

PATENT
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No* _____ 12/489977 _____

Patent No* _____ 8446823 _____

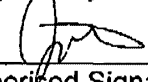
CHANGE OF ENTITY STATUS PURSUANT TO 37 C.F.R. §1.27 (g)(2)

Commissioner for Patents
Mail Stop M Correspondence
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This communication hereby notifies the United States Patent and Trademark Office that Small Entity status is no longer applicable for the above-identified patent.

Respectfully submitted by:



Authorised Signatory*

Address of Signatory or Company*

____ N. Harris Computer _____
____ 1 Antares Drive, Suite 100 _____
____ Ottawa Ontario K2E 8C4 _____

____ Jérôme Nantel _____
Print Name*

____ VP, Magor _____
Title* (Owner, Inventor, Assignee or US Attorney)

____ January 30, 2020 _____
Date*

Please note that all fields* must be completed and the form signed by the authorised Owner, Inventor, Assignee or US Attorney.



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.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/489,977	05/21/2013	8446823	23532-US	2594

23553 7590 05/01/2013
MARKS & CLERK
P.O. BOX 957
STATION B
OTTAWA, ON K1P 5S7
CANADA

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 962 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):

Mojtaba Hosseini, Ottawa, CANADA;
Patrick White, Renfrew, CANADA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
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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)

23553 7590 02/21/2013
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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.
12/489,977	06/23/2009	Mojtaba Hosseini	23532-US	2594

TITLE OF INVENTION: METHOD OF MANAGING THE FLOW OF TIME-SENSITIVE DATA OVER PACKET NETWORKS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$885 \$890.00	\$300	\$0	\$1185 \$1190.00	05/21/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
ROSE, KERRIM	2474	348-014080

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. **MARKS & CLERK**
2. **Richard J. Mitchell**
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)

MAGOR COMMUNICATIONS CORPORATION

Ottawa, ON K2K 2W5
CANADA

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

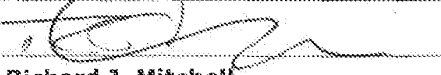
4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ 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 **13-1717** 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 
Typed or printed name **Richard J. Mitchell**

Date **April 15, 2013**
Registration No. **34,519**

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.

Electronic Patent Application Fee Transmittal				
Application Number:		12489977		
Filing Date:		23-Jun-2009		
Title of Invention:		METHOD OF MANAGING THE FLOW OF TIME-SENSITIVE DATA OVER PACKET NETWORKS		
First Named Inventor/Applicant Name:		Mojtaba Hosseini		
Filer:		Richard J. Mitchell/Carolynn Irvin		
Attorney Docket Number:		23532-US		
Filed as Small 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:				
Utility Appl Issue Fee	2501	1	890	890
Publ. Fee- Early, Voluntary, or Normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1190

Electronic Acknowledgement Receipt	
EFS ID:	15561852
Application Number:	12489977
International Application Number:	
Confirmation Number:	2594
Title of Invention:	METHOD OF MANAGING THE FLOW OF TIME-SENSITIVE DATA OVER PACKET NETWORKS
First Named Inventor/Applicant Name:	Mojtaba Hosseini
Customer Number:	23553
Filer:	Richard J. Mitchell/Carolynn Irvin
Filer Authorized By:	Richard J. Mitchell
Attorney Docket Number:	23532-US
Receipt Date:	19-APR-2013
Filing Date:	23-JUN-2009
Time Stamp:	11:11:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$1190
RAM confirmation Number	8102
Deposit Account	131717
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)	IF.pdf	152352	no	1
			b9a6dd61d58ab8898864464aff1062a5c26747f		

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	31950	no	2
			c03a6ba15ec457bc4c1c6b9d457cdc92ce161547		

Warnings:

Information:

Total Files Size (in bytes): 184302

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.



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NOTICE OF ALLOWANCE AND FEE(S) DUE

23553 7590 02/21/2013
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STATION B
OTTAWA, ON K1P 5S7
CANADA

EXAMINER

ROSE, KERRI M

ART UNIT

PAPER NUMBER

2474

DATE MAILED: 02/21/2013

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/489,977	06/23/2009	Mojtaba Hosseini	23532-US	2594

TITLE OF INVENTION: METHOD OF MANAGING THE FLOW OF TIME-SENSITIVE DATA OVER PACKET NETWORKS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$885	\$300	\$0	\$1185	05/21/2013

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.

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
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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)

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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.
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12/489,977	06/23/2009	Mojtaba Hosseini	23532-US	2594
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TITLE OF INVENTION: METHOD OF MANAGING THE FLOW OF TIME-SENSITIVE DATA OVER PACKET NETWORKS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$885	\$300	\$0	\$1185	05/21/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
ROSE, KERRI M	2474	348-014080

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 3.111. 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.

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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.
12/489,977	06/23/2009	Mojtaba Hosseini	23532-US	2594
23553	7590	02/21/2013	EXAMINER	
MARKS & CLERK P.O. BOX 957 STATION B OTTAWA, ON K1P 5S7 CANADA			ROSE, KERRI M	
			ART UNIT	PAPER NUMBER
			2474	

DATE MAILED: 02/21/2013

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 644 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 644 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.

Privacy Act Statement

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

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

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

Notice of Allowability	Application No.	Applicant(s)	
	12/489,977	HOSSEINI ET AL.	
	Examiner	Art Unit	
	KERRI ROSE	2474	

-- 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 the amendment filed 1/17/2013.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-3, 5-13, 16, 15, 17-19, 24 (now 1-18). As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ 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.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

☐ 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)	5. ☐ Examiner's Amendment/Comment
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____	6. ☐ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	7. ☐ Other ____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date ____.	

/Kerri M Rose/ Examiner, Art Unit 2474	
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<i>Search Notes</i> 	Application/Control No. 12489977	Applicant(s)/Patent Under Reexamination HOSSEINI ET AL.
	Examiner KERRI ROSE	Art Unit 2474

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
370	229-232, 235, 252, 400, 401, 431, 464-466, 468 UPDATED	2/11/13	KMR

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor Search	10/15/12	KMR
East - see printout (including text search) UPDATED	2/11/13	KMR

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
370	230.1, 252, 468 (including text search)	2/11/13	KMR

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	47059	(370/229-232,235,252,400,401,431,464,466,468).ccls.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2013/02/11 08:29
L2	269479	((logic\$4 virtual\$4) near5 (path\$1 connect\$3 link\$1))	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2013/02/11 08:31
L3	1101	((logic\$4 virtual\$4) near5 (path\$1 connect\$3 link\$1)) and ((determin\$5 measur\$5 calculat\$3) near5 (rtt (round\$1 near2 trip\$1 near2 delay\$3)))	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2013/02/11 08:31
L4	162	((logic\$4 virtual\$4) near5 (path\$1 connect\$3 link\$1)) same2 ((determin\$5 measur\$5 calculat\$3) near5 (rtt (round\$1 near2 trip\$1 near2 delay\$3)))	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2013/02/11 08:33
L5	25	((logic\$4 virtual\$4) near5 (path\$1 connect\$3 link\$1)) same2 ((determin\$5 measur\$5 calculat\$3) near5 (rtt (round\$1 near2 trip\$1 near2 delay\$3))) and ((max\$1 maximum\$1 limit\$1) near3 (rtt (round\$1 near2 trip\$1 near2 delay\$3)))	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2013/02/11 08:34
L6	12	((logic\$4 virtual\$4) near5 (path\$1 connect\$3 link\$1)) same2 ((determin\$5 measur\$5 calculat\$3) near5 (rtt (round\$1 near2 trip\$1 near2 delay\$3))) and ((max\$1 maximum\$1 limit\$1) near3 (rtt (round\$1 near2 trip\$1 near2 delay\$3))) and (peak\$1 spike\$1)	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2013/02/11 08:36
L7	1343	(round\$1 near trip\$1 near delay\$1) and ((delay\$3 suspen\$4 wait\$3 schedul\$3) same (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) same (coincid\$4 interfer\$4))	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2013/02/11 08:43
L8	365	(round\$1 near trip\$1 near delay\$1) and ((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) near10 (coincid\$4 interfer\$4))	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2013/02/11 08:43
L9	19	(round\$1 near trip\$1 near delay\$1) and ((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) near10 (coincid\$4 interfer\$4)) and (data\$1 near2 peak\$3)	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2013/02/11 08:43
L10	4	((determin\$5 measur\$5 find\$3 calculat\$3) near7 (stream\$1 path\$1 link\$1) near7 (round\$1 near trip\$1 near delay\$1)) and	US-PGPUB; USPAT;	OR	OFF	2013/02/11 08:43

		((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) near10 (coincid\$4 interfer\$4))	EPO; JPO			
L11	29	((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) near10 (coincid\$4 interfer\$4)) and (i\$1frame)	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2013/02/11 08:43

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L12	761	370/230.1.ccls.	USPAT; UPAD	OR	OFF	2013/02/11 09:01
L13	5930	370/252.ccls.	USPAT; UPAD	OR	OFF	2013/02/11 09:01
L14	3201	370/468.ccls.	USPAT; UPAD	OR	OFF	2013/02/11 09:02
L15	16	((((logic\$4 virtual\$4) near5 (path\$1 connect\$3 link\$1)) and ((determin\$5 measur\$5 calculat\$3) near5 (rtt (round\$1 near2 trip\$1 near2 delay\$3))))).clm.	USPAT; UPAD	OR	OFF	2013/02/11 09:02
L16	364	((((determin\$5 measur\$5 calculat\$3) near5 (rtt (round\$1 near2 trip\$1 near2 delay\$3))))).clm.	USPAT; UPAD	OR	OFF	2013/02/11 09:02
L17	63	(12 13 14) and 16	USPAT; UPAD	OR	OFF	2013/02/11 09:03
L18	0	((((logic\$4 virtual\$4) near5 (path\$1 connect\$3 link\$1)) same2 ((determin\$5 measur\$5 calculat\$3) near5 (rtt (round\$1 near2 trip\$1 near2 delay\$3))) and ((max\$1 maximum\$1 limit\$1) near3 (rtt (round\$1 near2 trip\$1 near2 delay\$3))))).clm.	USPAT; UPAD	OR	OFF	2013/02/11 09:03
L19	21	((((determin\$5 measur\$5 calculat\$3) near5 (rtt (round\$1 near2 trip\$1 near2 delay\$3))) and ((max\$1 maximum\$1 limit\$1) near3 (rtt (round\$1 near2 trip\$1 near2 delay\$3))))).clm.	USPAT; UPAD	OR	OFF	2013/02/11 09:03
L20	9	(12 13 14) and 19	USPAT; UPAD	OR	OFF	2013/02/11 09:04

