undersigned had informed the Examiner that this application had been withdrawn from issue in order to cite the Day '052 patent and have it considered in by the Examiner in the present application.

The undersigned discussed differences between the presently-claimed invention and the teachings of the Day '052 reference. The Examiner agreed that

all of the pending claims are patentable over the prior art, including the Day '052 reference.

The undersigned also proposed and discussed various claim amendments to deal with *potential* §101 rejections (no rejection under 25 U.S.C. § 101 was made). The Examiner agreed to amend the claims by Examiner's Amendment and indicated that the claims were allowable.

Respectfully submitted,

By: 

Brian Siritzky, Ph.D.
Registration No.: 37,497
703.894.6405

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

Applicant : Paul E. Stolorz, et al.	
Appln. No. : 10/259,497	Confirmation No: 5284
Filed : 09/30/2002	Group Art Unit: 2451
Title : CONFIGURABLE ADAPTIVE GLOCAL TRAFFIC CONTROL AND MANAGEMENT	Examiner: Walsh, John B.
	Docket No. 0093-US-U1

COMMENTS ON STATEMENT OF REASONS FOR ALLOWANCE

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

Dear Sir:

Applicant acknowledges the Notice of Allowability in the present application by the Examiner with appreciation. Applicant notes that the reasons for allowance set forth in the Notice of Allowability are not the only reasons that the claims are allowable. As the Examiner's reasons for allowance are not exhaustive, such reasons for allowance do not establish an estoppel against Applicant with regard to the scope of any claim in the present application or any related applications, including without limitation any continuation applications claiming priority to the present application.

Respectfully submitted,

Date: September 24, 2010

/DDW/

David D. Wier, Reg. No. 48,229
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Tel: 720-888-3539
Fax: 720-888-5619

OPAP IAP6 SEP 24 2010 PATENT & TRADEMARK OFFICE

PART B - FEE(S) TRANSMITTAL

B1

NT

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

83579 7590 09/20/2010

LEVEL 3 COMMUNICATIONS, LLC
c/o CPA Global
P.O. Box 52050
Minneapolis, MN 55402

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

David D. Wier	(Depositor's name)
	(Signature)
September 24, 2010	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	09/30/2002	Paul E. Stolorz	0093-US-U1	5284

TITLE OF INVENTION: CONFIGURABLE ADAPTIVE GLOBAL TRAFFIC CONTROL AND MANAGEMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$0	$1510	$1510	12/20/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
WALSH, JOHN B	2451	709-238000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Brian Siritzky, Ph D.
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Level 3 Communications, LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Broomfield, CO

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☑ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee

☒ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies

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☐ Payment by credit card. Form PTO-2038 is attached.

50-5063

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 50-5063 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date September 24, 2010

Typed or printed name David D. Wier ✓ Registration No. 48,229

This collection of information is required by 37 CFR 1.311. 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 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, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450 Alexandria, Virginia 22313-1450.

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/259,497	10/26/2010	7822871	0093-US-U1	5284

83579 7590 10/06/2010

LEVEL 3 COMMUNICATIONS, LLC
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Minneapolis, MN 55402

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 1107 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

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