2/ 11/ 2013 9:33:26 AM**C:\ Users\ krose1\ Documents\ EAST\ Workspaces\ 12489977.wsp**

Issue Classification 	Application/Control No. 12489977	Applicant(s)/Patent Under Reexamination HOSSEINI ET AL.
	Examiner KERRI ROSE	Art Unit 2474

CPC			Type	Version
Symbol				

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

US ORIGINAL CLASSIFICATION						INTERNATIONAL CLASSIFICATION													
CLASS		SUBCLASS				CLAIMED					NON-CLAIMED								
370		230.1				G	0	8	C	15 / 00 ()									
CROSS REFERENCE(S)																			
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)																		
370	468																		

(Assistant Examiner)		(Date)	Total Claims Allowed:	
/KERRI ROSE/ Examiner, Art Unit 2474		02/11/2013	18	
(Primary Examiner)		(Date)	O.G. Print Claim(s)	O.G. Print Figure
			1	6

Issue Classification 	Application/Control No. 12489977	Applicant(s)/Patent Under Reexamination HOSSEINI ET AL.
	Examiner KERRI ROSE	Art Unit 2474

		Total Claims Allowed:	
		18	
(Assistant Examiner)	(Date)		
/KERRI ROSE/ Examiner, Art Unit 2474	02/11/2013	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	6

Issue Classification 	Application/Control No. 12489977	Applicant(s)/Patent Under Reexamination HOSSEINI ET AL.
	Examiner KERRI ROSE	Art Unit 2474

☐ 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	Final	Original
1	1	15	17												
2	2	16	18												
3	3	17	19												
	4		20												
4	5		21												
5	6		22												
6	7		23												
7	8	18	24												
8	9														
9	10														
10	11														
11	12														
12	13														
	14														
14	15														
13	16														

		Total Claims Allowed:	
		18	
(Assistant Examiner)	(Date)		
/KERRI ROSE/ Examiner, Art Unit 2474	02/11/2013	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	6

12/489,977
Art Unit: 2474
Response to Office action mailed 10/18/2012

PATENT

Agent's Docket No. 23522-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Mojtaba Hosseini	)	
	)	Conf no. 2594
	)	
	)	
Serial No: 12/489,977	)	Art Unit: 2474
	)	
Filed: 06/23/2009	)	Examiner: KERRI M ROSE

Customer no. 23553

For: METHOD OF MANAGING THE FLOW OF TIME-SENSITIVE DATA OVER
PACKET NETWORKS

Jan 14, 2013

Commissioner of Patent and Trademarks
P.O. Box 1450, Alexandria, Virginia 22313-1450

.

RESPONSE TO OFFICE ACTION MAILED 10/18/2012

Sir:

Pursuant to the office action mailed October 18, 2012, the applicant respectfully submits the following amendments and remarks.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.(currently amended) A method of managing multiple data streams transported ~~over~~
through a common communications resource in a packet network, wherein data flowing through
said resource travels in both directions, and wherein each stream is subject to data peaks,
comprising:

establishing logical two-way connections through the common communications resource
between one or more near endpoints and one or more far endpoints,

determining an undelayed round trip delay for each said ~~each data stream~~ logical two-way
connection;

determining the maximum round trip delay among all said logical two-way
connections, and

preparing each of said data streams for transmission over respective said logical
connections from a said near endpoint to a said far endpoint,

determining the location of said data peaks in said data streams,

~~delaying transmission of data peaks in~~ transmitting said data streams over said respective
logical two-way connections to said one or more far endpoints, and

delaying the transmission of one or more of said data streams that are transmitted over a
said logical two-way connection having an undelayed round trip delay less than the maximum
round trip delay by an amount dependent on the location of said peaks to ~~to at least~~ reduce the

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degree of coincidence in the data peaks of different streams _without increasing the maximum round trip delay for the ~~data streams~~logical two-way connections.

2.(currently amended) A method as claimed in claim 1, wherein the transmission of said data ~~peaks streams are~~is delayed so as to remove any coincidence in said data peaks of different data streams.

3. (currently amended) A method as claimed in claim 1, wherein the delays introduced into the different data streams are ranked in accordance with the determined round trip delays for each ~~data stream~~logical two-way connection.

4.(canceled)

5. (original) A method as claimed in claim 3, wherein the amount of delay that can be introduced into a data stream is capped at a predetermined value.

6. (original) A method as claimed in claim 3, wherein the round trip delays are monitored over a period of time, and the rank order is changed as necessary to take into account changing round trip delays.

7. (original) A method as claimed in claim 3, wherein the delays are introduced so as to evenly distribute the data peaks in different streams.

8. (currently amended) A method as claimed in claim 1, wherein the ~~data streams~~flowlogical connections are established between a common source endpoint and multiple ~~destinations~~destination endpoints.

9. (original) A method as claimed in claim 1, wherein said data streams represent video streams and said data peaks correspond to I-frames.

10. (currently amended) A method as claimed in claim 9, wherein a period within which the I-frames from all the streams are present is identified, said period is divided into a plurality of timeslots at least equal in number to the number of data streams, and said I-frames from the different data streams are distributed over said timeslots.

11.(currently amended) A de-synchronizer for reducing packet loss in a packet network wherein multiple data streams are transported over respective logical two-way connections through a common communications resource between one or more near endpoints and one or more far endpoints, ~~wherein data flowing through said resource travels in both directions~~, and wherein each data stream is subject to data peaks, comprising:

an interface for communicating with transmitters and receivers for said data streams; and
a processor ~~configured to issue signals, in response~~responsive to reported round trip delays for the ~~data streams~~logical two-way connections to determine the maximum round trip delay among all the logical two-way connections, said processor further being responsive to signals indicating the location of data peaks in said data streams to issue signals; delaying transmission of ~~data peaks in one or more of said data streams~~ over said logical two-way connections having a round trip delay less than the determined maximum round trip delay by an amount dependent on the location of said peaks so as to ~~at least~~ reduce the degree of coincidence in the data peaks of different data streams without increasing the maximum round trip delay for the ~~data streams~~logical two-way connections.

12.(currently amended) A de-synchronizer as claimed in claim 11, wherein the processor is configured to delay said data ~~peaks~~streams so as to remove any coincidence in said data peaks of different streams.

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13.(original) A de-synchronizer as claimed in claim 11, wherein said processor is configured to introduce delays into the different data streams that are ranked in accordance with the round trip delays for each data stream.

14.(canceled)

15. (currently amended) A de-synchronizer as claimed in claim ~~14~~11, wherein the processor is configured to cap the amount of delay that can be introduced into a data stream at a predetermined value.

16.(currently amended) A de-synchronizer as claimed in claim ~~14~~13, wherein the processor is configured to monitor the round trip delays over a period of time and change the rank order as necessary to take into account changing round trip delays.

17. (currently amended) A de-synchronizer as claimed in claim ~~14~~11, wherein the processor is configured to introduce delays so as to evenly distribute the data peaks in different streams.

18. (original) A de-synchronizer as claimed in claim 11, wherein said data streams represent video streams and said data peaks correspond to I-frames.

19.(Currently amended) A ~~method~~de-synchronizer as claimed in claim ~~12~~18, further comprising a memory storing a table containing a number of timeslots at least equal to the number of datastreams, and wherein said processor is configured to distribute said I-frames from the different data streams over said timeslots.

Claims 20 – 23 are canceled.

24. (New) A video conference apparatus, comprising:

a plurality of video sources;

a plurality of transmitters for transmitting video signals from said video sources as multiple data streams over respective logical two-way connections through a common communications resource between said video sources and one or more far endpoints, and wherein each data stream is subject to data peaks corresponding to I-frames in the video signals;

a plurality of receivers for receiving multiple data streams and outputting received video signals;

a plurality of display units for displaying received the received video signals; and

a de-synchronizer comprising:

an interface for communicating with said transmitters and receivers for said data streams; and

a processor responsive to round trip delays for the logical two-way connections reported by the receivers to determine the maximum round trip delay among all the logical two-way connections, said processor further being responsive to signals indicating the location of I-frames in said data streams to issue signals delaying transmission of one or more of said data streams over said logical two-way connections having a round trip delay less than the determined maximum round trip delay by an amount dependent on the location of said I-frames so as to reduce the degree of coincidence in the I-frames of different data streams without increasing the maximum round trip delay for the logical two-way connections.

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Remarks

Claims 1, 2, 3, 8, 10, 11, 15, 17, and 19 have been amended to better define the invention.

Claims 20 – 23 have been canceled. New claim 24 has been added.

New claim 24 has been added. Claim 24 contains all the limitations of claim 11, which is believed allowable for the reasons stated below. As such it is believed that claim 24 may be maintained in the application based on the allowability of claim 11.

As the Examiner will appreciate, the invention is concerned with logical connections within a packet network, wherein multiple data streams flow through a common resource such as a router. In one embodiment the data streams represent video data, which contains I-frames that contain a large amount of data. If the I-frames in the different streams coincide, the router can become overloaded and as a result packets are lost.

In accordance with the invention, the data streams for which their respective logical connections have a round trip time less than the maximum may be delayed so that the peaks no longer coincide and the maximum round trip delay is not increased.

Rejection under 35 USC 102

The Examiner has cited Naidu under 35 USC 102. Naidu of course has nothing to do with the packet networks and data streams of the present invention, wherein the data is transmitted over logical connections through a common resource, such as a router. Naidu is concerned with separate RF links between a base station and individual antenna units at different distances from the base station. Because the mobile units are at different distances, the transmission delays are different, and the teaching of Naidu is how to equalize them by introducing an additional delay.

Any alleged similarity between Naidu and the present invention results from an unintended overly broad interpretation of the original claims. The new claims have been amended to place the invention more squarely within its intended context of packet networks and logical (virtual connections) passing through a common resource, such as a router.

As noted, the object of Naidu is to equalize the delay time, which is precisely the opposite objective to the present invention. In Naidu, a delay detector measures the present delay in each path, and then adds an additional delay so that all the paths have the same delay. As a result, the bursts are synchronized.

Furthermore, the equalization synchronizes the bursts so that air frame timing between cells served by the remote antenna units is enhanced (Naidu, abstract, line 20).

By contrast the purpose of the invention is to desynchronize the bursts (peaks) so that they do not all pass through the common resource (router) at the same time.

With regard to claim 1, Naidu, inter alia, fails to disclose a packet network wherein two-way logical connections are established between endpoints through a common resource as claimed. Moreover, Naidu fails to disclose detecting peaks and delaying transmission of the data streams over such connections to reduce coincidence of the peaks (i.e. desynchronize the peaks) based on the location of the peaks in the data streams. Still further Naidu fails to disclose the step delaying the streams by an amount dependent on the location of the peaks.

While the applicants do not accept that a fair interpretation of Naidu is to regard it as a packet network with logical connections as claimed, even if Naidu is given an interpretation that the applicants would regard as unreasonably broad, Naidu fails to determine round trip times

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between endpoints passing through a common resource. For example, if the base station is loosely regarded as the common resource, Naidu determines the transmission times between it and the antenna units, not between endpoints wherein logical connections pass through a common resource as claimed.

The idea of time-shifting the data streams in this way so as to reduce coincidence of the peaks is not disclosed in the art of record. This solution addresses a particular problem in packet networks where, for example, if a series of data bursts belonging to different logical connections pass through a common resource such as a router between endpoints on either side of the router, the router can become momentarily congested and start dropping packets even though the overall throughput is less than its capacity.

Similar arguments apply to claim 11. New claim 24 is believed to be allowable since it encompasses all the limitations of claim 11.

It is believed that the application is now in condition for allowance and such action is respectfully requested.

Reconsideration and allowance are therefore respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "R. J. Mitchell", is written above a horizontal line.

Richard J. Mitchell
Registration No. 34519

12/489,977

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Response to Office action mailed 10/18/2012

Agent of Record

MARKS & CLERK

P. O. Box 957, Station B,

Ottawa, Ontario, Canada

K1P 5S7

(613) 236-9561

Electronic Acknowledgement Receipt	
EFS ID:	14725611
Application Number:	12489977
International Application Number:	
Confirmation Number:	2594
Title of Invention:	Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks
First Named Inventor/Applicant Name:	Mojtaba Hosseini
Customer Number:	23553
Filer:	Richard J. Mitchell
Filer Authorized By:	
Attorney Docket Number:	23532-US
Receipt Date:	17-JAN-2013
Filing Date:	23-JUN-2009
Time Stamp:	14:08:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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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	23532resamd.pdf	81733 b9dc268fef1000922ce29620a6739fef9897c367	no	1

Warnings:

Information:

2	Claims	23532resclms.pdf	91348 577af4d94066bf9986e473df19937ed6bea04ef3	no	5
Warnings:					
Information:					
3	Applicant Arguments/Remarks Made in an Amendment	23532resrem.pdf	108061 49bebdb8b06b68a9c8926a0308ffc3cbf3405ec5	no	4
Warnings:					
Information:					
Total Files Size (in bytes):			281142		
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.					

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 12/489,977		Filing Date 06/23/2009		☐ 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 (\$)	OR	RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
☐ 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.										
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	01/17/2013	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 18	Minus	** 23	= 0	X \$31 =	0	OR	X \$ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0	X \$125 =	0	OR	X \$ =	
☐ Application Size Fee (37 CFR 1.16(s))										
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	
(Column 1)			(Column 2)			(Column 3)				
AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	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))										
						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:
/DIANE WILLIAMS/

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.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Address: COMMISSIONER FOR PATENTS
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/489,977	06/23/2009	Mojtaba Hosseini	23532-US	2594
23553 7590 10/18/2012 MARKS & CLERK P.O. BOX 957 STATION B OTTAWA, ON K1P 5S7 CANADA			EXAMINER ROSE, KERRI M	
			ART UNIT 2474	PAPER NUMBER
			MAIL DATE 10/18/2012	DELIVERY MODE 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)	
	12/489,977		HOSSEINI ET AL.	
	Examiner		Art Unit	
	KERRI ROSE		2474	

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

Period for Reply

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

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 23 June 2009.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ 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

5) ☒ Claim(s) 1-23 is/are pending in the application.

5a) Of the above claim(s) 20-23 is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-19 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☒ The drawing(s) filed on 23 June 2009 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).

12) ☐ 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

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

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. ____.
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date ____.	6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

14. Claims 20-23 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 6/4/12.

Claim Rejections - 35 USC § 102

15. 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 –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1-8 and 11-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Naidu et al. (US 5,805,983).

17. In regards to claim 1, Naidu discloses a method of managing multiple data streams transported over a common communications resource in a packet network, wherein data flowing through said resource travels in both directions, and wherein each stream is subject to data peaks (Fig. 4 discloses a system with multiple remote units in communication with a base station.), comprising:

determining a round trip delay for each data stream (Fig. 4 discloses delay detectors 110. Fig. 5 and col. 6 lines 5-9 discloses measuring the round-trip delay time.); and

delaying transmission of data peaks in one or more of said data streams to at least reduce the degree of coincidence in the data peaks of different streams without increasing the maximum round trip delay for the data streams (Fig. 4 discloses delay compensators 115 for equalizing the

delay, which implies some transmissions are delayed. Col. 6 lines 50-56 disclose the delays are introduced to minimize intersymbol interference.).

18. In regards to claim 2, Naidu discloses a method as claimed in claim 1, wherein said data peaks are delayed so as to remove any coincidence in said data peaks of different streams (Col. 6 lines 50-56 disclose the delays are introduced to remove intersymbol interference.).

19. In regards to claim 3, Naidu discloses a method as claimed in claim 1, wherein the delays introduced into the different data streams are ranked in accordance with the determined round trip delays for each data stream (Col. 6 lines 28-45 disclose measuring the round trip delay of each stream and adjusting the delay of each remote unit until synchronization is achieved.).

20. In regards to claim 4, Naidu discloses a method as claimed in claim 1, wherein no delay is introduced into the data stream with the maximum round trip delay (Col. 5 lines 30-32 discloses delay is introduced so as to equalize the delay across all streams. This implies the stream with the most or maximum round trip delay does not have any additional delay introduced.).

21. In regards to claim 5, Naidu discloses a method as claimed in claim 3, wherein the amount of delay that can be introduced into a data stream is capped at a predetermined value (Col. 8 lines 49-59 and fig. 8b disclose the maximum amount of introduced delay may be predetermined, up to 16 microseconds in the given example.).

22. In regards to claim 6, Naidu discloses a method as claimed in claim 3, wherein the round trip delays are monitored over a period of time, and the rank order is changed as necessary to take into account changing round trip delays (Col. 6 lines 38-45 discloses monitoring the round trip delays and changing the order of introduced delays as required.).

23. In regards to claim 7, Naidu discloses a method as claimed in claim 3, wherein the delays are introduced so as to evenly distribute the data peaks in different streams (Col. 6 lines 51-55 disclose compensating for differences in length and types of media in order to distribute the data peaks and limit intersymbol interference.).

24. In regards to claim 8, Naidu discloses a method as claimed in claim 1, wherein the data streams flow between a common source and multiple destinations (Fig. 4 discloses a common base station sending transmissions to multiple mobile stations. Col. 9 line 13 discloses multicasting.).

25. In regards to claim 11, Naidu discloses a de-synchronizer for reducing packet loss in a packet network wherein multiple data streams are transported over a common communications resource, wherein data flowing through said resource travels in both directions, and wherein each stream is subject to data peaks (Fig. 4 discloses a system with multiple remote units in communication with a base station.), comprising:

an interface for communicating with transmitters and receivers for said data streams (Fig. 4 discloses a communications system with communication interface. Fig. 5 is a diagram of the remote unit with communication interface.);

a processor configured to issue signals, in response to reported round trip delays from the data streams (Fig. 4 discloses delay detectors 110. Fig. 5 and col. 6 lines 5-9 discloses measuring the round-trip delay time.), delaying transmission of data peaks in one or more of said data streams to at least reduce the degree of coincidence in the data peaks of different streams without increasing the maximum round trip delay for the data streams (Fig. 4 discloses delay

compensators 115 for equalizing the delay, which implies some transmissions are delayed. Col. 6 lines 50-56 disclose the delays are introduced to minimize intersymbol interference.).

26. Claims 12-17 are rejected upon the same grounds as claims 2-7 respectively.

Claim Rejections - 35 USC § 103

27. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

28. Claims 9, 10, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naidu in view of Wang (US 5,912,644).

29. In regards to claim 9, Naidu discloses a method as claimed in claim 1, wherein said data streams represent video streams (Fig. 2 and col. 1 line 57 – col. 2 line 9 discloses CATV or cable tv signals, which include video.).

Naidu is silent to said data peaks correspond to I-frames.

Wang discloses said data peaks correspond to I-frames (Fig. 6 depicts an I-frame).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use an I-frame, as taught by Wang in the system of Naidu because doing so allows for a plurality of operators with greater accuracy and reliability by limiting interference, as taught by Wang in col. 3 lines 15-25.

30. In regards to claim 10, Naidu and Wang disclose a method as claimed in claim 9, wherein a period within which the I-frames from all the streams is identified, said period is divided into a plurality of timeslots at least equal in number to the number of data streams, and said I-frames

from the different data streams are distributed over said timeslots (Naidu discloses using time division multiplexing in col. 2 line 20. Wang discloses assigning different transceivers to different time slots in col. 32 lines 12-22.).

31. Claims 18 and 19 are rejected upon the same grounds as claims 9 and 10 respectively.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KERRI ROSE whose telephone number is (571)272-0542. The examiner can normally be reached on Monday through Friday, 8 am - 4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael THIER can be reached on 571-272-2832. 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.

/Kerri M Rose/
Examiner, Art Unit 2474

Notice of References Cited	Application/Control No. 12/489,977	Applicant(s)/Patent Under Reexamination HOSSEINI ET AL.	
	Examiner KERRI ROSE	Art Unit 2474	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,805,983 A	09-1998	Naidu et al.	455/67.16
*	B	US-5,912,644 A	06-1999	Wang, James J. M.	342/457
*	C	US-2002/0181633 A1	12-2002	Trans, Francois	375/354
*	D	US-2010/0142638 A1	06-2010	Jalali et al.	375/260
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

<i>Search Notes</i> 	Application/Control No. 12489977	Applicant(s)/Patent Under Reexamination HOSSEINI ET AL.
	Examiner KERRI ROSE	Art Unit 2474

SEARCHED			
Class	Subclass	Date	Examiner
370	229-232, 235, 252, 400, 401, 431, 464-466, 468	10/15/12	KMR

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor Search	10/15/12	KMR
East - see printout (including text search)	10/16/12	KMR

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	1	((determin\$5 measur\$5 find\$3 calculat\$3) near7 (stream\$1 path\$1 link\$1) near7 (round\$1 near trip\$1 near delay\$1)) and ((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) near10 (coincid\$4 interfer\$4)) and (i\$1frame)	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/17 10:29
L3	28	((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) near10 (coincid\$4 interfer\$4)) and (i\$1frame)	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/17 10:37
L4	2	((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) near10 (coincid\$4 interfer\$4)) and (i\$1frame) and (time\$1 near2 slot\$1)	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/17 11:09
S1	4	((MOJTABA) near2 (HOSSEINI)).INV.	US-PGPUB; USPAT	OR	OFF	2012/10/15 14:41
S2	176	((PATRICK) near2 (WHITE)).INV.	US-PGPUB; USPAT	OR	OFF	2012/10/15 14:42
S3	3188	370/229.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:43
S4	4600	370/230.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:43
S5	966	370/230.1.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:43
S6	1380	370/231.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:43
S7	1688	370/232.ccls.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:43
S8	5849	370/235.ccls.	US-	OR	OFF	2012/10/15

			PGPUB; USPAT; EPO; JPO			14:43
S9	11250	370/252.ccls.	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:43
S10	3631	370/400.ccls.	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:44
S11	12277	370/401.ccls.	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:44
S12	1065	370/431.ccls.	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:44
S13	734	370/464.ccls.	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:44
S14	4172	370/465.ccls.	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:44
S15	4003	370/466.ccls.	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:44
S16	4258	370/468.ccls.	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:44
S17	7335	round\$1 near trip\$1 near delay\$1	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:45
S18	1296	((round\$1 near trip\$1 near delay\$1) and ((delay\$3 suspen\$4 wait\$3 schedul\$3) same (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) same (coincid\$4 interfer\$4))	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:47
S19	947	((round\$1 near trip\$1 near delay\$1) and ((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) same (coincid\$4 interfer\$4))	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:48
S20	362	((round\$1 near trip\$1 near delay\$1) and	US-	OR	OFF	2012/10/15

		((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) near10 (coincid\$4 interfer\$4))	PGPUB; USPAT; EPO; JPO			14:48
S21	19	(round\$1 near trip\$1 near delay\$1) and ((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) near10 (coincid\$4 interfer\$4)) and (data\$1 near2 peak\$3)	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 14:56
S22	4	((determin\$5 measur\$5 find\$3 calculat\$3) near7 (stream\$1 path\$1 link\$1) near7 (round\$1 near trip\$1 near delay\$1)) and ((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) near10 (coincid\$4 interfer\$4))	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 15:20
S23	1	((determin\$5 measur\$5 find\$3 calculat\$3) near7 (stream\$1 path\$1 link\$1) near7 (round\$1 near trip\$1 near delay\$1)) and ((delay\$3 suspen\$4 wait\$3 schedul\$3) near10 (transmi\$5 send\$3 packet\$1 message\$1 frame\$1) near10 (coincid\$4 interfer\$4)) and ((max\$1 maximum\$1) near7 (round\$1 near trip\$1 near delay\$3))	US- PGPUB; USPAT; EPO; JPO	OR	OFF	2012/10/15 15:20

10/ 17/ 2012 12:42:03 PM

C:\ Users\ krose1\ Documents\ EAST\ Workspaces\ 12489977.wsp

<i>Index of Claims</i> 	Application/Control No. 12489977	Applicant(s)/Patent Under Reexamination HOSSEINI ET AL.
	Examiner KERRI ROSE	Art Unit 2474

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

☐ Claims renumbered in the same order as presented by applicant			☐ CPA			☐ T.D.			☐ R.1.47		
CLAIM		DATE									
Final	Original	10/17/2012									
	1	✓									
	2	✓									
	3	✓									
	4	✓									
	5	✓									
	6	✓									
	7	✓									
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	15	✓									
	16	✓									
	17	✓									
	18	✓									
	19	✓									
	20	N									
	21	N									
	22	N									
	23	N									

PATENT

Agent's Docket No. 23532-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	)	
	)	
Mojtaba HOSSEINI et al	)	Art Unit: 2611
	)	
Serial No: 12/489,977	)	Confirmation No. 2594
	)	
Filed: 23-June-2009	)	Ex: PATEL, Hemant S.

For: Method of Managing the Flow of Time-Sensitive Data over Packet Networks

RESPONSE TO RESTRICTION REQUIREMENT MAILED May 14, 2012

June 5, 2012

Commissioner for Patents
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria VA 22413-1450

Sir:

In response to the Restriction Requirement mailed May 14, 2012, applicants respectfully elect the claims of Group I, namely Claims 1 to 19 for further prosecution without prejudice to the applicants' right to file a divisional application to Claims 20 to 23.

Respectfully submitted,



Richard J. Mitchell
Registration No. 34,519
Agent of Record

MARKS & CLERK
P. O. Box 957, Station B,
Ottawa, Ontario Canada K1P 5S7
(613) 236-9561

Electronic Acknowledgement Receipt	
EFS ID:	12925077
Application Number:	12489977
International Application Number:	
Confirmation Number:	2594
Title of Invention:	Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks
First Named Inventor/Applicant Name:	Mojtaba Hosseini
Customer Number:	23553
Filer:	Richard J. Mitchell/Patricia Martin
Filer Authorized By:	Richard J. Mitchell
Attorney Docket Number:	23532-US
Receipt Date:	04-JUN-2012
Filing Date:	23-JUN-2009
Time Stamp:	14:11:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Response to Election / Restriction Filed	23532.pdf	37145 65f8e7d53c8067be42ddc22c30298042a6f9e59e	no	1

Warnings:

Information:

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.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/489,977	06/23/2009	Mojtaba Hosseini	23532-US	2594
23553 7590 05/14/2012 MARKS & CLERK P.O. BOX 957 STATION B OTTAWA, ON K1P 5S7 CANADA			EXAMINER PATEL, HEMANT SHANTILAL	
			ART UNIT 2614	PAPER NUMBER
			MAIL DATE 05/14/2012	DELIVERY MODE 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. 12/489,977	Applicant(s) HOSSEINI ET AL.	
	Examiner HEMANT PATEL	Art Unit 2614	

-- 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 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.

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

- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 23 June 2009.

2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ 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

5) ☒ Claim(s) 1-23 is/are pending in the application.

5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☐ Claim(s) ____ is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☒ Claim(s) 1-23 are subject to restriction and/or election requirement.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ 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).

12) ☐ 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

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application
3) ☐ Information Disclosure Statement(s) (PTO/SB/03) Paper No(s)/Mail Date _____	6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-19, drawn to Data Flow Congestion Prevention Or Control based on Measurement of the peak data flow rate, classified in class 370, subclass 233.
 - II. Claims 20-23, drawn to Video Conference, classified in class 348, subclass 14.08.
2. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination I has separate utility such as Data Flow Congestion Prevention Or Control in a) file transfer over Internet and/or b) Voice over Internet Protocol calls, which do not require subcombination II video conferencing. See MPEP § 806.05(d).

The examiner has required restriction between subcombinations usable together. Where applicant elects a subcombination and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to

provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

3. Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and/or examination burden if restriction were not required because at least the following reason(s) apply:

- *the inventions have acquired a separate status in the art in view of their different classification*
- *the inventions have acquired a separate status in the art due to their recognized divergent subject matter*
- *the inventions require a different field of search (e.g., searching different classes /subclasses or electronic resources, or employing different search strategies or search queries).*

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HEMANT PATEL whose telephone number is (571)272-8620. The examiner can normally be reached on 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on 571-272-7547. 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.

Hemant Patel
Primary Examiner
Art Unit 2614

/Hemant Patel/
Primary Examiner, Art Unit 2614



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. 2594

SERIAL NUMBER 12/489,977	FILING or 371(c) DATE 06/23/2009 RULE	CLASS 348	GROUP ART UNIT 2614	ATTORNEY DOCKET NO. 23532-US		
APPLICANTS Mojtaba Hosseini, Ottawa, CANADA; Patrick White, Renfrew, CANADA; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED *** SMALL ENTITY ** 07/02/2009						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and /HEMANT SHANTILAL PATEL/ Acknowledged Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY CANADA	SHEETS DRAWINGS 3	TOTAL CLAIMS 23	INDEPENDENT CLAIMS 3
ADDRESS MARKS & CLERK P.O. BOX 957 STATION B OTTAWA, ON K1P 5S7 CANADA						
TITLE Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks						
FILING FEE RECEIVED 605	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			



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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/489,977	06/23/2009	Mojtaba Hosseini	23532-US

CONFIRMATION NO. 2594

23553
MARKS & CLERK
P.O. BOX 957
STATION B
OTTAWA, ON K1P 5S7
CANADA

PUBLICATION NOTICE



Title:Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks

Publication No.US-2010-0321468-A1

Publication Date:12/23/2010

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
12/489,977	06/23/2009	2611	605	23532-US	23	3

CONFIRMATION NO. 2594

UPDATED FILING RECEIPT



OC000000040731833

23553
MARKS & CLERK
P.O. BOX 957
STATION B
OTTAWA, ON K1P 5S7
CANADA

Date Mailed: 03/23/2010

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)

Mojtaba Hosseini, Ottawa, CANADA;
Patrick White, Renfrew, CANADA;

Assignment For Published Patent Application

MAGOR COMMUNICATIONS CORPORATION, Ottawa, CANADA

Power of Attorney:

Richard Mitchell--34519 Hetal Kushwaha--58187
George MacGregor--37547
Ian Clark--51376
Stuart Budd--53880
John Koh--53943

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 07/02/2009

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/489,977**

Projected Publication Date: 12/23/2010

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks

Preliminary Class

375

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).

SUPPLEMENTAL APPLICATION DATA SHEET

PTO/SB/14 (07-07)

Approved for use through 06/30/2010. 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 contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	23532-US
		Application Number	<u>12/489,977</u>
Title of Invention	Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Applicant Information:

Applicant 1				
Applicant Authority ☒ Inventor		☐ Legal Representative under 35 U.S.C. 117		☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix
	Mojtaba		Hosseini	
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service				
City	Ottawa	Country Of Residenceⁱ	CA	
Citizenship under 37 CFR 1.41(b)ⁱ				
Mailing Address of Applicant:				
Address 1	516-1300 Richmond Road			
Address 2				
City	Ottawa	State/Province	ON	
Postal Code	K2B 8L2	Countryⁱ	CA	
Applicant 2				
Applicant Authority ☒ Inventor		☐ Legal Representative under 35 U.S.C. 117		☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix
	Patrick		White	
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service				
City	Renfrew	Country Of Residenceⁱ	CA	
Citizenship under 37 CFR 1.41(b)ⁱ CA				
Mailing Address of Applicant:				
Address 1	35A Canaan Road			
Address 2				
City	Renfrew	State/Province	ON	
Postal Code	K7V 3Z4	Countryⁱ	CA	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add				

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).	
☐	An Address is being provided for the correspondence information of this application.

SUPPLEMENTAL APPLICATION DATA SHEET

PTO/SB/14 (07-07)

Approved for use through 06/30/2010. 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 contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	23532-US
		Application Number	<u>12/489,977</u>
Title of Invention	Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks		
Customer Number	23553		
Email Address	patents@markclerk.com	Add Email	Remove Email

Application Information:

Title of the Invention	Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks		
Attorney Docket Number	23532-US	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	3	Suggested Figure for Publication (if any)	2

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	23553		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

SUPPLEMENTAL APPLICATION DATA SHEET

PTO/SB/14 (07-07)

Approved for use through 06/30/2010. 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 contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	23532-US
		Application Number	<u>12/489,977</u>
Title of Invention	Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks		

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

Remove			
Application Number	Country ⁱ	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			☒ Yes ☐ No
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			

Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.

Assignee 1

If the Assignee is an Organization check here. ☒

Organization Name MAGOR COMMUNICATIONS CORPORATION

Mailing Address Information:

Address 1 350 Legget Drive

Address 2

City Ottawa

State/Province

ON

Country ⁱ CA

Postal Code

K2K 2W7

Phone Number

Fax Number

Email Address

Additional Assignee Data may be generated within this form by selecting the **Add** button.

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.

Signature	/rjmitchell34519/	Date (YYYY-MM-DD)	~~2009-06-23~~ 2009-08-25
First Name	Richard J.	Last Name	Mitchell
Registration Number		34519	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

SUPPLEMENTAL

Docket No. 23532-US

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

METHOD OF MANAGING THE FLOW OF TIME-SENSITIVE DATA OVER
PACKET NETWORKS

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on June 23, 2009 as United States Application No. or PCT International
Application Number 12/489,977
and was amended on _____

(if applicable)

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 United States Patent and Trademark Office all information know to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim Foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	☐
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	☐
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	☐

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

_____	_____
(Application Serial No.)	(Filing Date)
_____	_____
(Application Serial No.)	(Filing Date)
_____	_____
(Application Serial No.)	(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

_____	_____	_____
(Application Serial No.)	(Filing Date)	(Status)
		(patented, pending, abandoned)
_____	_____	_____
(Application Serial No.)	(Filing Date)	(Status)
		(patented, pending, abandoned)
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		(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.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

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Electronic Patent Application Fee Transmittal				
Application Number:		12489977		
Filing Date:		23-Jun-2009		
Title of Invention:		Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks		
First Named Inventor/Applicant Name:		Mojtaba Hosseini		
Filer:		Richard J. Mitchell/Carolynn Irvin		
Attorney Docket Number:		23532-US		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Late filing fee for oath or declaration	2051	1	65	65
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				65

Electronic Acknowledgement Receipt	
EFS ID:	5945393
Application Number:	12489977
International Application Number:	
Confirmation Number:	2594
Title of Invention:	Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks
First Named Inventor/Applicant Name:	Mojtaba Hosseini
Customer Number:	23553
Filer:	Richard J. Mitchell/Carolynn Irvin
Filer Authorized By:	Richard J. Mitchell
Attorney Docket Number:	23532-US
Receipt Date:	25-AUG-2009
Filing Date:	23-JUN-2009
Time Stamp:	08:58:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$65
RAM confirmation Number	10233
Deposit Account	131717
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	SuppADS.pdf	220447	no	3
			6c77b1249e52d9db356cd518691b0337ea8e3629		

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2	Oath or Declaration filed	Declarationx.pdf	142804	no	3
			574f77de101b4db0c79a434d0361c931d2ba9fffd		

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3	Fee Worksheet (PTO-875)	fee-info.pdf	30331	no	2
			5fdb2d25f088be4a9877c8e8920075486373d0be		

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Total Files Size (in bytes): 393582

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/489,977	06/23/2009	Mojtaba Hosseini	23532-US

CONFIRMATION NO. 2594

FORMALITIES LETTER



23553
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OTTAWA, ON K1P 5S7
CANADA

Date Mailed: 07/13/2009

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FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

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The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of **\$65** for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this notice.

SUMMARY OF FEES DUE:

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
12/489,977	06/23/2009	2611	540	23532-US	23	3

CONFIRMATION NO. 2594

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OTTAWA, ON K1P 5S7
CANADA

FILING RECEIPT



OC000000036773172

Date Mailed: 07/13/2009

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Applicant(s)

Mojtaba Hosseini, Ottawa, CANADA;

Assignment For Published Patent Application

MAGOR COMMUNICATIONS CORPORATION, Ottawa, CANADA

Power of Attorney: None

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 07/02/2009

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/489,977**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks

Preliminary Class

375

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Method of Managing the Flow of Time-sensitive Data over Packet Networks

Field of the Invention

[001] This invention relates to the field of packet networks, and in particular to a method of managing the flow of time-sensitive data, such as voice or audio.

Background of the Invention

[002] It is becoming increasingly common to establish video conferencing sessions over IP networks rather than circuit-switched networks, such as ISDN. Such networks can, for example, be LANs, WANs, or virtual networks established over the Internet. In a typical session, a TCP/IP virtual connection is established between a pair of video endpoints, which can then communicate with each other to provide a telecollaboration session. The endpoints stream video and audio data to each other over other virtual connections (e.g. using RTP).

[003] Video data is streamed over a network in compressed form and comprises two kinds of frames: P- frames and I-frames. P-frames are smaller in size than I-frames because the P-frames only contain information about the changes relative to a previous frame. For example, if an object moves over a static background, the P-frames only carry information pertaining to the movement of the object. On the other hand, when there is a change of scene, it is necessary to transmit the entire frame, and this is achieved with an I-frame. Because small data errors in P-frames can result in disproportionate degradation of received video, I-frames are also transmitted periodically to limit perpetuation of these data errors. Although the I-frame may be compressed internally, it is still much larger than a P-frame.

[004] When multiple Video sources are streamed onto an IP network, I-frames occurring simultaneously create bandwidth or traffic peaks. As a result of the network

internal congestion controls, which discard packets when congestion exceeds a certain threshold, the important I-frames may be discarded en route. This problem can occur when multiple video conference calls are in process and particularly in the case of multi-party conferences when the same video source is connected to two or more remote endpoints.

[005] Existing stream buffers attempt overcome this problem by indiscriminately delaying arbitrary packets. This technique can result in undesirable latency in the video conference case. Another solution can be achieved at the endpoints if the users accept lower quality video, e.g. lower resolution and/or lower frame rate will be exchanged for more consistent, reliable performance.

Summary of the Invention

[006] According to the present invention there is provided a method of managing multiple data streams transported over a common communications resource in a packet network, wherein data flowing through said resource travels in both directions, and wherein each stream is subject to data peaks, comprising determining a round trip delay for each data stream; and delaying transmission of data peaks in one or more of said data streams to at least reduce the degree of coincidence in the data peaks of different streams without increasing the maximum round trip delay for the data streams.

[007] By measuring the Round Trip Delay (RTD) for each video connection, data associated with connection(s) having the least RTD are delayed to smooth net traffic. This will result in zero delay to the connection having greatest RTD. The effect of this, other factors being equal, is to ensure that no party in a multiparty conference will experience RTD greater than would be experienced by parties communicating via the path of greatest point to point delay when all other connections are disconnected.

[008] As the number of connections is increased traffic peaks from each source will preferably be distributed as evenly as possible to minimize the probability of traffic loss due to bandwidth caps in each transmission paths. Such caps are considered to have essentially unknown clipping characteristics that will significantly deteriorate video rendered at the endpoint equipment.

[009] According to another aspect of the invention there is provided a de-synchronizer for reducing packet loss in a packet network wherein multiple data streams are transported over a common communications resource, wherein data flowing through said resource travels in both directions, and wherein each stream is subject to data peaks, comprising an interface for communicating with transmitters and receivers for said data streams; and a processor configured to issue signals, in response to reported round trip delays for the data streams, delaying transmission of data peaks in one or more of said data streams so as to at least reduce the degree of coincidence in the data peaks of different streams without increasing the maximum round trip delay for the data streams.

[0010] In a still further aspect of the invention there is provided a video conference apparatus, comprising at least one video source; at least one transmitter for transmitting a transmitted video signal from said at least one source as a data stream; at least one receiver for receiving a data stream and outputting a received video signal; at least one display unit for displaying received a received video signal; and a processor responsive to round trip delays for the data streams reported by said receivers to delay transmission of data peaks in one or more of said data streams so as to at least reduce the degree of coincidence in the data peaks of different streams without increasing the maximum round trip delay for the data streams.

Brief Description of the Drawings

[0011] The invention will now be described in more detail, by way of example only, with reference to the accompanying drawings, in which:-

[0012] Figure 1 is a schematic diagram of a typical video conferencing system;

[0013] Figure 2 is a functional block diagram of a video conferencing system;

[0014] Figure 3 illustrates a typical video signal in the prior art;

[0015] Figure 4 illustrates a video signal with de-synchronization applied in accordance with one embodiment of the invention;

[0016] Figure 5 illustrates the case for three video three signals;

[0017] Figure 6 is a flow chart showing the operation of the desynchronizer;

[0018] Figure 7 is a high-level block diagram of a desynchronizer.

Detailed Description of Preferred Embodiments

[0019] Figure 1 illustrates a part of a typical video conference system. Endpoints 1a at location 1 are connected to endpoints locations 2, 3 and 4 at different locations. The endpoints 1a and 1b are connected via LAN 6 to router 5, which connects to IP network 8, to which the endpoints 2, 3, 4 are also connected. An important point to realize is that there is a point-to-point IP connection set up between each source and each destination endpoint. In the example shown, there are three IP connections to the router 5 shown at the edge of the IP Network 8. The router 5 is typical of many in each IP connection. The IP Network shown could be, for example, a corporate private network, the public Internet, or a combination of such networks.

[0020] A typical stylized IP Video Signal 44 is illustrated in Figure 3. Larger peaks 44a represent periods of high data traffic associated with video I-frames transmitting the

entire picture. Smaller traffic peaks 44b represent P-frames, transmitting small fragments of the picture, which have changed with respect to the previous I and P-frames, and other data. The signal shown in Figure 3 reflects a typical one to two second period.

[0021] Each video connection in Figure 1 carries a signal similar to that shown in Fig 3. In the case where the signal from one common video source is transmitted to two destinations, the signal traffic to each destination will be similar; for example, signal 44 and signal 48. These are signals transmitted on a virtual IP connection.

[0022] Figure 3 shows aggregate traffic on the real, physical, LAN 6. In general, the video data from different sources are not synchronized, which means that there is no particular temporal relationship between traffic peaks resulting from the various I-frames coming from different sources. These peaks from different sources will drift with respect to one another when viewed over time but they will always coincide if the same source streams to multiple destinations. From time to time drifting I-frame peaks will coincide again resulting in a signal similar to that shown at 49 in Fig 3. When the traffic peaks on each of the connections to multiple destinations roughly coincide it is possible that the instantaneous traffic level may exceed the traffic capacity of one of more devices (e.g. router 5 in Fig 1) in the system. This capacity limit is shown as a cap 49a in Figure 3. The router 5 typically discards any data, which would otherwise have exceeded the cap. The consequence of this loss of data is a degradation of the transmitted picture when it is rendered at the display for a period of time that is noticeable and significant to the system users.

[0023] In a one-way video application, for example, a YouTube video, if the video signal is delayed a few hundred ms or even several seconds, users likely will either not notice or not be too concerned. Such delay typically occurs once at the point the user starts

watching the video and has no perceivable effect to the viewer on the remainder of that video.

[0024] Unlike streaming one-way video applications, round trip delay (RTD) is a very important parameter in a videoconference system. A video conference is a two-way communication, like a telephone call. Human communication evolved in an environment in which the delay in sound traveling from a speaker's mouth to a listener's ear is typically a few ms. to human perception this is instantaneous. Visual cues are received even faster. It has been found that communication can continue naturally when the RTD is kept under approximately 150ms. Between this figure and 500 or 600ms users will find conversation increasingly difficult, especially, for example, if discussion is heated or users are in negotiation.

[0025] As it relates to video, RTD is the time taken from the moment an individual at the source moves or makes a gesture until that movement occurs on the distant display plus the time taken for a similar movement at the distant location to occur on the local display. Each way this includes typically time taken to scan the scene, encode it, packetize it, traverse the IP network and carry out the inverse functions at the display end, where further delay is incurred in a jitter buffer. It is extremely difficult if not impossible with current technology and user desired picture quality to meet the ideal RTD requirements. It will be clear that arbitrarily adding further delay to smooth traffic using a video buffer will further deteriorate the user experience.

[0026] Figure 2 is a functional block diagram of a system in accordance with one embodiment of the invention. With the exception of the DeSync Control block 32 and delay blocks 52, whose function will be described in more detail below, the function of the remaining blocks is known in the art. The video displays 12 and 13 could be a

dedicated device, such as may be found in a typical conference room or a window on a display more typically found at an individuals desk.

[0027] Network Receiver 16 terminates the IP connection 42 from a remote source at endpoint 2 and delivers the digital video signal 14 to the display 12. Video Source 22 could be a video camera, a group of switched cameras, or any other source of video including a Video Player, Multiparty Conference Unit (MCU), or a Gateway connection to legacy video equipment. Network Transmitter 26 converts the digital video signal 24 from the source and sends it as an IP signal 44 to the remote endpoint 2.

[0028] Desynch block 32, shown in Figure 7, comprises a processor 70, memory 72, and interface 74 for interfacing with transmitters 26 and receivers 16.

[0029] The blocks shown illustrate functions that may be physically integrated with each other and/or other equipment (not illustrated). For example displays 12 and 13 may be simply two windows on a single display or they may be separate standalone displays. At remote locations details, similar to 1 with or without blocks 32 and 52, of video encoding and decoding and IP transmission and reception are omitted for clarity.

[0030] The endpoints 1 and 2, 3, 4 are interconnected via the IP network 8, which is understood to include all equipment necessary for IP connectivity between the locations. In particular, the network will include many routers, similar to 5 shown and other equipment. This other equipment may be at the respective location and/or part of a private network, a public network, especially the Internet. It will be understood that signals traversing the network are subject to significant arbitrary and variable delay ranging from tens of milliseconds to seconds.

[0031] Connections 42 and 44 form one logical two-way connection (IP virtual connections are illustrated as dashed lines to differentiate from other signals). It will be

understood that these connections comprise more than one signal. These signals include both the video signal (e.g. carried in Real Time Protocol - RTP) and round trip delay (RTD) information on the RTP flow (e.g. derived from RTP Control Protocol RTCP)

[0032] Referring again to Figure 3, it will be seen that the peaks associated with I-frames are aligned and when aggregated onto the LAN they result in a 2x traffic peak. It should be noted that in the example peaks necessarily line up because a single encoder is used. However had there been two independent video sources with two encoders the same situation would arise periodically as the two signals drift in and out of phase. Each time they come into phase a large traffic peak is created resulting potentially in data loss around the peak as described earlier.

[0033] The deSync control 32, shown in Figure 2, receives signals 34 from each Receiver (Rx) block 16 (two or more) indicative of Round Trip Delay (RTD), which information is derived from a network protocol (e.g. RTCP) in the IP Transport layer.

[0034] Signals 36 from each controlled video source 22 are indicative of the time the last I-Frame was transmitted in video signal 24.

[0035] The purpose of the desync function is to delay the transmission of the signal transmitted on certain connections in order to minimize aggregate traffic peaks whilst at the same not increasing RTD of any connection beyond the greatest undelayed RTD for all connections. This is achieved by signal 38.

[0036] The network transmitter 26 is preceded by the addition of a delay block 52 at the video input. Block 52 delays signal 24 by a time specified in signal 38. The result is that the IP signal 48 is delayed by block 52 by the value specified in signal 38 when compared to conventional endpoints. It will be understood that this modification may or may not be embedded within the existing transmitter code.

[0037] The deSync control 32 determines the delay of each stream so as to separate peaks that would otherwise coincide. It does so by delaying streams with the least RTD more than those with higher RTD such that the stream with the highest RTD is not delayed at all. The amount of delay per stream also has a maximum value so as to cap the total delay.

[0038] Figure 4 illustrates the result of the implementing a controlled delay as described and should be compared with Fig 3. In this example it is assumed that connection 44 has the greatest RTD and no further delay has been added to this signal. A delay is, according to the invention, applied only to the signal driving connection 48 so that its I-frame peaks do not align with signal 44. The peaks in the resultant aggregate LAN traffic therefore do not exceed the arbitrary traffic cap as they do in Fig 3.

[0039] It will be understood that this method may be used for any number of connections. Figure 5 illustrates the operation of the invention more generally. In this case three video signals 44, 48, and 50 are being transmitted simultaneously. The deSync function will attempt to distribute I-frame peaks in signals 48 and 50 between successive peaks of Signal 44 which is the un-delayed Signal on the connection with the greatest RTD.

[0040] However, in practice I-frame transmission is not strictly periodic and the round trip delay experienced by each connection may change over time. This change may result in the rank order of connections by RTD changing. The connection with the greatest delay at one moment may be replaced by a different connection at a later moment.

[0041] Fig 6 shows a simplified flow chart of embodiment of of the desynchronizing control unit 32. However, it will be appreciated that there a numerous alternative ways of implementing the desribed function, which will be apparent to a person skilled in the art.

In this exemplary embodiment, the process described in the flow chart shown in Figure 6 is executed on a schedule once every 9-10 seconds.

[0042] The first step in the process 60 is to create an empty SignalTable in computer memory. The table contains a row for each destination endpoint currently active. It contains the two columns:

1. Last I-frame time (I) for the destination
2. Current Round Trip Delay (RTD) for the destination

In step 62 the SignalTable is populated with data from the Network Receivers 16 and the video sources 22 as described earlier.

[0043] It will be understood that the round trip delay reported by receivers 16 reflects only the delay in the network, the total for outbound path plus return path, and does not include any additional delay introduced in the endpoint as a result of this invention, either at the subject endpoint or the remote endpoint, if the invention is implemented in any or all the remote endpoints 2,3 and 4.

[0044] It will be understood that the time stamp signal 36 indicating the last I-frame from a given video source 22 will be relative to a common arbitrary real time clock.

[0045] In the next step 64, the SignalTable is sorted on the basis of the RTD column in descending order. In step 66 the time reference (Ref) for the purposes of the rest of the process steps is established. It is taken to be the time of the last I-frame for the video source feeding the connection with the longest RTD, i.e. the first entry in the SignalTable column I.

[0046] Further each I value in the SignalTable, except the first, is adjusted. It will be understood that I values are roughly periodic. The I values are adjusted by adding or subtracting the I-frame period to I such that I now has a value greater than Ref but not

exceeding $I + \text{Ref}$.

[0047] Next in 68 a table of time slots is created, bSlotsTable. Initially each entry is FALSE. The period into which I-frames could be potentially delayed is divided into "slots", at least as many slots as there are endpoints. Each entry in the bSlotsTable corresponds to one slot, each having a different associated SlotTime. In the preferred embodiment slots are evenly spaced in time so that the SlotTime is proportional to the slot number.

[0048] The remaining loop determines a delay value for each destination (row) which will result in moving all but one of any coincident I-frames to an empty slot, so that no slot has more than one I-frame in it.

[0049] Because the destination with greatest RTD is taken as reference, it will be evident that it will not be further delayed by this process.

[0050] Steps 70 and 80 control a typical software loop processing one row of the table, i.e. one destination, in each loop.

[0051] In the first step of the loop 72, the next empty slot that is no more than the maximum allowable delay ahead in time is found, i.e. slot having a SlotTime value greater than or equal to the I value but no more than the maximum allowable delay ahead in time. Under certain circumstances it is possible that such a slot may not be found.

[0052] A test 74 selects the subsequent step on the basis of whether an empty slot was found in 72.

[0053] Typically a slot is found and step 76 sets the delay 38 (the specific signal connected to the transmitter 26 of the current loop destination). It is set to a value equal to the $\text{SlotTime} - I$. Following this 78 the slot value in bSlotsTable is set TRUE so that

this slot will not again be chosen in step 72 when finding a slot for the remaining destinations in SignalTable.

[0054] In the event that no slot is found for this endpoint the delay 38 for that endpoint transmitter is set to zero in step 82, i.e. no delay.

[0055] Step 80 is the end of the loop. The flowchart either loops back to 70 or ends when all destination have been processed.

[0056] It should be appreciated by those skilled in the art that any block diagrams herein represent conceptual views of illustrative circuitry embodying the principles of the invention. For example, a processor may be provided through the use of dedicated hardware as well as hardware capable of executing software in association with appropriate software. When provided by a processor, the functions may be provided by a single dedicated processor, by a single shared processor, or by a plurality of individual processors, some of which may be shared. Moreover, explicit use of the term “processor” should not be construed to refer exclusively to hardware capable of executing software, and may implicitly include, without limitation, digital signal processor (DSP) hardware, network processor, application specific integrated circuit (ASIC), field programmable gate array (FPGA), read only memory (ROM) for storing software, random access memory (RAM), and non volatile storage. Other hardware, conventional and/or custom, may also be included.

We claim:

1. A method of managing multiple data streams transported over a common communications resource in a packet network, wherein data flowing through said resource travels in both directions, and wherein each stream is subject to data peaks, comprising:
 - determining a round trip delay for each data stream; and
 - delaying transmission of data peaks in one or more of said data streams to at least reduce the degree of coincidence in the data peaks of different streams without increasing the maximum round trip delay for the data streams.
2. A method as claimed in claim 1, wherein said data peaks are delayed so as to remove any coincidence in said data peaks of different streams.
3. A method as claimed in claim 1, wherein the delays introduced into the different data streams are ranked in accordance with the determined round trip delays for each data stream.
4. A method as claimed in claim 1, wherein no delay is introduced into the data stream with the maximum round trip delay.
5. A method as claimed in claim 3, wherein the amount of delay that can be introduced into a data stream is capped at a predetermined value.
6. A method as claimed in claim 3, wherein the round trip delays are monitored over a period of time, and the rank order is changed as necessary to take into account changing round trip delays.
7. A method as claimed in claim 3, wherein the delays are introduced so as to evenly distribute the data peaks in different streams.

8. A method as claimed in claim 1, wherein the data streams flow between a common source and multiple destinations.
9. A method as claimed in claim 1, wherein said data streams represent video streams and said data peaks correspond to I-frames.
10. A method as claimed in claim 9, wherein a period within which the I-frames from all the streams is identified, said period is divided into a plurality of timeslots at least equal in number to the number of data streams, and said I-frames from the different data streams are distributed over said timeslots.
11. A de-synchronizer for reducing packet loss in a packet network wherein multiple data streams are transported over a common communications resource, wherein data flowing through said resource travels in both directions, and wherein each stream is subject to data peaks, comprising:
- an interface for communicating with transmitters and receivers for said data streams; and
 - a processor configured to issue signals, in response to reported round trip delays for the data streams, delaying transmission of data peaks in one or more of said data streams so as to at least reduce the degree of coincidence in the data peaks of different streams without increasing the maximum round trip delay for the data streams.
12. A de-synchronizer as claimed in claim 11, wherein the processor is configured to delay said data peaks so as to remove any coincidence in said data peaks of different streams.
13. A de-synchronizer as claimed in claim 11, wherein said processor is configured to introduce delays into the different data streams that are ranked in accordance with the round trip delays for each data stream.

14. A de-synchronizer as claimed in claim 11, wherein said processor is configured to introduce no delay into the data stream with the maximum round trip delay.
15. A de-synchronizer as claimed in claim 14, wherein the processor is configured to cap the amount of delay that can be introduced into a data stream at a predetermined value.
16. A de-synchronizer as claimed in claim 14, wherein the processor is configured to monitor the round trip delays over a period of time and change the rank order as necessary to take into account changing round trip delays.
17. A de-synchronizer as claimed in claim 14, wherein the processor is configured to introduce delays so as to evenly distribute the data peaks in different streams.
18. A de-synchronizer as claimed in claim 11, wherein said data streams represent video streams and said data peaks correspond to I-frames.
19. A method as claimed in claim 12, further comprising a memory storing a table containing a number of timeslots at least equal to the number of datastreams, and wherein said processor is configured to distribute said I-frames from the different data streams over said timeslots.
20. A video conference apparatus, comprising:
- at least one video source;
 - at least one transmitter for transmitting a transmitted video signal from said at least one source as a data stream;
 - at least one receiver for receiving a data stream and outputting a received video signal;
 - at least one display unit for displaying received a received video signal;
 - a processor responsive to round trip delays for the data streams reported by said

receivers to delay transmission of data peaks in one or more of said data streams so as to at least reduce the degree of coincidence in the data peaks of different streams without increasing the maximum round trip delay for the data streams.

21. A video conference apparatus as claimed in claim 20, wherein said processor is configured to introduce delays into the different data streams that are ranked in accordance with the round trip delays for each data stream.

22. A de-synchronizer as claimed in claim 20, wherein said processor is configured to introduce no delay into the data stream with the maximum round trip delay.

23. A de-synchronizer as claimed in claim 20, wherein the processor is configured to cap the amount of delay that can be introduced into a data stream at a predetermined value.

Abstract of the Disclosure

A method is disclosed for managing multiple data streams transported over a common communications resource in a packet network, wherein data flowing through the resource travels in both directions, and wherein each stream is subject to data peaks. The round trip delay is determined for each data stream, and the transmission of data peaks in one or more of the data streams is delayed to at least reduce the degree of coincidence in the data peaks of different streams without increasing the maximum round trip delay for the data streams.

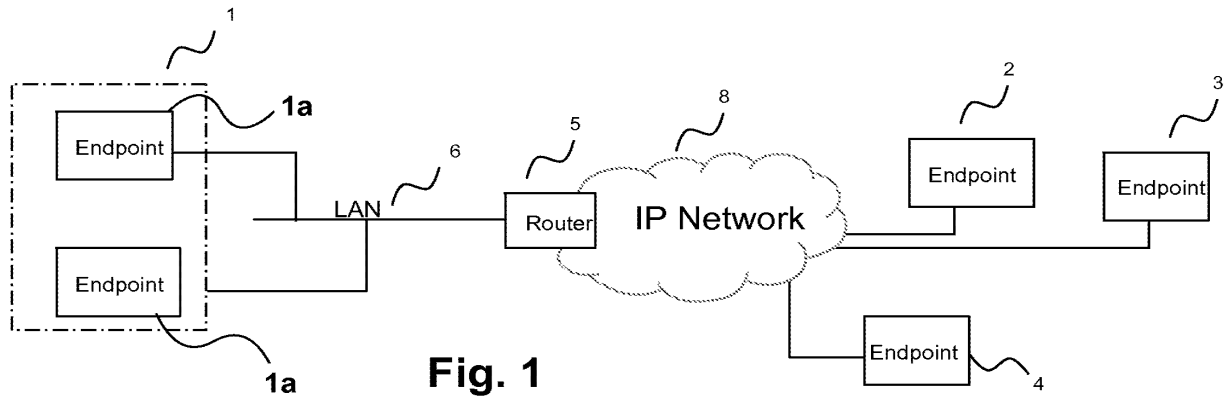


Fig. 1

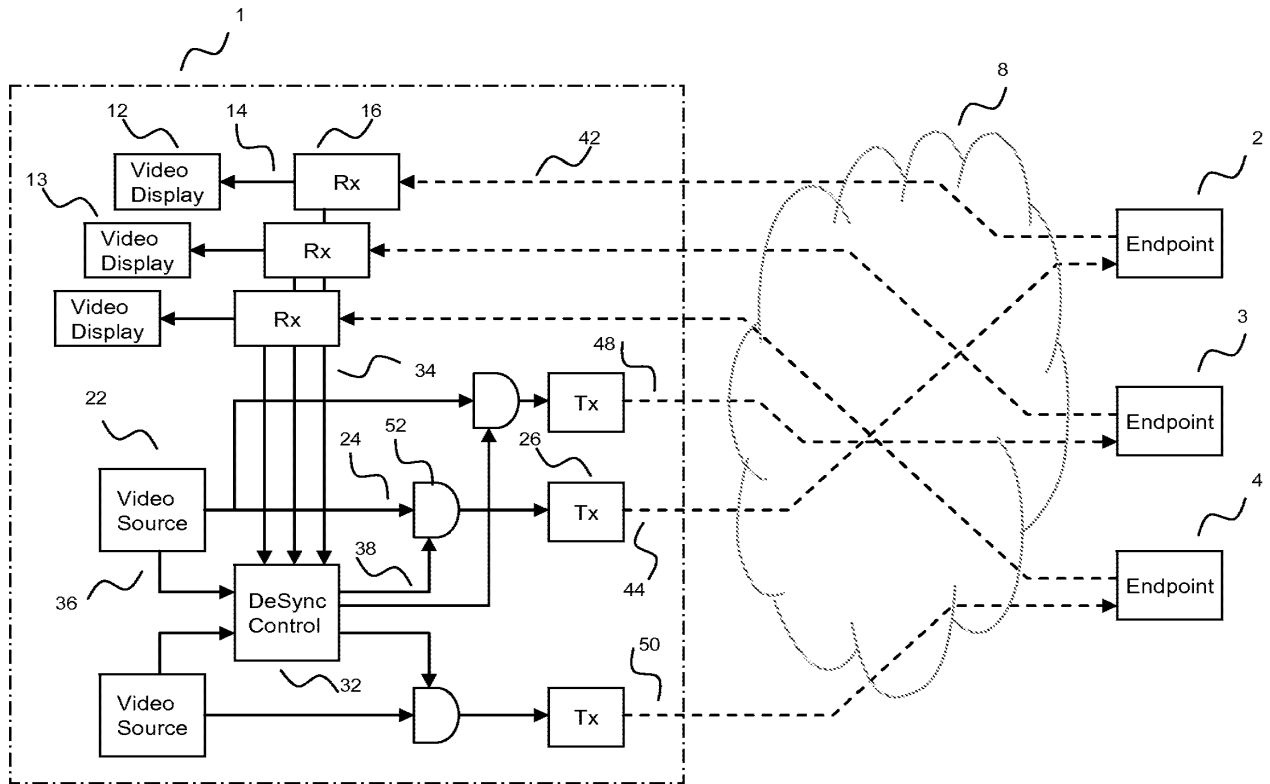


Fig 2 Video Conference Function Block Diagram

Fig. 2

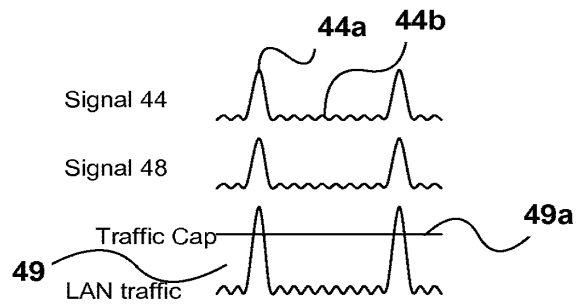


Fig. 3

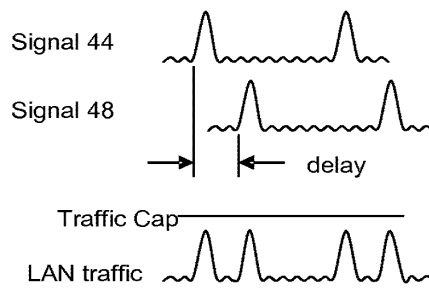


Fig. 4

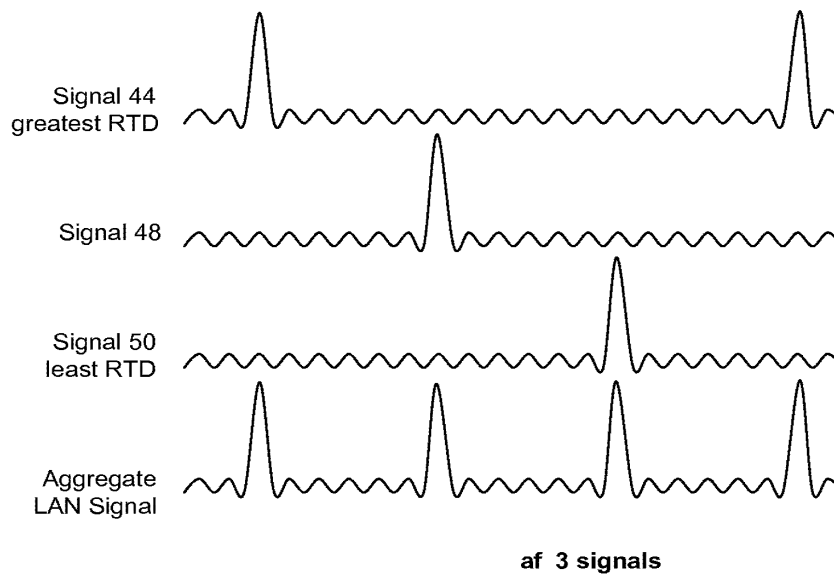


Fig. 5

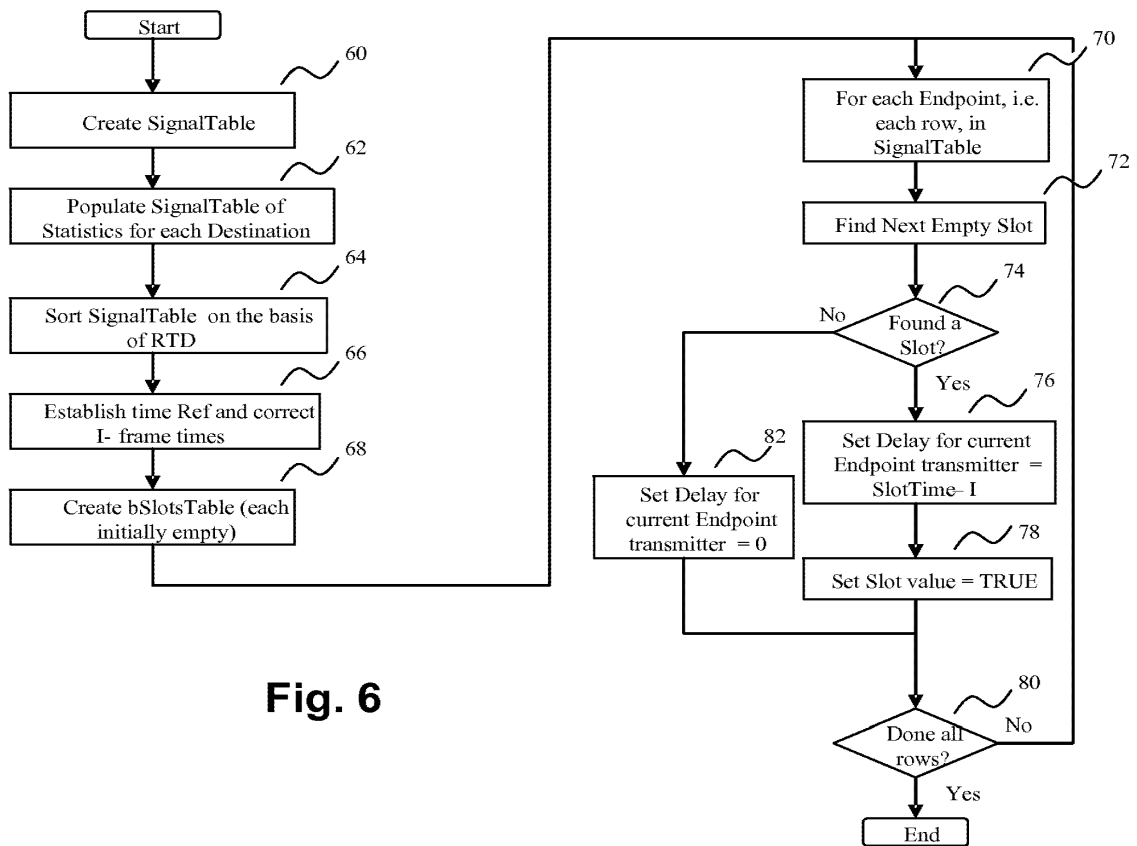


Fig. 6

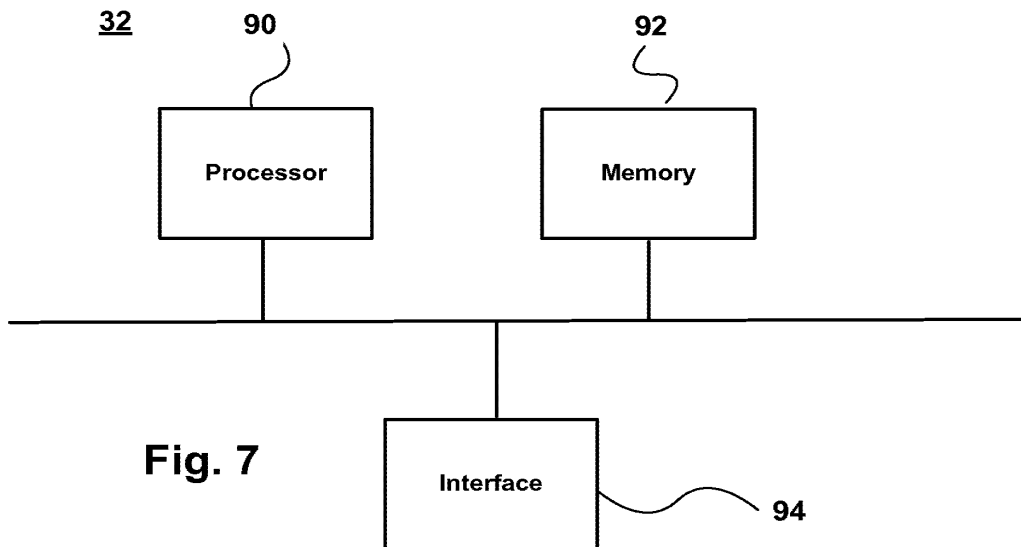


Fig. 7

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	23532-US
		Application Number	
Title of Invention	Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

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Applicant 1					Remove
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Mojtaba		Hosseini		
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service					
City	Ottawa	Country Of Residenceⁱ	CA		
Citizenship under 37 CFR 1.41(b)ⁱ					
Mailing Address of Applicant:					
Address 1	516-1300 Richmond Road				
Address 2					
City	Ottawa	State/Province	ON		
Postal Code	K2B 8L2	Countryⁱ	CA		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					
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Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence information of this application.			
Customer Number	23553		
Email Address	patents@markclerk.com	Add Email	Remove Email

Application Information:

Title of the Invention	Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks		
Attorney Docket Number	23532-US	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	3	Suggested Figure for Publication (if any)	2

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	23532-US
		Application Number	
Title of Invention	Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks		

Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐	Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Customer Number	23553		

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Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
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This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).			
Remove			
Application Number	Country i	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			☒ Yes ☐ No
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Assignee Information:

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	23532-US
		Application Number	
Title of Invention	Method Of Managing The Flow Of Time-Sensitive Data Over Packet Networks		

If the Assignee is an Organization check here. ☒			
Organization Name	MAGOR COMMUNICATIONS CORPORATION		
Mailing Address Information:			
Address 1	350 Legget Drive		
Address 2			
City	Ottawa	State/Province	ON
Country ⁱ	CA	Postal Code	K2K 2W7
Phone Number		Fax Number	
Email Address			
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Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.					
Signature	/rjmitchell34519/			Date (YYYY-MM-DD)	2009-06-23
First Name	Richard J.	Last Name	Mitchell	Registration Number	34519

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		METHOD OF MANAGING THE FLOW OF TIME-SENSITIVE DATA OVER PACKET NETWORKS		
First Named Inventor/Applicant Name:		Mojtaba Hosseini		
Filer:		Richard J. Mitchell		
Attorney Docket Number:		23532-US		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	82	82
Utility Search Fee	2111	1	270	270
Utility Examination Fee	2311	1	110	110
Pages:				
Claims:				
Claims in excess of 20	2202	3	26	78
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				540

Electronic Acknowledgement Receipt	
EFS ID:	5571577
Application Number:	12489977
International Application Number:	
Confirmation Number:	2594
Title of Invention:	METHOD OF MANAGING THE FLOW OF TIME-SENSITIVE DATA OVER PACKET NETWORKS
First Named Inventor/Applicant Name:	Mojtaba Hosseini
Customer Number:	23553
Filer:	Richard J. Mitchell
Filer Authorized By:	
Attorney Docket Number:	23532-US
Receipt Date:	23-JUN-2009
Filing Date:	
Time Stamp:	16:28:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 540
RAM confirmation Number	2909
Deposit Account	131717
Authorized User	
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Specification	23532spec.pdf	97332	no	12
			0df7c2ee9aec935f7ee946b2a487c0dcdbd1451b0		
Warnings:					
Information:					
2	Claims	23532clms.pdf	59625	no	4
			3b69fe812697cba85de8ac458e10f872d2111e1b		
Warnings:					
Information:					
3	Abstract	23532abs.pdf	54584	no	1
			2dc89031413a1d93022642aba8f4ae56facf9617		
Warnings:					
Information:					
4	Drawings-only black and white line drawings	23532drw.pdf	124167	no	3
			5a457cff40cc5bcc70e6460040a5c0b6eb2a464		
Warnings:					
Information:					
5	Application Data Sheet	23532ADS.pdf	936811	no	4
			ebe9902d812ebbed33e0d3158008ec743abbbe27		
Warnings:					
Information:					
6	Fee Worksheet (PTO-875)	fee-info.pdf	36702	no	2
			f343c96368f98a6f4cc72393aab084b4055c43b0		
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Application Number: 12489977 Document Date: 6/23/2009

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Form Revision Date: February 8, 2006

Filing Date: 06/23/09

PTO/SB/06 (12-04)

Approved for use through 7/31/2006. OMB 0651-0032

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/489,977	
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	82	N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	270	N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	110	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	23	minus 20 =	3	x\$26	78	x\$52
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 =	*	x\$110		x\$220
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR					
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				195	390	
				TOTAL	540	TOTAL
* If the difference in column 1 is less than zero, enter "0" in column 2.						
APPLICATION AS AMENDED – PART II						
(Column 1)		(Column 2)		(Column 3)		
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)
	Total (37 CFR 1.16(i))	Minus **	=	X =		X =
	Independent (37 CFR 1.16(h))	Minus ***	=	X =		X =
	Application Size Fee (37 CFR 1.16(s))			N/A		N/A
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))			TOTAL ADD'T FEE		TOTAL ADD'T FEE
(Column 1)		(Column 2)		(Column 3)		
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)
	Total (37 CFR 1.16(i))	Minus **	=	X =		X =
	Independent (37 CFR 1.16(h))	Minus ***	=	X =		X =
	Application Size Fee (37 CFR 1.16(s))			N/A		N/A
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))			TOTAL ADD'T FEE		TOTAL ADD'T FEE
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.						

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